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YALE
student
academic
competitions

we are the people with buzzers who answer questions

Packet 1

1. The light source in this painting comes from a large box-shaped lantern at the foot of the figures on the right, who stand facing a group of figures on the left, that includes a praying monk. At the top of the painting, is a group of people huddled with fear as they watch the grisly scene, and at the bottom, there is a pile of corpses, but the two central groups of people, are the soldiers of the firing squad on the right, and the group of intended victims on the left, which include a man with his arms outstretched in a V-shape towards the sky. FTP, what is this Francisco Goya painting, depicting the day after the Spanish uprising against Napoleon.

ANSWER: **The Third of May 1808** or **El tres de mayo de 1808** en Madrid, or **Los fusilamientos de la moncloa** del Príncipe Pío or **Los fusilamientos** del tres de mayo

2. The adult human body contains, on average, twenty four grams of this element, with about sixty percent of that total residing in the skeleton. Among commercially useful minerals both talc and dolomite contain high concentrations of this element, and Grignard reagents are formed when alkyl halides react with them. Atoms of it are at the centers of Porphyrin rings in Chlorophyll, and when its hydroxides are put in a suspension with water it finds use as an antacid and a laxative. For ten points name this alkaline earth metal, with atomic number 12.

ANSWER: **magnesium**

3. He will play Scotty in the new *Star Trek* film, and is being coached by his Scottish wife to perfect his accent. He starred in *Asylum* and the sketch show *Big Train*, before appearing as scientist Benji Dunn in *Mission Impossible 3*. He appeared in Tarantino and Rodriguez's *Grindhouse*, in the trailer for *Don't*, along with Nick Frost. *Don't* was directed by Edgar Wright, who had also directed this actor, writer, and comedian's best work, a television series which he co-wrote and co-starred with Jessica Stevenson called *Spaced*. FTP, name this British actor, star of *Hot Fuzz*, *Shaun of the Dead*, and *Run, Fat Boy, Run*.

ANSWER: Simon **Pegg**

4. Blazars sometimes exhibit it when expelling high-velocity jets of plasma. Barnard's Star notably also shows it. While its opposite is nearly ubiquitous, this effect is measured only in about 100 galaxies, most of which are gravitationally-bound dwarfs in the local group, and which include the Andromeda galaxy. It is so rare because very few objects have enough motion to counteract the Hubble expansion of the universe. FTP, name this shortening of the wavelength of light emitted by approaching objects, the opposite of the red shift.

ANSWER: **blue shift**

5. In Act I, Scene ii of this work, several characters are seen rehearsing a play-within-a-play, which they will later perform in Act V. Egeus forbids the marriage of Hermia to her lover Lysander, so they elope by escaping into the forest by night, where they are followed by Demetrius, who is in turn followed by Helena. The king and queen of the fairies, Oberon and Titania, are in the midst of a marital squabble, so Oberon has her punished by making her fall in love with the first thing she sees upon waking, which turns out to be a man whose head has been transformed into a donkey's. FTP, Puck and Bottom are characters in what comedy by William Shakespeare?

ANSWER: **A Midsummer Night's Dream**

6. The series has spawned a spinoff called *The Carlyles*. Jessica Szohr, who portrays Vanessa Abrams, is dating Ed Westwick, who plays Chuck Bass. The title character, who is never seen, is voiced by Kristen Bell, who had previously played Veronica Mars. Blair Waldorf is played by Leighton Meester, and Blake Lively plays Serena van der Woodsen. Adapted from a series of books by Cecily von Ziegesar, FTP, name this CW TV series.

ANSWER: **Gossip Girl**

7. Crystals are trigonal-rhombohedral and usually white or colorless. It is harder than gypsum but softer than fluorite, placing it as number 3 on Moh's scale. Stalagmites and stalactites are often made from this, a common component of limestone and the primary mineral in metamorphic marble. Shells of many marine organisms are made from this carbonate mineral. FTP, name this most stable polymorph of calcium carbonate.

ANSWER: **calcite** (prompt on calcium carbonate early)

8. The poem this novel takes its title from features a "blood-dimmed tide" that seems appropriate to the book as well. It begins with the main character throwing "The Cat" to the great delight of his fellow villagers - palm wine is drunk and

yams are eaten. Ominous signs are present, but the main character acts often out of fear, and is eventually exiled. The stereotypically named Mr. Brown eventually arrives and “mere anarchy is loosed upon the world”. FTP name this novel set in Umuofia and telling the tale of the ill-fated Okonkwo, a work of Nigerian author Chinua Achebe.

ANSWER: Things Fall Apart

9. [Note to moderators: Pause 2 seconds between each sentence] Pencil and paper ready. The answer's the same. The quantity three to the sixth power minus three squared divided by seventy-two. The square root of the quantity eighty-three times sixty-three minus seventy-three squared. The fourth triangular number. The log base 2 of 1024. All these are equal to, FTP, which number, symbolized by the Roman numeral X?

ANSWER: 10

10. Author Nathanael West died in a car accident the day after this author died, possibly due to his grief at his friend's passing. That death left his final novel based on the life of Irving Thalberg unfinished, though it was printed posthumously under the title *The Last Tycoon*. The relationship between psychologist Dick Diver and his patient and wife Nicole in one novel is based on this author's actual problems with his mentally unstable wife, Zelda. In another novel, the title character becomes a millionaire by bootlegging in order to win the love of a girl he met during World War I, Daisy Buchanan. FTP, who is this author of *Tender is the Night* and *The Great Gatsby*?

ANSWER: F. Scott Fitzgerald

11. Although this man received 73 electoral votes, he would not become president; a situation which most directly led to the introduction of the 12th amendment. As vice president, he presided over the impeachment trial of Samuel P. Chase. Later in his political career, he was accused of treason for supposedly wanting to set up a monarchy in western North America. This man may be better known, though, for an incident that occurred when he was running for governor of New York in 1804, where a federalist political opponent sullied his name with many slanders and eventually made him lose the election. This is, FTP, what man who challenged Alexander Hamilton to a duel and killed him?

ANSWER: Aaron Burr

12. After serving in the Social war under his father Strabo he was sent to clear Sicily and Africa of opposition in the ensuing Civil War. He then subdued more enemies of Sulla when he was sent to Spain, after which he returned to Rome and took much credit for putting down Spartacus' rebellion. After he was made consul, he was given the extraordinary command of clearing the Mediterranean of pirates, which he did successfully. His success would soon come to an end, however, at the hands of one of his fellow triumvirs. Losing the battle of Pharsalus, this is, FTP, what member of the first triumvirate who fought against Caesar for control of the Roman Empire?

ANSWER: Pompey

13. Apart from the addition of trombones and piccolo in the last movement, this composition's instrumentation is largely consistent with the format formalized by the composer, namely double woodwinds, horns and trumpets. It consists of a standard set of 4 movements, with the 2nd movement in A flat major. The opening motif is extremely famous and has been incorporated into jazz by Duke Ellington and World War 2 Allied radio broadcasts. FTP, name what is probably the best known piece of classical music, which opens with a distinctive short-short-short-long idea, the middle symphony of Ludwig van Beethoven.

ANSWER: Beethoven's 5th Symphony

14. After serving in the Second Crusade with his uncle Conrad, he would see his calvary defeated by Civic infantry at the battle of Legnano. As Duke of Swabia he was able to take Rome, fighting off the forces of the Lombard League, after sacking Milan in 1162 as well. Saladin called his death a "miracle," when, on his way to fight in the third Crusade, this man drowned in the Calycadnus river. FTP, name this famous leader of the House of Hohenstauffen who received his nickname from his red beard.

ANSWER: Frederick Barbarossa (also accept Frederick I Hohenstaufen or Frederick III of Swabia)

15. Fresh on the heels of the wars of religion, Pope Sixtus V treated it as a crusade. Their battle plan involved anchoring off the coast of Flanders, where the Duke of Parma's army stood ready to commence the invasion. Its origins lay in cutting off English support for the United Provinces, which had revolted from Spanish rule. Setting out from Spain with 22 warships and 108 converted merchant vessels, this was, FTP, what 1588 Spanish fleet sent to invade England?

ANSWER: Spanish Armada

16. After Trotsky announced his response to this, The Germans began advancing toward Petrograd once again, and Lenin threatened to resign over this measure. Largely because of this measure, Russia was excluded from the peace negotiations at Versailles. Ultimately, Russia had to give up one third of its railway network, 73% of its iron ore production, and 780,000 square kilometers of territory. Resulting in the cession of territory already occupied by the German army, including Poland, Lithuania, and Latvia, this was FTP, what treaty signed by the Bolshevik revolutionaries with Germany that took Russia out of World War I?

ANSWER: Treaty of **Brest-Litovsk**

17. The most successful animal species, by this measure, is probably the Antarctic Krill, which accounts for 0.7% of the Earth's total for this measure. That estimate places them at five times the total for human beings, but only about a quarter that of crops. In aquatic systems, primary consumers often have more of this quantity than primary producers, because of the rapid turnover of phytoplankton. However, on land, the slower life cycles of plants mean that pyramids organized around this quantity are always widest at the base. FTP, name this measure from ecology, whose units are typically given in mass per unit area.

ANSWER: **biomass** (accept reasonable equivalents)

18. Minor episodes in this novel concern an unsuccessful attempt by a mob to lynch Colonel Sherburn for killing a harmless drunk, and a 30-year feud between the Grangerford and the Shepherdsons that erupts into a bloody gunfight. More famous episodes include the title character faking his own death by killing a hog and using its blood, and a theatrical production called The Royal Nonesuch, which two of the characters use to swindle unsuspecting townfolk. Previously, those two characters, posing as the Duke of Bridgewater and the Dauphin of France, had commandeered the raft used by the title character to help Miss Watson's slave Jim escape to freedom. FTP, name this novel by Mark Twain whose protagonist had previously appeared in *The Adventures of Tom Sawyer*.

ANSWER: *The **Adventures of Huckleberry Finn***

19. Unlike the theoretical Eyring one, this model is empirical in nature. Plots of natural log of k vs 1 over the temperature can be used to figure out the activation energy of the system from the slope. A modified version of this compares the current temperature of the system to a baseline temperature to show the independence of that activation energy to the pre-exponential factor A , which represents the number of collisions that occur every second. FTP, provide this equation named for a Swedish chemist and used to describe the effect of temperature on the rate constant of a reaction.

ANSWER: **Arrhenius** equation

20. The object presented in this poem is seemingly rarely unveiled since the narrator tells us that only he may draw back the curtain that hides it. It is one of many artworks owned by the narrator, including a sculpture of Neptune by Claus of Innsbruck. The cause of the "spot of joy" visible in the subject's cheek may have been caused by any "courtesy" as the narrator tells us that hers was a heart "too soon made glad". However, after the narrator gave "commands", "all smiles stopped together". This is, FTP, what dramatic monologue delivered by the Duke of Ferrara about a portrait Fra Pandolf painted, a poem by Robert Browning.

ANSWER: "**My Last Duchess**"

1. Answer some questions about the Mongols FTPE.

[10] Recent genetic studies have concluded that one half of one percent of the world's men are descendants of this man. A celebration of his 800th birthday in Mongolia led to a rebuke from the Soviets, who saw him as a reactionary. He also conquered a lot of land.

ANSWER: **Genghis Khan**

[10] This 14th century emir traced his ancestry back to Genghis Khan, but his troops were mostly Turkish. He conducted a massacre of Baghdad in 1401 and was exhumed by a Soviet Anthropologist in 1942, who concluded that he did indeed suffer from a limp.

ANSWER: **Timur** the lame or **Tamerlane**

This third son of Genghis succeeded him, but inherited only part of his territory. He launched an invasion of Jin China and his armies sacked Kiev in 1240. His death in a bout of drinking halted the Mongol advance on Western Europe.

ANSWER: **Ogodei**, or **Ogedei**, Khan

2. The four of them include Meg, Beth, and Amy, and their mother is Marmee, FTPE:

[10] The March sisters are the title characters of what American novel?

ANSWER: **Little Women**

[10] *Little Women* is by this author of *Flower Fables* and *Hospital Sketches*.

ANSWER: Louisa May **Alcott**

[10] The second oldest of the March sisters, and the protagonist of the novel, this tomboy with a quick temper and passion for writing is thought to represent Alcott herself.

ANSWER: **Jo**(sophine) March

3. FTPE, answer these related biology questions.

[10] Those in fish have two chambers, while the ones in reptiles and amphibians feature three chambers. Mammals and birds have four-chambered ones, but all are known by this term which refers to the "pump" of the circulatory system.

ANSWER: **heart**

[10] This dual-flap valve controls the flow of blood between the left atrium and the left ventricle of the human heart.

ANSWER: **mitral** valve (also accept **bicuspid** valve or **left atrioventricular** valve)

[10] This technique, which involves the placement of electrodes on the skin to measure the electrical activity of the heart, can be used to identify damaged muscles after a heart attack.

ANSWER: **ECG** or **EKG** (also accept **electrocardiography**)

4. Answer some questions about sorting algorithms FTPE.

[10] This sort finds the smallest element of an array, and moves it to the first position. It runs in big Oh of n squared time.

ANSWER: **selection** sort

[10] This improvement on selection sort is a divide-and-conquer algorithm that splits the array to be sorted in half, recursively sorts the smaller arrays, and then puts the sorted arrays back together.

ANSWER: **mergesort**

[10] This randomized analog of mergesort runs in big Oh of n squared in the worst case, but in n log n time in the average case. It runs faster than mergesort in most implementations.

ANSWER: **quicksort**

5. FTPE, answer some questions about a famous Missourian.

[10] This man replaced Roosevelt at Potsdam, seeing the United States through the end of WW II

ANSWER: Harry **Truman**

[10] Not only did Truman see us through WWII, but he was back for another four years after defeating this man, who was widely expected to defeat Truman

ANSWER: Thomas **Dewey**

[10] Truman announced a battle with communism in his namesake doctrine, largely orchestrated by this man, his second secretary of state, who advocating a policy of developing "situations of strength"

ANSWER: Dean **Acheson**

6. FTPE, answer questions about a Pre-Civil War party.

[10] This party's first nominee was defeated by Zachary Taylor in 1848; it grew out of a desire to halt the expansion of slavery

ANSWER: **Free Soil** Party

[10] This was the Free Soil Party's first nominee. He is perhaps more famous for being president during the Caroline Affair

ANSWER: Martin **Van Buren**

[10] This piece of legislation was an encouraging factor for the Free Soil Party's development, as it sought to prohibit the establishment of slavery in territories acquired during Mexican War.

ANSWER: **Wilmot Proviso**

7. Answer some questions about a common subject of sculpture FTPE.

[10] Both Verocchio and Donatello did bronzes of this Biblical figure holding a sword, with his enemy's head at his feet.

ANSWER: **David**

[10] The most famous David is the massive one by this Renaissance artist, the most impressive piece in Florence's Accademia museum.

ANSWER: **Michelangelo**

[10] A hundred years after Michelangelo, Bernini sculpted a twisting David readying his sling. David's pose is very similar to that of this famous sculpture by Myron.

ANSWER: **Discobolus**

8. Answer some questions about the Lyrical Ballads, FTPE:

[5,5] The Lyrical Ballads is a 1798 collection of poems by which two of the English "Lake Poets" (five points for each poet).

ANSWER: William **Wordsworth** and Samuel Taylor **Coleridge**

[10] This longest poem in the Lyrical Ballads is also the longest major poem Coleridge ever wrote, and deals with the punishment of a certain sailor for having shot an albatross.

ANSWER: "**The Rime of the Ancient Mariner**"

[10] This final poem of the Lyrical Ballads is a reflection on nature, written by Wordsworth, inspired by the scenery near the celebrated ruins of a Welsh church.

ANSWER: "**Lines Composed a Few Miles Above Tintern Abbey** on Revisiting the Banks of the Wye Valley during a Tour, July 13, 1798" (accept "Lines Written a Few Miles Above Tintern Abbey" or even just "Tintern Abbey")

9. This man, while ordering the Hagia Sophia to be built, sent his generals on numerous expeditions to recover land formerly belonging to the western Roman Empire, FTPE:

[10] Name this man, emperor of the Byzantine Empire, who restored much former Roman glory

ANSWER: **Justinian** the Great

[10] This was Justinian's most trusted general, who reclaimed much of Italy briefly for the Byzantines

ANSWER: **Belisarius**

[10] Belisarius also assisted Justinian in suppressing this revolt that nearly cost him his reign. It was instigated by supporters of chariot racing known as the Blues and the Greens.

ANSWER: **Nika** Riots

10. Answer some questions about Alexandre Dumas's *The Three Musketeers*, FTSNOP:

[5,5,5,5] For five points each, give the name of each of the Three Musketeers, as well as the name of the protagonist.

ANSWER: **Athos, Aramis, Porthos, and D'Artagnan** [DAR-tan-yan] (in any order)

[10] FTP, what is the name of Athos' wife, who survives his earlier attempts to kill her and becomes a spy for Cardinal Richelieu.

ANSWER: **Milady de Winter** (accept "Milady" or "De Winter" on their own)

11. Answer some questions about novels with avian titles, FTPE:

[10] Sam Spade must solve a murder and beat Kaspar Gutman and his henchman to finding the title statue in this Dashiell Hammett novel.

ANSWER: *The **Maltese Falcon***

[10] Young American heiress Milly Theale sees the effects that incurable mortal illness have on the people around her in this Henry James novel.

ANSWER: *The **Wings of the Dove***

[10] This American author's third novel is titled *The Song of the Lark*, but she is more famous for her second novel, *O Pioneers*.

ANSWER: Willa **Cather**

12. Sergei Prokofiev's Peter and the Wolf has often been used in orchestral educational concerts, because it features various instruments as the characters in the narration. FTPE, given a character, give the instrument or instruments that portray it.
[10] The Duck, characterized by the nasal sound of this double-reed instrument.

ANSWER: **Oboe**

[10] The Bird, characterized by the extremely fast sixteenth-note passages on this woodwind instrument composed entirely of metal.

ANSWER: **Flute**

[10] Peter, characterized by the soothing, pastoral sound produced by this body of instruments.

ANSWER: **Strings**

13. Name these thinkers from the early modern period FTPE.

A. This was the first man to articulate a detailed social contract. He argued that people in a state of nature gave up their individual rights for the sake of a strong state and protection. The government that emerges is absolute in character, for this man, and not subject to the consent of the governed.

ANSWER: Thomas **Hobbes**

B. This Englishman's social contract influenced the American revolutionaries. Unlike Hobbes, he believed that if the government failed to protect the individual's life, liberty, and property, the people had the duty to rebel.

ANSWER: John **Locke**

C. This man's social contract draws more heavily on popular sovereignty, and argues that individuals should abide by a general will of the community.

ANSWER: Jean-Jacques **Rousseau**

14. FTPE, answer these questions about equilibrium chemistry:

[10] This concept states that a system shifts towards equilibrium in response to any change in the system's conditions.

ANSWER: **Le Chatelier's Principle**

[10] Equilibrium shifts to disfavor the dissociation of a weak acid in the presence of its conjugate base in this effect.

ANSWER: **common ion effect**

[10] If one knows the equilibrium constant for a system, one can find this quantity using the ideal gas constant and temperature.

ANSWER: **Gibbs free energy**

15. FTPE, answer these related questions:

[10] The thirteenth Summer rendition of these was held in September 2008 and featured 20 events for more than 4,200 athletes, all of whom are physically disabled.

ANSWER: **Paralympics**

[10] This double amputee, South African runner won the 100, 200, and 400 meter events. He is nicknamed "Blade Runner" for his use of J-shaped, flexible carbon fiber prosthetics.

ANSWER: Oscar Leonard Carl **Pistorius**

[10] When discussing his bowling skills on Jay Leno's *Tonight Show*, President Obama made an offensive remark directed against this organization.

ANSWER: **Special Olympics**

16. It consists of three books, the first two volumes titled "On the Motions of Bodies" and the third "On the System of the World," FTPE:

[10] Name this 1687 work which provided the foundation for classical mechanics.

ANSWER: *Philosophiae Naturalis* **Principia Mathematica**

[10] This English physicist, mathematician, and theologian wrote *Principia Mathematica*.

ANSWER: Sir Isaac **Newton**

[10] Publication of *Principia Mathematica* was delayed because of a dispute over credit for the inverse-square law of gravitation between Newton and this prominent English physicist. He is better known today for work on elasticity and microscopy.

ANSWER: Robert **Hooke**

17. Name these holidays celebrated in the Middle East, FTPE:

[10] This day, known in Arabic as 'Id Al-Milaad [EED-ELL-ME-LEAD], is celebrated in many parts of the Middle East on January 7, including Egypt, where it is a national holiday and important holiday for the Copts.

ANSWER: **Christmas** or **Noel**

[10] This late March holiday is regarded to be the beginning of the new year in some Zoroastrian calendars. Though ancient, it survived the Islamic conquests and is still an important holiday in Iran, Central Asia, and Turkey.

ANSWER: **Nawruz** or **Norouz** or **Navruz**

[10] Among the traditions of this holiday include the rattling of the gragger at the mention of Haman's name and children dressing up in costumes. The Megillah is read during this holiday, commemorating the intervention of Esther against Haman's plots to kill the Jews of Persia.

ANSWER: **Purim**

18. Identify the German philosophers and their heirs FTPE.

[10] This man formulated the idea of a categorical imperative, and wrote *Groundwork for the Metaphysics of Morals*, *Critique of Judgment*, and *Critique of Pure Reason*.

ANSWER: Immanuel **Kant**

[10] He concluded that man's emotional, physical, and sexual desires could never be fulfilled and favored the negation of human desires. His central work is *The World as Will and Representation*

ANSWER: Arthur **Schopenhauer**

[10] This contemporary American's ideas on the "End of History" have been much misunderstood by people who have never read his work. He actually draws his idea of history from Hegel, and considers it the clash between competing ideological systems.

ANSWER: Francis **Fukuyama**

19. A dead samurai who speaks through a medium, his newly-widowed wife, a bandit named Tajomaru, and a woodcutter, FTPE:

[10] These four characters recount through flashback four contradictory accounts of the murder of a samurai in what 1950 film?

ANSWER: **Rashomon**

[10] What early 20th century author, known as the master of Japanese short story, wrote *Rashomon* and *In a Grove*, the two short stories the film is based on?

ANSWER: **Akutagawa** Ryunosuke

[10] The film *Rashomon* was directed by what Japanese director, known for his samurai adaptations of Shakespeare?

ANSWER: Akira **Kurosawa**

20. FTPE, answer these questions about cities in Central Europe.

[10] Famous landmarks in this city include the Chain Bridge, the Fisherman's Bastion, and a Westminster-influenced parliament.

ANSWER: **Budapest**

[10] The Castle in this city dominates the skyline like a spaceship, and it is linked to the Old Town across the river by the Charles Bridge, in addition to the astronomical clock and the graves of Smetana and Dvorak.

ANSWER: **Prague**

[10] This Austrian city has built its entire tourist economy on its most famous denizen, Mozart, but ironically, Mozart could not wait to leave the city. Located in the center of the country, it lies west of the capital Vienna.

ANSWER: **Salzburg**

Packet 2

1. Numerous composers have tried to set music to this literary work, with 24 operas noted at last count. Within these operas, Charles Gounod's is the one most performed today. Hector Berlioz set a "symphonie dramatique" to it, while Duke Ellington represented the protagonists with the alto and tenor saxophone in *Such Sweet Thunder*. Arguably, the two most famous pieces of classical music derived from it are Tchaikovsky's *Fantasy Overture*, which opens with a clarinet and bassoon duet and Prokofiev's ballet of the same name. FTP, name this Shakespeare work, the primary source material for *West Side Story*, featuring a pair of star crossed lovers.

ANSWER: Romeo and Juliet

2. Its music video was shot in black and white, like the artist's earlier single *If I Were a Boy*, and it generated some controversy when speculation came out that the rightmost of the three dancers was originally a man. The choreography in the music video is inspired by Fosse and Tina Turner, and includes various styles including jazz, hip-hop, and J-setting. FTP, name this hit single off of Beyoncé's *I Am...Sasha Fierce*, which tells the listener "If you like it then you should have put a ring on it."

ANSWER: Single Ladies (*Put a Ring On It*)

3. Aided by Charles VIII of France, he landed at Milford Haven with over 5,000 men, where he would soon go on to win his greatest victory. He attempted to regain the throne for his family after the Death of Edward IV two years earlier, but he was repulsed. Descended from Edward III, and made Earl of Richmond by Henry VI. FTP, name this son of Edmund Tudor who defeated Richard III at Bosworth field, thus ending the Wars of the Roses.

ANSWER: Henry VII

4. The characters in this novel, the author's second, are never referred to by name in the narration, only in the dialogue, and the protagonist is mainly referred to as "The Youth". The heroic and graphic death of "the tall soldier", Jim Conklin, from wounds received in battle, is contrasted with the cowardice of the protagonist, who earlier had fled the battle scene. When the protagonist detains a fellow fleeing soldier by grabbing his arm, he is bashed on the head, giving him the titular mark, which he tries to pass off as a bullet wound. However, he later redeems these actions, through heroism as color bearer at the Battle of Chancellorsville. FTP, Henry Fleming is a private during the Civil War in what novel by Stephen Crane?

ANSWER: The Red Badge of Courage

5. The roots of this character's antisocial behavior lie in his childhood: his mother died giving birth to him, and his father was distant, blaming him for her death. His only loving relationship in his youth seems to be with his sister, Fan, but she dies prematurely. Another disastrous love relationship is with his fiancée Belle, but she leaves him after it becomes clear that he is more interested in making money than in her. Some time after these events, he becomes partner in a counting house with Jacob Marley, where he later employs Bob Cratchit. "Bah, humbug!" is a common exclamation of, FTP, what miserly protagonist of Charles Dickens' *A Christmas Carol*?

ANSWER: Ebenezer Scrooge

6. British general Pakenham was fatally wounded after two large assaults on the American position were repulsed. The British were able to, however, to break through the American line on the west bank of the Mississippi. The British were easily repulsed, though, eventually accumulating 2,000 casualties, compared to only 71 for the Americans. All the deaths were unnecessary, as a treaty had been signed 2 months before that would have prevented the battle, but news took too long to reach this location. This is, FTP, what last battle of the war of 1812 that made Andrew Jackson's a war hero?

ANSWER: New Orleans

7. Referencing this author's effeminacy, William Faulkner once called him "one of the nicest old ladies I ever met". His distaste for prying literary biographers was represented in his novella, *The Aspern Papers*; and some scholars have found regret for his own unfulfilled romance in another novella, *The Beast in the Jungle*. An expatriate, he often wrote about the divide between Old and New Worlds, as he did in *Daisy Miller*. In what is possibly his most famous work, an unnamed governess becomes concerned that her predecessor's ghost might be haunting the children under her charge. FTP, who is this American author of *The Portrait of a Lady* and *The Turn of the Screw*?

ANSWER: Henry James

8. The country's capital is the largest city by far in the country, with over 9 million people, whilst the second city, Arequipa, has only a million. It boasts an amazing array of diversity, including the Amazon rainforest town of Iquitos, and the Andean antiplano, a plateau with the world's highest navigable lake, Lake Titicaca. Attractions in this country include the Colca Canyon, the world's second deepest canyon, and the Nazca lines, a collection of large animal carvings made by an ancient civilization. FTP, name this South American country, home to the Incan sites of Cuzco and Machu Picchu, with capital city Lima.

ANSWER: Peru

9. Pencil and paper ready. A sample of a radioactive isotope emits 10 thousand Curies of radiation per second, and this quantity decreases by 5 percent every second in an exponential decay. If you allow this sample to decay forever, FTP, how much radiation will be released?

ANSWER: 200,000 Curies

10. This battle is often regarded as the most significant in human history. It began after the attacking sides forces were lured into the narrow straits, where their much greater numbers would work as a disadvantage. Themistocles was able to outmaneuver the Persians, sinking or capturing at least 200 ships. Afterwards, Xerxes retreated with much of his army back to Asia, while the defeat of the Persians the next year at Plataea effectively ended any chance for the them to conquer the Greek mainland. The Greeks achieved victory in, FTP, what decisive naval battle of the second Persian War?

ANSWER: Salamis Bay

11. The Goldman-Hodgkin-Katz variation of this equation can be used for multiple ions at a non-equilibrium steady state, while some pH meters reverse its most common usage by utilizing measured voltage to determine hydrogen ion concentration. In one form, it can be stated as “delta G equals delta G naught plus R times T times the natural log of Q,” though at standard temperature and pressure, the equation converts to a Faraday constant-containing form relating the electrical potential of a cell to a standard potential. FTP, name this central electrochemistry equation named after the 1920 Nobel Laureate in Chemistry.

ANSWER: Nernst equation

12. This artist was inspired by Japanese woodcuts and would often compose whole works from a single block of wood. Landscapes like Couple on the Shore form part of later works like The Reinhardt Frieze. Various self-portraits depict him "with a burning cigarette," "with a bottle of wine," and "as the Night Wanderer." The deaths of family members when he was young had a profound influence on early paintings like The Sick Child which depicts his eldest sister. Loneliness is constantly present in his works, especially in the 22 paintings making up the Frieze of Life, in which even those pictures about love convey a hint of death. FTP, identify this artist who most poignantly expressed feelings about anxiety and isolation in 1893's The Scream.

ANSWER: Edvard Munch

13. The most abundant genus within this phylum or subdivision is commonly known as Bracken. Members of that genus often play an important role in succession in subtropical regions and are particularly resilient weeds because of their sturdy rhizomes. Their gametophytes tend to die after their sporophytes detach to disperse spores, a process which is aided by the presence of springy sporangia. Members of this group are notable for possessing megaphylls, unlike other seedless vascular plants, and their leaves, or fronds, can only open after their fiddleheads uncurl. FTP, name these seedless vascular plants.

ANSWER: ferns (also accept Pteridophyta or Filicophyta)

14. The attackers in this battle, led by Friedrich Paulus, were forced to surrender over 90,000 men. The Romanians, Italians, and Hungarians, along with the Germans, lost more than 800,000 after this long battle was over. The defense led by Vasily Chuikov were able to encircle the Germans in early 1943, bringing an end to this battle begun over a year earlier, at the start of Operation Barbarossa. FTP, name this World War II battle which saw the deepest penetration of Axis Powers into Russian soil, fought in the namesake city.

ANSWER: Stalingrad

15. In its most general form, it states that a far-field diffraction pattern is the spatial Fourier transform of the aperture shape. In a single slit diffraction, it states that each point in the opening through which the wave passes acts as a point source of

waves, which interfere with one another to produce a pattern. FTP, name this principle of wave propagation named for a Dutch physicist, which regards an advancing wave as the sum of many fresh disturbances, and states that any obstruction produces a secondary wavefront.

ANSWER: Huygens' Principle

16. One of the characters in this book is based on actor Amitabh Bachchan, who is the answer to the first question in *Slumdog Millionaire*. Another character, Alleluia Cone, is an English mountaineer who tells of ghosts while climbing Everest. Mahound leaves Jahilia to climb a mountain, and Ayesha goes on a pilgrimage surrounded by butterflies, which she occasionally eats. One character temporarily turns into a devil, and the real devil shows up as a small fat bald man. FTP, Gibreel Farishta and Saladin Chamcha, whose rivalry is that between God and the Devil, are characters in what controversial 1988 novel, which provoked a *fatwa* from Ayatollah Khomeini, calling for the death of its author, Salman Rushdie.

ANSWER: *The Satanic Verses*

17. As a theorist, his concept of the "objective correlative" influenced New Criticism; as a playwright, his works include *The Burial of the Dead* and *Murder in the Cathedral*; but he is best known as a poet. An early precocious work includes references to Donne and Hamlet, as well as an epigraph from Dante, while later poems like "Journey of the Magi" and "Ash Wednesday" reflect a turn towards religion. His most famous reference however, was to *The Canterbury Tales*, in the famous opening line "April is the cruellest month". FTP name this Nobel Prize-winning poet of "The Love Song of J. Alfred Prufrock" and "The Waste-Land".

ANSWER: Thomas Stearns Eliot

18. He frequently fought the serpent Apep in his role as the guardian of the solar barge on its daily journey to the underworld. This task is surprising, considering his usual relationship with other gods. Depicted as having red hair and portrayed on the Was scepter, he was a patron deity of Lower Egypt, and the centers of his cult included Tanis and Ombo. According to the Ennead of Heliopolis, he is the brother and husband of Nephthys, though he is not the father of Anubis, who was fathered by his brother and rival. He killed this brother, who eventually became the lord of the underworld, only to be avenged by the brother's son, Horus, who tricked him by making him eat some semen-covered lettuce. FTP, name this Egyptian god of storms and the desert, depicted with the head of a donkey or aardvark.

ANSWER: Set or Seth

19. This man was forced to withdraw several essays during his lifetime, for fear that he would gain a bad reputation, which he desperately wished to avoid. Better known works by this man include such essays as "Of Superstition and Enthusiasm" and "Of the Standard of Taste," both of which are contained in his *Essays Moral, Political, and Literary*. After writing a history of Britain, this man proceeded to compose a work containing an invective against unsupportable claims "Of Miracles." That work was later made part of a larger work that sought to prove that we cannot really be certain of anything, an *Enquiry Concerning Human Understanding*. FTP, name this Scottish Philosopher who also wrote *A Treatise of Human Nature*.

ANSWER: David Hume

20. This compound, consisting of A and B chains linked together, can be activated after removal of the C peptide component to promote the dephosphorylation of acetyl-CoA carboxylase. When it binds to certain tyrosine kinase receptors, GLUT-1 transporters are integrated into the plasma membrane to allow for the increased trafficking of glucose. Glucagon acts as an antagonist to this enzyme made in beta cells. FTP, name this hormone critical for the regulation of blood sugar levels, whose deficiency results in diabetes mellitus.

ANSWER: insulin

1. Questions about the Greeks, FTPE:

[10] Admiration of this Peloponnesian city-state is known as laconophilia. Herodotus estimates that eighty percent of its population was composed of helots.

ANSWER: **Sparta** or **Lacedaemon**

[10] Sparta was governed by five ephors, a council of old men known as the gerousia, and two of these, who were supposedly descended from Hercules. They led the Spartan army into battle and were important religious officials.

ANSWER: **Kings**

[10] The Spartan hegemony following the Peloponnesian war was dealt a critical blow by the Thebans and Epaminondas at this battle. The Thebans fought in an Echelon phalanx, with a left wing fifty men deep, which helped them crush the vaunted Spartan right.

ANSWER: The Battle of **Leuctra**

2. Answer some questions about an artistic school, FTPE:

[10] This landscape art movement was founded by Theodore Rousseau and named for a village near the Fontainebleau forest where its practitioners worked.

ANSWER: **Barbizon** school

[10] Perhaps the most famous canvas produced by the Barbizon school is this depiction of three peasant women working in a field by Jean-Francois Millet.

ANSWER: **The Gleaners**

[10] This great landscape painter of The Bridge at Narni and Interrupted Reading invented the souvenir style of landscape and was briefly associated with the Barbizon in the 1830s.

ANSWER: Jean-Baptiste-Camille **Corot**

3. FTPE, answer the following questions about electrons.

[10] There can be no more than eight of these types of outer electrons for a single atom.

ANSWER: **valence** electrons

[10] This quantity measures the amount of energy it takes to remove one electron from an atom. It usually increases with the removal of subsequent electrons.

ANSWER: **ionization energy** (also accept ionization potential or E-sub-i)

[10] Atoms whose electrons are not all paired exhibit this effect where the spins of the unpaired electrons align with an external magnetic field.

ANSWER: **paramagnetism** (also accept alternate word forms)

4. FTPE, answer these plant biology questions:

[10] According to this theory, the mitochondria and chloroplasts present in eukaryotic cells were once prokaryotic cells that were swallowed by other prokaryotes.

ANSWER: **endosymbiotic** theory

[10] These membrane-bound compartments inside chloroplasts enclose a lumen and may be stacked in arrays called grana. The membrane itself contains proteins for the light-dependent reactions of photosynthesis.

ANSWER: **thylakoids**

[10] This fluid surrounds the thylakoid membranes and contains all the enzymes such as RuBisCO required for the "dark" reactions of photosynthesis.

ANSWER: **stroma**

5. The lead up to the Reformation was quite tumultuous, FTPE:

[10] The reformation began with Martin Luther's nailing of this document to the door of the Wittenburg church.

ANSWER: **95 Theses**

[10] The sale of Indulgences was one of the primary complaints of Martin Luther against the Catholic Church. It wasn't helped in its image with this guy, appointed by Leo X, going around collecting them.

ANSWER: **Tetzel**

[10] One of the primary uses the Church made of money from indulgences was financing the rebuilding of this church in Rome.

ANSWER: **St. Peters**

6. Answer some questions dealing with the rule of Henry VIII, FTPE:

[10] Quite famous for the plethora of wives he had, and had beheaded, Henry VIII was always in search on one that would give him a male heir. This successor to Henry VIII was the result, but he died when he was only 16.

ANSWER: **Edward VI**

[10] Henry even separated from the Catholic church in order to marry this woman, who regrettably did not produce him a son and was promptly beheaded.

ANSWER: Anne **Boleyn**

[10] Anne Boleyn followed this woman in the cycle of wife succession. She was the aunt of Charles V, so Henry couldn't divorce her so easily.

ANSWER: **Catherine of Aragon**

7. FTPE, answer some questions about a diagram that greatly increased understanding of stellar evolution.

[10] Name this doubly eponymous figure on which stars are plotted graphically.

ANSWER: **Hertzsprung-Russell** diagram

[10] On a Hertzsprung-Russell diagram, spectral type or temperature is placed on the horizontal axis. What is on the vertical axis?

ANSWER: **luminosity** (also accept **absolute magnitude**)

[10] The majority of stars in the universe, including the sun, fall within this diagonal strip on the H-R diagram.

ANSWER: The **Main Sequence**

8. Pencil and paper ready. FTPE, how many ways are there to...

[10] Order 5 books on a shelf?

ANSWER: **120**

[10] Order 6 people around a circular table?

ANSWER: **120**

[10] Pair 3 boys and 3 girls into boy/girl couples?

ANSWER: **6**

9. Identify an author from his works, 30-20-10:

30. Master and Man, Resurrection

20. The Kreutzer Sonata, The Death of Ivan Ilyich

10. Anna Karenina, War and Peace

ANSWER: Leo **Tolstoy**

10. FTPE, name these Presidential Cabinet nominees who had personal tax problems.

[10] This former U.S. Senator from South Dakota was nominated to the post of Secretary of Health and Human Services to spearhead President Obama's healthcare reform plans, but he voluntarily withdrew his nomination when his tax issues became public.

ANSWER: Thomas Andre **Daschle**

[10] This former mayor of Dallas, Texas was sworn in as the United States Trade Representative on March 20th, 2009 despite owing nearly \$10,000 in back taxes during his nomination proceedings.

ANSWER: Ronald **Kirk**

[10] In addition to dealing with his personal back taxes, this current Secretary of the Treasury administers the Troubled Asset Relief Program (TARP).

ANSWER: Timothy Franz **Geithner**

11. Master of Suspense Alfred Hitchcock hired some well-known writers to craft his riveting plots. Name some FTPE:

[10] *Shadow of a Doubt*, Hitchcock's personal favorite of his own films, was primarily written by this playwright, better known for *Our Town*.

ANSWER: Thornton **Wilder**

[10] *The Birds* and *Rebecca* were based on a short story and novel respectively by this author.

ANSWER: **Daphne du Maurier** (prompt on "Du Maurier")

[10] Though *Strangers on a Train* was based on a novel by Patricia Highsmith, the screenplay was co-written by this author of *The Big Sleep*.

ANSWER: Raymond **Chandler**

12. Name these figures from the history of literary theory FTPE.

[10] This man questioned the service that poets do for a city, because they produce mere imitations of imitations.

ANSWER: **Plato**

[10] This man's writings, like *The Dream Work*, have spawned an entire subfield of psychoanalytic criticism.

ANSWER: Sigmund **Freud**

[10] This Yale professor has written recently on the Bible in the *Book of J* and is fond of delineating the Western canon, but his greatest contribution to criticism is perhaps his theory of the intentional misreading "strong" poets employ due to the Anxiety of Influence.

ANSWER: Harold **Bloom**

13. FTPE, name these concepts you might need to solve problems in elementary mechanics.

[10] This common pictorial representation shows the force vectors on an object, but generally excludes acceleration and velocity vectors.

ANSWER: **free body** diagram

[10] In a free body diagram of a block on an inclined plane, this force acts on the block in a direction perpendicular to the plane.

ANSWER: **normal force**

[10] If the block doesn't move, the component of the gravitational force along the plane is not enough to overcome this force, which is proportional to the normal force.

ANSWER: **static friction**

14. Identify the following Russian expatriate writers, FTPE:

[10] This author, who emigrated to the US in 1925, founded the philosophical system of Objectivism and wrote the novels *Atlas Shrugged* and *The Fountainhead*.

ANSWER: Ayn **Rand**

[10] Fleeing German troops, he arrived in America in May of 1940, becoming a literature professor first at Wellesley and later at Cornell, but he is more famous for the controversial novel, *Lolita*.

ANSWER: Vladimir **Nabokov**

[10] This author of *Gulag Archipelago* was expelled from Russia on February 12th, 1974, and would not be allowed to return home for twenty years.

ANSWER: Aleksandr **Solzhenitsyn**

15. Identify some characters from George Orwell's *Animal Farm*, FTPE:

[10] This Berkshire boar, modeled on Joseph Stalin, becomes the tyrannical ruler of the farm after the expulsion of Farmer Jones.

ANSWER: **Napoleon**

[10] This loyal and hardworking horse, who is sold to knackers once he outlives his usefulness, is the novel's symbol of the exploited proletariat

ANSWER: **Boxer**

[10] A wise and cynical donkey, this character is one of the few non-pigs to survive the entire course of the novel, and is possibly meant to represent the wary Russian intellectuals who steer clear of trouble.

ANSWER: **Benjamin**

16. Identify the following characters from *One Thousand and One Nights*, FTPE:

[10] This frame story of *The Arabian Nights* is set into motion when this King of Persia discovers the infidelity of his first wife, and thereafter adopts the policy of marrying a virgin every night and executing her in the morning.

ANSWER: **Shahryar**

[10] Sharyar's bloodshed is halted by this vizier's daughter, who marries him and occupies him with the cliffhanger-laden tales that fill the rest of the book.

ANSWER: **Scheherezade**

[10] Some of the most well-known tales in the *Arabian Nights* are the seven voyages of this sailor. His fifth voyage saw his ship destroyed by a Roc (the bird, not a stone) and him enslaved by the Old Man of the Sea.

ANSWER: **Sinbad** the sailor

17. FTPE, name some of the smallest countries in the world.

[10] This city state is currently ruled by Prince Albert II, and it hosts a famous Formula One race each year. It is the world's second smallest country, and is located on the French Riviera.

ANSWER: **Monaco**

[10] The nation is entirely surrounded by Italy and is the oldest sovereign state in the world, dating back to 301. It also used to hold a Formula One race, but this was cancelled in 2007.

ANSWER: **San Marino**

[10] This Pacific island nation is the third smallest country in the world and has recently courted controversy for rampant selling of its web addresses.

ANSWER: **Tuvalu**

18. Name the instrument most closely associated with each of the following jazz greats, FTPE:

[10] Dizzy Gillespie

ANSWER: **trumpet**

[10] Art Tatum

ANSWER: **piano**

[10] Charles Mingus

ANSWER: **bass**

19. A young boy fails to buy a gift for the girl he loves in "Araby" and several Irish politicians discuss the legacy of Parnell in "Ivy Day in the Committee Room," FTPE:

[10] Name this collection that includes the short stories "The Sisters" and "An Encounter."

ANSWER: **Dubliners**

[10] *Dubliners* is by this Irish author.

ANSWER: James **Joyce**

[10] In this, the final and longest story in *Dubliners*, Gabriel Conroy has an epiphany about the shortcomings of his life after attending a Christmas party given by his aunts.

ANSWER: **"The Dead"**

20. Identify the following novelists from their works, FTPE:

[10] Yacov Bok is the title character in *The Fixer* and Frank Alpine is the title character in *The Assistant* by this author.

ANSWER: Bernard **Malamud**

[10] He wrote novels titled *The Genius* and *The Financier*, though he is better known for *An American Tragedy*.

ANSWER: Theodore **Dreiser**

[10] This Russian wrote the historical novel *The Captain's Daughter* and the narrative poem *The Bronze Horesman*.

ANSWER: Aleksandr **Pushkin**

we are the people with buzzers who answer questions

Packet 3

1. This man's political career began as a Tennessee representative, in the year it achieved statehood. He abandoned politics for a while, and fought the Creek Indians, where he commanded Sam Houston and Davy Crockett and won a major victory at Horseshoe Bend. Later, he was appointed by President Monroe to lead a campaign against the Seminoles, where he defeated them at Pensacola. Apparently he wanted back into politics, though, as he was nominated for president in 1824, where he lost to John Quincy Adams due to what he called a "corrupt bargain." FTP, who was this man who went on to defeat Adams in the 1824 election and become 7th president of the United States?

ANSWER: Andrew **Jackson**

2. Metathesis ones are the opposite of these, which are involved in processes as diverse as combustion and cellular respiration. Some substitution and single displacement reactions fall under this description as electron acceptors and donors are involved, resulting in changes to the formal charges of the atoms of the reactants and products. Electrochemical cells depend on these, which can be analyzed by breaking up a reaction into its component half-reactions. FTP, name this class of reactions involving changes in oxidation state of oxidizing and reducing agents.

ANSWER: **redox** reactions (also accept **oxidation-reduction** reactions; prompt on oxidation or reduction)

3. The goals for this program were first set out at a speech at Ann Arbor. Many of the measures that made up this program were assembled by separate task forces that studied various aspects of American society, and then reported back to the president on what problems were most pressing. Many aspects of this program were earlier proposed to be a part of Kennedy's New Frontier legislation. The civil right act of 1964, along with the economic opportunity act and the establishment of head start programs were among the major successes of, FTP, what set of domestic programs enacted by Lyndon B Johnson?

ANSWER: The **Great Society**

4. The winning side in this battle had only around 6,000 men, and were outnumbered nearly six-to-one, although they did have technology on their side, so to speak. Similar to the results of an earlier victory at Crecy, French knights were unable to close the gap with the English because they got stuck in the mud, and they were constantly being killed by arrows. This is what battle, that, FTP, allowed Henry V to conquer much of France during the Hundred Years War?

ANSWER: **Agincourt**

5. It took its name from a bill drafted by William Lovett, and rose to national importance under the leadership of Feargus O' Connor, who recruited support for it from those affected by the new Poor Law. Although all of its measures, including universal suffrage, equal electoral districts, vote by ballot, and annually elected parliaments were eventually adopted, Parliament refused to take action on petitions from this movement, and so it quickly declined after 1848. This was, FTP, what movement among the working classes of England which sought Parliamentary reform?

ANSWER: **Chartists**

6. Just like many composers of his time, this man was descended from a family of musicians, though his family line allegedly died off in the 1800s, despite having multiple children. His three most famous children were important composers in their own right, including the youngest, nicknamed the 'London' one of his family. Finally settling in the St. Thomas' Church in Leipzig, he is most famous for two collections of 24 Preludes and Fugues. FTP, name this German composer of the Mass in B Minor and the Art of the Fugue.

ANSWER: **Johann Sebastian Bach**

7. Painted during the artist's shift towards more abstract watercolors, this oil work was created after two separate trips to Nassau. The scene features numerous stalks of sugar cane that lie scattered at the central figure's feet. Some critics have speculated that the "rigger" in the upper left-hand corner was added in order to offer hope and make the work more appealing to buyers. FTP, identify this picture depicting a tumultuous water spout, raging sharks, and a seemingly stoic black man awaiting his demise; a painting of a boat drifting along the titular ocean current by Winslow Homer.

ANSWER: The **Gulf Stream**

8. This concept was first discovered by a German physician in 1908, but only became widely known when Reginald Punnett introduced a problem to a British mathematician, who thought its solution, this principle, to be very simple.

Significance tests for deviation from it are generally carried out through Pearson's chi-squared test, and it can be adjusted for polyploidy systems. The deviating factors this principle cites are gene flow, random genetic drift, mutations, limited population size, nonrandom mating, and natural selection. FTP, name this principle from genetics, which says that allele and genotype frequencies will remain constant unless disturbed?

ANSWER: **Hardy Weinberg** Principle

9. Recently they have been used in smart rubber because they are easier to repair after being broken. These are the reason for various plant phenomena like capillary action, as dipole-dipole interactions involving them are very strong. Secondary structure of proteins results from these, as alpha helices and beta sheets are created by the interactions of these between various side chains. Nitrogen and fluorine can serve as the electronegative atom, though oxygen is the most common one. Water can have up to four, FTP, of what type of bond found between a namesake atom covalently bonded to an electronegative atom and another nearby electronegative atom.

ANSWER: **hydrogen bonds** (prompt on H bonds)

10. He was recruited by the University of Miami to play quarterback in addition to the sport he plays professionally, but he turned down college after being signed in the amateur draft. He made his major league debut at the age of 18, and he was the first 18 year-old shortstop in the major leagues since 1900. However, he was signed away from his first team, the Mariners in 2000, and won the AL MVP in 2003. When third basemen Aaron Boone suffered an injury and went down for the 2004 season, he was signed away from the Rangers. FTP, name this New York Yankee, who admitted to taking "boli or bole" from 2001-2003.

ANSWER: Alex **Rodriguez** [or **A-Rod**]

11. It was the destination of the first robotic space probe mission, the Soviet Venera 1. This body's apparent magnitude is -4.6, making it second in brightness only to the moon, and it exhibits retrograde rotation, the slowest of any planet. Mariner 2 discovered its surface to be extremely hot, due to a runaway greenhouse effect. FTP, name this "sister planet" to Earth, the second from the sun.

ANSWER: **Venus**

12. Pencil and paper ready. Express your answer as a fraction in simplified form. There are 5 green socks, 4 blue socks, and 3 red socks in a drawer. If you draw two of them at random without replacement, FTP, what is the chance that you draw a matching pair of any color?

ANSWER: **19/66**

13. It was first proposed in an 1824 work titled "Reflections on the Motive Power of Fire", and operates on a thermodynamically reversible cycle consisting of 4 steps: isothermal expansion, isentropic expansion, isothermal compression, and isentropic compression. This hypothetical device ideally transfers energy from a hot reservoir to a cold reservoir, producing mechanical work. FTP, name this namesake engine proposed by a French physicist, whose efficiency is always greater than that of any real heat engine.

ANSWER: **Carnot** Engine

14. Authentic translations of this poem were attempted by A.J. Arberry, and Robert Graves, working with Omar Ali-Shah, but the manuscripts they worked from turned out to be forgeries. Its popularity in English-speaking countries is largely due to the translation by Edward Fitzgerald, and the rhyme scheme of AABA he employed for its quatrains is now named after the poem. His translation contains the lines "The Moving Finger writes: and, having writ, / Moves on", and its twelfth quatrain reads: "A Book of Verses underneath the Bough, / A Jug of Wine, a Loaf of Bread—and thou". This if, FTP, what 12th century Persian poem by Omar Khayyam?

ANSWER: *The* **Rubaiyat** of Omar Khayyam

15. Act III of this play begins with two marquis, Acaste and Clitandre, striking a deal about the courtship of the female lead character. The male protagonist is also in love with this character, but is trying to rid himself of the love, as she, Celimène, is a shameless gossip and flirt. More trouble for the protagonist comes from insulting the poetry of Oronte, who later brings a lawsuit against him. The philosophy that will alienate the protagonist from society is apparent in the first scene of the play, when he demands that his best friend Philinte "never utter a single word you don't really mean". FTP, Alceste is the title character in what play by Molière?

ANSWER: *Le* **Misanthrope** or *The* **Misanthrope**

16. The start of this incident involved a secret agreement between one of the aggressors and Britain. Although Harold Macmillan managed to restore Anglo-American relations, his predecessor, Anthony Eden, was forced to resign because of this conflict. Begun with the withdrawal of an offer to fund the building of the Aswan Dam, and one of the few incidents in which the United States and Soviet Union Cooperated, this was, FTP, what crisis sparked when President of Egypt Nasser nationalized the namesake waterway?

ANSWER: Suez Canal Crisis

17. Literary critic Edmund Wilson once referred to this author's prose style as "a tissue of clichés". He pioneered the genre of the espionage novel with *Ashenden*, and quasi-feminist themes can be found in a play on marital relations, *The Constant Wife*. More famously, he portrayed fellow writers Thomas Hardy and Hugh Walpole as Edward Driffield and Alroy Kear in *Cakes and Ale*; and based another protagonist, Charles Strickland, on the painter Paul Gauguin in the novel *The Moon and the Sixpence*. FTP, who is this English novelist and playwright of *Of Human Bondage* and *The Razor's Edge*.

ANSWER: W(illiam) Somerset Maugham

18. This collection was greeted at its publication by nearly universal censure for its perceived obscenity, and its author was fired from his job at the Department of the Interior. The work's first section is titled Inscriptions, and one poem in that section begins with the lines "I celebrate myself, and sing myself". Other sections include Autumn Rivulets, Drum-Taps, and Memories of President Lincoln, which contains the poem "*When Lilacs Last in the Dooryard Bloom'd*". FTP, "*Out of the Cradle Endlessly Rocking*", "*I Sing the Body Electric*", and "*Song of Myself*" are poems in what collection by Walt Whitman.

ANSWER: Leaves of Grass

19. Philosopher Walter Kauffman called one novel by this author the "best overture for existentialism ever written". One novel of his contains a famous section dealing with religious questions, sometimes read on its own, called "*The Grand Inquisitor*". That novel is split into two parts--the first a lengthy discussion of philosophical questions and the second the story of the protagonist, his job in the St. Petersburg civil service, and his relationship with the prostitute Liza-- and is titled *Notes from Underground*. Aloysha, Dmitri, and Ivan are the title characters of that novel, *The Brothers Karamazov*. The author's most famous novel charts the psychological aftereffects of a double murder committed by Raskolnikov. FTP, who is this Russian author of *Crime and Punishment*.

ANSWER: Fyodor Dostoevsky

20. The present international airport of this city is located at Chep Lak Kok on Lantau Island, but previously airlines had to make a harrowing descent through skyscrapers to reach Kai Tak Airport. The total population is estimated at over 7 million, but vast parts of the New Territories in the North are uninhabited. Walt Disney opened its newest edition of Disneyland here in 2005, but so far, critics have slammed it as an overpriced failure, while the equestrian events at the 2008 Olympics were staged here. FTP, name this Chinese Special Administrative Region, located east of Macau, which was handed back to China by the British in 1997.

ANSWER: Hong Kong

1. This man brought modernization to Russia, FTPE:

[10] Who was this man who traveled in disguise to western Europe to learn the secrets of shipbuilding, intent on making Russia into a modern nation state?

ANSWER: **Peter the Great**

[10] One of Peter the Great's greatest achievements was gaining territory on the Baltic sea so he could build his "window to the West" of St. Petersburg. He defeated Sweden in this war to gain that territory.

ANSWER: **Great Northern War**

[10] This Swedish king had mighty ambitions of his own, but was crushingly defeated by Peter at the battle of Poltava, which really swung the war in Russia's favor.

ANSWER: **Charles XII**

2. Identify the novelist from his works, 30-20-10:

30. The Izu Dancer, The Master of Go

20. Thousand Cranes, The Sound of the Mountain

10. Snow Country, the "palm-of-the-hand" stories

ANSWER: **Kawabata** Yasunari

3. Identify the following characters from Arthur Conan Doyle's Sherlock Holmes stories, FTPE:

[10] First appearing in "*The Final Solution*", this man is called "the Napoleon of crime" by Sherlock, and the story ends with the archenemies fighting to the death atop the Reichenbach Falls.

ANSWER: Professor Jack **Moriarty**

[10] First appearing in "*The Greek Interpreter*", this brother of Sherlock Holmes is said to be even more intelligent than Sherlock, but too lazy for detective work.

ANSWER: **Mycroft** Holmes

[10] First appearing in "*A Scandal in Bohemia*", she is the only person to ever outsmart Sherlock Holmes, and he thereafter fondly refers to her as "the woman".

ANSWER: **Irene Adler** (accept either "Irene" or "Adler")

4. FTPE, answer some questions about the election of 1860.

[10] This newly formed party managed to carry the states of Kentucky, Tennessee, and Virginia

ANSWER: **Constitutional Union** Party

[10] This northern democratic candidate, who had earlier engaged in some namesake debates with Lincoln where he came up with his so-called Freeport Doctrine, came in third in the electoral voting

ANSWER: Stephen A. **Douglas**

[10] This man, on the other hand, actually came in second to Lincoln, as he was able to win all the southern states as the southern democratic nominee

ANSWER: John C. **Breckinridge**

5. It was published under the pseudonym "Victoria Lucas", FTPE:

[10] What is this semi-autobiographical novel about Esther Greenwood, a student at Smith college who has a mental breakdown during her summer internship at a fashion magazine.

ANSWER: **The Bell Jar**

[10] *The Bell Jar* is the only novel of this poet, who committed suicide one month after its publication.

ANSWER: Sylvia **Plath**

[10] At the time of her death, Sylvia Plath was married to this children's author and poet of *The Iron Man*; he wrote about his marriage to Plath and reaction to her suicide in his final collection of poetry, *Birthday Letters*.

ANSWER: Edward James "Ted" **Hughes**

6. It would last only about 100 hours on the land, FTPE:

[10] Identify this war which began with the invasion of Kuwait

ANSWER: First **Gulf War**

[10] The operations of invading U.S. military forces during the Gulf war was known as desert storm, this, however, was the codename of the operation to defend Saudi Arabia from further Iraqi aggression

ANSWER: **Desert Shield**

[10] This Vietnam veteran gained international recognition during the Gulf war as leader of U.S. and allied troops

ANSWER: Norman **Schwarzkopf**

7. Answer the following about a sculptor, FTPE:

[10] The Three Shades, Fugit Amor, and The Kiss were works originally a part of his work, The Gates of Hell.

ANSWER: Auguste **Rodin**

[10] This Rodin sculpture was inspired by the self-sacrifice of six individuals, including Eustache de Saint Pierre, during a siege of the titular city during the Hundred Years' War.

ANSWER: The **Burghers of Calais** (Les **Bourgeois de Calais**)

[10] A Belgian soldier named Auguste Neyt was the model for this sculpture, in which a naked man holds his bent right arm to the top of his head.

ANSWER: **Age of Bronze (L'Age d'Airain)**

8. Answer some questions about computer programs FTPE.

[10] In many programming languages, including C and Java, programs require a method by this name in order to be executable.

ANSWER: **main** method

[10] Computing the factorial of n by multiplying n by the quantity n minus one factorial is this computational procedure, often contrasted with iteration.

ANSWER: **recursion**

[10] This is the technique of solving overlapping subproblems developed by Richard Bellman at the RAND Corporation. It can be used to find optimal solutions to Hidden Markov Models.

ANSWER: **dynamic** programming

9. FTPE, name these minority public figures who were the first to do something.

[10] This Governor of New Mexico was the first Hispanic Democrat to run for the Presidency of the United States.

ANSWER: William Blaine "Bill" **Richardson**

[10] Though he was the first African American to hold statewide office in Illinois when he assumed the post of comptroller in 1978, he is better known as President Obama's replacement in the U.S. Senate

ANSWER: Roland Wallace **Burriss**

[10] This current Harvard Medical School professor and collaborator with Paul Farmer is set to become the first Asian American President of an Ivy League university when he assumes the post at Dartmouth in July 2009.

ANSWER: Dr. **Jim Yong Kim**

10. FTPE, name these related metamorphic rocks.

[10] This fine-grained, fissile rock is deposited in very slow-moving water and is the most common sedimentary rock. Formations include the Barnett in Texas and Burgess in Canada.

ANSWER: **shale**

[10] Low grade metamorphism of shale produces this foliated rock, often used in building materials.

ANSWER: **slate**

[10] Shales and slates are intermediates in the metamorphic formation of this rock in which quartz, feldspar, micas, and graphite can often be seen in flaky mineral grains.

ANSWER: **schist**

11. Current, measured in amperes, is the rate at which charge flows through a conductor, FTPE:

[10] Which device would one use to measure the current through a wire?

ANSWER: **ammeter**

[10] For five points each, name the two common types of current, abbreviated AC and DC. In one, charge always flows in the same direction, while in the other it periodically changes.

ANSWER: **alternating** current, **direct** current

[10] This hand-held device combines the functions of an ohmmeter and an ammeter. They can also measure resistance.

ANSWER: **multimeter**

12. Identify the poets who wrote the following first lines, FTPE, or for 5 points if you need us to give you the title of the poem:

[10] "Come live with me and be my love"

[5] "The Passionate Shepherd to His Love"

ANSWER: Christopher **Marlowe**

[10] "The sea is calm tonight"

[5] "Dover Beach"

ANSWER: Matthew **Arnold**

[10] "I saw the best minds of my generation destroyed by madness."

[5] "Howl"

ANSWER: Allen **Ginsberg**

13. FTPE, answer these questions about the life of Ludwig van Beethoven.

[10] Beethoven was born in this city, near to his father's workplace in the court of Cologne. It is probably also famous for being the capital of West Germany.

ANSWER: **Bonn**

[10] Beethoven died in this city, and is buried in the Zentralfriedhof there. Beethoven allegedly changed houses no less than 38 times in that city, which is more famous for its Schonburn and Hofburg palaces.

ANSWER: **Vienna**

[10] Beethoven's romantic life has always been difficult to decipher, though he never married. In 1812, he wrote three mysterious love letters addressed to this individual, but she has never been identified.

ANSWER: **Immortal Beloved**

14. FTPE, name these parts of the endocrine system.

[10] Weighing about a tenth of a gram, this small gland is located in the brain between the two cerebral hemispheres and produces the hormone melatonin.

ANSWER: **pineal gland**

[10] One of the hormones produced by this gland is calcitonin, which regulates blood calcium levels. It contains a lot of iodine, which is an essential element of its namesake hormones.

ANSWER: **thyroid gland**

[10] The zona glomerulosa, zona fasciculata, and zona reticularis make up this region of the adrenal glands that produce glucocorticoids and mineralocorticoids.

ANSWER: adrenal **cortex**

15. He is stranded on an island near Venezuela for 28 years with his native servant Friday, FTPE:

[10] What title character, the quintessential castaway, is based on Scottish sailor, Alexander Selkirk?

ANSWER: **Robinson Crusoe** (prompt on "Crusoe")

[10] This British author of picaresque novels such as *Moll Flanders*, wrote *Robinson Crusoe*.

ANSWER: Daniel **Defoe**

[10] Another castaway-themed book of sorts is this William Golding novel about the chaos that ensues after a plane crash strands a group of school-age boys on an uninhabited island.

ANSWER: **Lord of the Flies**

16. Identify some Thomas Hardy novels, FTPE:

[10] The title character marries Angel Clare, who leaves her when he finds out that she had a child with libertine Alec.

ANSWER: **Tess of the D'Urbervilles**

[10] Michael Henchard gets drunk and sells his wife and child at the beginning of this novel, before being elected to the titular office

ANSWER: **The Mayor of Casterbridge**

[10] This novel about the love triangle between Sue Bridehead, Arabella Donn, and the title character was so universally panned by critics of the day for its perceived obscenity, that Hardy made it his last novel, and wrote only poetry thereafter.

ANSWER: **Jude the Obscure**

17. FTPE, answer these questions regarding a biological process.

[10] This process is defined as the production of proteins from mRNA through the action of ribosomes.

ANSWER: **translation**

[10] This kind of RNA brings amino acids to ribosomes for attachment to a growing peptide chain.

ANSWER: **tRNA**

[10] For tRNA to properly attach, this region needs to match a specific three nucleotide sequence of the mRNA.

ANSWER: **anticodon**

18. Name these gods from Sumerian myth, FTPE:

[10] This is the god of Heaven and husband of the earth goddess Ki, one of the oldest Sumerian gods.

ANSWER: **An** or **Anu**

[10] This is the son of Anu and Ki, the god of air and of storms, worshipped extensively in Nippur.

ANSWER: **Enlil**

[10] This god of water, fertility, and wisdom rescued Ishtar from the underworld and warned humanity of the great flood

ANSWER: **Enki**

19. Not surprisingly, some rivers are named exactly like the states in which they flow through. FTPE, name these rivers. You have at least a 1 in 50 shot!

[10] This river originates near Knoxville and is the largest tributary of the Ohio River.

ANSWER: **Tennessee** River

[10] Forming the border between Vermont and New Hampshire, this river empties into Long Island Sound.

ANSWER: **Connecticut** River

[10] This river joins the Mississippi from the state north of Saint Louis.

ANSWER: **Illinois** River

20. Name these rivers of the Greek underworld FTPE from a brief description:

[10] River of sorrow.

ANSWER: **Acheron**

[10] River of forgetfulness.

ANSWER: **Lethe**

[10] River of hate.

ANSWER: **Styx**

YALE
student
academic
competitions

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Packet 4

1. One of only twenty people worldwide to gain early entrance to NYU's Tisch School of the Arts, she dropped out in 2005 when she was signed by Def Jam. She was dropped off Def Jam after only three months, and started appearing in drag shows along with Lady Starlight. She finally got her break in 2008 after hooking up with Akon, who helped produce her debut album, *The Fame*. Taking her stage name from a song by Queen, FTP, name this pop sensation of "Just Dance" and "Poker Face."

ANSWER: **Lady Gaga** [or Stefani Joanne Angelina **Germanotta**]

2. In the upper center of this painting is a horse; its nose and teeth form a very distinct skull-shape and it has clearly been struck through by a sharp object. The horse also appears to be being gored by a bull, and there is another bull on the left side of the painting, whose tail has turned into a flame. In addition to the animal figures, are several human figures, all in obvious poses of pain, including a woman who strikes the pose of a pieta while cradling her dead child in her arms. FTP, what is this painting by Pablo Picasso of the bombing of a Basque town during the Spanish Civil War?

ANSWER: **Guernica**

3. 454 Life Sciences and Illumina use it for DNA sequencing, while other companies use its namesake hybridization assays for the early diagnosis of certain diseases. It comes in asymmetric, allele-specific, hot-start, and methylation-specific varieties, although in all these variations the general procedure of breaking double-stranded DNA into single-stranded ones for 3' end primer addition holds. Its feasibility was limited until the discovery of the heat-resistant Taq polymerase. FTP, name this DNA amplification procedure that doubles the amount of DNA per cycle, a method invented in 1983 by Kary Mullis.

ANSWER: **Polymerase Chain Reaction**

4. One of the results of this battle was the signing of the Treaty of Pressburg, which reinforced the earlier treaties of Campo Formio and Luneville. The Confederation of the Rhine was created following this battle, and soon the Holy Roman Empire was dissolved permanently. This battle was not as decisive as it might have seemed to be, however, as the War of the Fourth Coalition followed a year later. Resulting in the resounding defeat of a Russo-Austrian army commanded by Alexander I, as well as ending the war of the third coalition, this was, FTP, what greatest of Napoleons' victories, also known as the Battle of the Three emperors?

ANSWER: Battle of **Austerlitz**

5. This musical institution was the first of its kind to be established in the USA, tracing its beginnings to 1842. Since a financially unstable beginning, this institution has grown to become one of America's 'Big 5' orchestras. Past Musical Directors have included Gustav Mahler, Zubin Mehta and Kurt Masur, while Alan Gilbert will become the first musical director from its home city in 2009. FTP, name this preeminent symphony orchestra which famously toured North Korea in February 2008.

ANSWER: **New York Philharmonic**

6. Stephen Hawking wrote that "God abhors a naked" one. They are described by theorems named for Hawking and Penrose, and in a black hole, gravitational forces cause spacetime to have infinite curvature at this location. Because they exist only at a single point, and have zero volume, they have infinite density. FTP, name this point found at the center of a black hole.

ANSWER: **singularity**

7. Referring to the Japanese national character he elaborates on the coexistence of elegance and brutality. No surprise then, that one of his most famous novels involves the main character setting fire to the object of his lifelong love in order to possess it. His first novel, *Confessions of a Mask*, gained him national fame when he was only 23, and he would later go on to write films, Kabuki plays, and the *Sea of Fertility* tetralogy. FTP name this Japanese writer who committed ritual suicide soon after Kawabata won a Nobel Prize in 1968, the author of *The Temple of the Golden Pavilion*.

ANSWER: **Mishima** Yukio

8. This author's first publication was a poetry collection called *Double Persephone*. Three more poetry collections, *The Circle Game*, *Expeditions*, and *Speeches for Doctor Frankenstein* were published before the appearance of a first novel,

The Edible Woman. Six novels by this author have been finalists for the Governor General's Award, including *Cat's Eye* and *The Blind Assassin*, which won the 2000 Booker Prize. However, she is most famous for a novel about Offred, who lives in what was once a part of the former United States, the dystopian Republic of Gilead. FTP, who is this Canadian author of *The Handmaid's Tale*.

ANSWER: Margaret **Atwood**

9. The Latin motto of this province means Splendour without Diminishment, and it contains the third-largest and fifteenth-largest metropolitan areas of its country. Home to Glacier National Park and the Pacific Rim National Park Reserve, its name was aptly chosen by Queen Victoria in 1858. An estimated 10% of the population here is of Chinese descent, and the Chinese food in its largest city is regarded as superior to that of Asia's, given the large influx of migrants over the past 20 years. The economy is primarily resource driven, though tourism at popular ski resorts like Whistler is an important contributor. FTP, name this westernmost province of Canada, containing the cities of Victoria and Vancouver.

ANSWER: **British Columbia**

10. Pencil and paper ready. FTP, How many unique words can be made using all the letters of the word "fireside?" It may help you to know that fireside has 8 letters, and that there are two sets of duplicate letters. If you don't know it offhand, it should also help you to find out that 7 factorial equals five thousand forty.

ANSWER: **10,080**

11. The American army in this battle had suffered over 2,000 casualties, about 4 times as many as the British. The British obtained an advantage in this battle when Tarleton's calvary bcharges the rear of the continental army. Nathanael Greene was awarded command of the southern army following this battle, a victory for Cornwallis. Horatio Gates was on the losing side in, FTP, what revolutionary war battle that took place in South Carolina?

ANSWER: **Camden**

12. The plain of this battle was divided into two valleys by the Causeway Heights, occupied by a series of Turkish-held redoubts. The British Commander, Lord Raglan, was short of infantry, and so ordered a calvary charge to stop the advancing Russians. The calvary brigade under Lord Cardigan advanced down one of the valleys, and while suffering horrendous losses, demoralized the Russians with their display of bravery. Immortalized in the Tennyson poem, the Charge of the Light Brigade, this was, FTP, what important battle of the Crimean War?

ANSWER: Battle of **Balaklava**

13. Displacement due to it is modeled by differential equations with solutions like $y'' + y = 0$. It can be considered a one-dimensional projection of uniform circular motion, and is undergone by springs that follow Hooke's Law. FTP, name this perpetual periodic oscillation with constant amplitude.

ANSWER: **simple harmonic motion** (accept **SHM**)

14. One early sign of bad things to come in this novel is the death of the family dog after being run over by a motorist outside a gas station. This contrasts with an earlier scene where a turtle was run over by a truck, but simply flipped itself over and kept on walking. That turtle is found by the protagonist shortly before he encounters a preacher who has lost faith in the Holy Spirit, and now believes in the human spirit, named Jim Casy. The family unit begins to crumble when Grandpa dies and Connie abandons Rose of Sharon to deal with her pregnancy by herself, but the family increases again when they get to California and Al gets hitched to Agnes Wainwright, a fellow Okie. This is, FTP, what John Steinbeck novel about a family of Dust Bowl migrant workers, the Joads.

ANSWER: *The* **Grapes of Wrath**

15. This character is bothered by nearly everything, including Ackley's poor personal hygiene and Stradlater's ineptitude at whistling in tune. He doesn't like Ernest Morrow either, but when he meets Ernest's mother on a train, he pretends to have much admiration for him. The things he loves seem to be few but include his red hunting cap that he wears often throughout the novel, his brother Allie who died of leukemia, and his sister Phoebe. He even seems to harbor some affection for Pencey Prep, the school he is expelled from at the beginning of the novel, even though it is filled with "phonies". This is, FTP, what protagonist of J.D. Salinger's *The Catcher in the Rye*.

ANSWER: **Holden** Caulfield (prompt on "Caulfield")

16. The most valuable account of this battle is probably from Attaliates, a historian under Romanus IV Diogenes, who lead one side in this battle. Romanus was eventually captured, though, when the Byzantine rearguard left the battlefield at

nightfall, after which Alp Arslan's forces were able to lure the Byzantines into ambushes. The Seljuk Turks were victorious in, FTP, what 1071 battle, a from which most historians usually mark the long decline of the Byzantine empire?

ANSWER: Manzikert

17. One treaty of this city involved Byzantine recognition of the Carolingian empire. Another treaty of this city ended a conflict which saw Louis XIV's armies overrun the Habsburg controlled Spanish Netherlands and the Franche-Comte, but was forced to give much of it back by a triple alliance of England, Sweden, and the Dutch Republic, the War of the Devolution. Probably the most famous conflict ended in a treaty of this city began with Charles VI's declaration of the Pragmatic sanction, leaving the Austrian throne to his daughter, Maria Theresa. The war of Austrian Succession was, FTP, ended by what treaty which gave Frederick the Great of Prussia control of Silesia?

ANSWER: Treaty of Aix-la-Chappelle [grudgingly accept Aachen]

18. He was worshipped extensively by farmers and common people, though contact with him required the intervention of the high priest, or Willaq Umu. His festival, or Raymi, was held on June 24th because of his nature as a particular astronomical diety, and his wife is a moon goddess by the name of Mama Quilla. His children included Mama Ocllo, a fertility goddess who taught people the art of spinning, and Manco Capac, the first emperor. Portrayed as the solar disc on the flags of Argentina and Uruguay, this is, FTP, what son of the creator god Viracocha, the supreme deity of the Inca pantheon.

ANSWER: Inti

19. He is the bastard nephew of Baron Thunder-ten-tronckh, but is expelled from his house when he naïvely kisses the Baron's daughter in imitation of his tutor kissing the chambermaid, Paquette. After killing the Jewish banker, Don Issachar and the Grand Inquisitor, he flees to Argentina and later Paraguay. There, he and his servant Cacambo manage to wander into El Dorado, but the sheep bearing all the gold and riches they gain are later stolen. Throughout his many travels he tries to win the hand of his love, Cunégonde, and attempts to cling to the principles of his tutor, Pangloss, that "all's for the best in this best of all possible worlds". FTP, who is this title protagonist of a novel by Voltaire?

ANSWER: Candide

20. This man's work, "Magna Moralia," is sometimes attributed to a later author who wanted to sum up this man's ethical views. The Eumedian ethics, though, is universally attributed to him, although his other ethical work is perhaps better known. This man's followers, the Peripatetics, gave the name Organon to this man's main work on logic. He later founded the lyceum, modeled on Plato's academy, for his followers. FTP, name this teacher of Alexander the Great, a disciple of Plato.

ANSWER: Aristotle

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1. According to legend, this battle saw Sumanguru Kante of Soso summon eight spirits, only to be struck with an arrow tipped by a white cock's spur and flee the field upon seeing a namesake black bird, FTPE:
 - [10] Name this battle in 1235 CE in which a coalition defeated Sumanguru.
ANSWER: Battle of **Kirina** or Krina
 - [10] As a result of the battle, this Malinke son of Maghan, whose life had earlier been reportedly spared by Sumanguru, became the first mansa of the new Mali Empire.
ANSWER: **Sundiata** Keita (or Mari Djata or Sogolon Djata)
 - [10] The Mali Empire was initially centered around this no-longer-extant city, the birthplace of Sundiata. It is described as a makeshift political capital in a fourteenth century account by al-Umari.
ANSWER: **Niani**

2. Maria Theresa was one of the best female monarchs around. FTPE, answer some questions related to her reign.
 - [10] Maria Theresa became empress of this body upon the death of her father, Charles VI.
ANSWER: **Holy Roman Empire**
 - [10] Maria Theresa rose to the throne on the authority of this document.
ANSWER: **Pragmatic Sanction**
 - [10] Maria Theresa was aided in the last half of her reign by this man, who ruled with her until her death, lasting until Napoleon dissolved the Holy Roman Empire permanently.
ANSWER: **Francis II**

3. One of his triptychs consists of Allegory of Greed and Lust, Ship of Fools, and Death and the Miser, FTPE:
 - [10] Name this painter whose other triptychs include The Crucifixion of St. Julia and The Temptation of St. Anthony.
ANSWER: Hieronymus **Bosch**
 - [10] Dating from the 1490's and found in the Boijmans van Beuningen Museum, this Bosch oil depicts the hoof-footed title character bent nearly parallel to the ground and straining with a stick to keep walking.
ANSWER: **St. Christopher** Carrying the Christ Child
 - [10] Bosch is best known for this triptych that portrays people crucified on musical instruments in Hell for their worldly lusts.
ANSWER: The **Garden of Earthly Delights**

4. Answer some questions about calculus FTPE.
 - [10] Integrating a product of functions like f of x equals x times cosine x is easier with this heuristic.
ANSWER: Integration **by parts**
 - [10] This simple calculus theorem states that between every two points on a smooth curve, there is a point whose derivative is the same as the slope of the line between those two points.
ANSWER: **mean value theorem**
 - [10] This is a representation of a function as an infinite sum of polynomials, is calculate by taking derivatives of increasing order.
ANSWER: **Taylor** series

5. Answer some questions about the Harlem Renaissance, FTPE:
 - [10] This author of the collection *The Negro Speaks of Rivers* is usually considered the premier poet of the Harlem Renaissance.
ANSWER: **Langston Hughes** (prompt on Hughes)
 - [10] These are the subjects of Langston Hughes' two most famous poems. In the more popular of the two poems, he writes that when these die "Life is a broken winged bird that cannot fly".
ANSWER: **Dream(s)**
 - [10] Another leading figure of the Harlem Renaissance, this poet wrote "Sympathy", which contains the much-quoted line "I know why the caged bird sings", which later became the title of Maya Angelou's autobiography.
ANSWER: Paul Laurence **Dunbar**

6. Given some famous pieces for a small number of instruments, give the number of instruments the piece is written for FTPE.
 - [10] Haydn wrote 23 of them, and Mozart wrote 68, Smetana's Number 1, "From My Life."
ANSWER: **4**
 - [10] Mendelssohn's opus 20 in E flat Major, and Shubert's F major.
ANSWER: **8**

[10] Tchaikovsky's *Souvenir de Florence*, and Arnold Schoenberg's *Verklarte Nacht*.

ANSWER: **6**

7. FTPE, Name these types of geologic faults.

[10] These faults are characterized by lateral motion and are subdivided into dextral and sinistral types.

ANSWER: **strike-slip** faults

[10] These are a special case of strike-slip faults that occur along the tectonic plate boundaries. Sudden release of strain along these faults is a common cause of earthquakes.

ANSWER: **transform** faults (do not accept strike-sli

[10] Classified into normal and reverse faults, these faults are characterized by a hangingwall and footwall that move vertically with respect to one another.

ANSWER: **dip-slip** faults

8. The title character for this novel comes upon a group of men led by Arroyo right after it has liberated a bunch of land held by the Mirandas family, FTPE:

[10] Identify this novel, in which the title character works for the Hearst newspaper syndicate. Other characters include Harriet Winslow, who's in charge of the Mirandas children.

ANSWER: The **Old Gringo** (also accept El **Gringo Viejo**)

[10] *The Old Gringo* is a novel by this man, who's also well-known for writing *Aura* and *Christopher Unborn*.

ANSWER: Carlos **Fuentes**

[10] Carlos Fuentes may be still better known for writing this novel told from by a man who tried to swindle the Bernal out of their land.

ANSWER: The **Death of Artemio Cruz** (Also accept "El **Muerte de Artemio Cruz**")

9. Her father is arms manufacturer Andrew Undershaft, her fiancé is the classics scholar Cusins, and she is an officer in the Salvation Army, FTPE:

[10] Who is this title heroine of a 1905 play.

ANSWER: **Major Barbara** (prompt on "Barbara")

[10] *Major Barbara* is by this Irish playwright.

ANSWER: George Bernard **Shaw**

[10] Later adapted into the musical *My Fair Lady*, this Shaw play sees phonetics professor Henry Higgins wager with Colonel Pickering that he can pass off flower-girl Eliza Doolittle as a noble lady through elocution lessons.

ANSWER: **Pygmalion**

10. Answer some questions about the most important part of a football team, the offensive line, FTPE.

[10] This Alabama left tackle's draft stock has plummeted since he showed up overweight to the NFL combine and then left early.

ANSWER: Andre **Smith**

[10] This longtime Rams left tackle, who Smith had often been compared to, was released by the team during the offseason to save salary cap room.

ANSWER: Orlando **Pace**

[10] This Tennessee Titans center and fifteen-year NFL veteran was elected President of the NFL Player's Association on March 11, 2009.

ANSWER: Kevin **Mawae**

11. FTPE, answer these environment-related current event questions.

[10] In late December 2008, an earthen retaining wall at the Kingston Fossil Plant in Tennessee gave way, spilling millions of cubic yards of this toxic material.

ANSWER: **coal ash** (also accept **fly ash**)

[10] Fortunately, coal ash can be reused by mixing it with cement to make a stronger form of this commonly used construction material.

ANSWER: **concrete**

[10] March 2009, the Long Island Power Authority awarded contracts to only foreign companies for the construction of a massive installation designed to generate energy through this technology.

ANSWER: **solar** power

12. Answer some questions about civil war battles, FTPE:

[10] The first engagement of the Civil War, it saw Confederate P.T. Beauregard attack Anderson's military Garrison in South Carolina

ANSWER: **Fort Sumter**

[10] This battle, part of the larger Chattanooga campaign, saw Braxton Bragg defeat Rosecrans' Union forces

ANSWER: **Chickamauga**

[10] This battle near the end of the war was the first direct engagement between Lee and Grant

ANSWER: **Cold Harbor**

13. Name some things related to various labor movements in the United States, FTPE:

[10] This organization was the first labor union to really have a large membership and to begin effectively fighting for worker's rights, and was headed by Terence Powderly for a good portion of its existence

ANSWER: **Knights of Labor**

[10] The Knights of Labor was in fact founded by this man, however, who was largely responsible for the Knights' characteristic ritual and secrecy

ANSWER: **Uriah Stephens**

The Knights of Labor were largely supplanted by this union, founded by Samuel Gompers

ANSWER: **American Federation of Labor**

14. FTPE, identify these concepts from cancer genetics.

[10] Some genes, when activated by mutation, help turn normal cells into cancer cells, and thereby become members of this class of genes.

ANSWER: **oncogenes**

[10] These genes serve to combat oncogenes, often through regulation of the cell cycle or apoptosis promotion. Mutant alleles of these genes are usually recessive, unlike mutant alleles of oncogenes, which tend to be dominant.

ANSWER: **tumor suppressor** genes or **antioncogenes**

[10] This protein encoded by a tumor suppressor gene acts as a transcription factor that can activate DNA repair proteins, help initiate apoptosis, and stop the cell cycle at the G₁ checkpoint. It was named the molecule of the year by *Science* in 1993.

ANSWER: **p53** (also accept **protein 53** or **tumor protein 53**)

15. "As Gregor Samsa awoke one morning from uneasy dreams he found himself transformed in his bed into a gigantic insect." FTPE:

[10] These are the first lines of what 1915 novella.

ANSWER: The **Metamorphosis**

[10] *The Metamorphosis* is by this Czech Jewish author.

ANSWER: Franz **Kafka**

[10] A similarly bizarre morning befalls Kovalyov, when he wakes to find his nose has escaped from the face and has earned a higher rank in the civil service than he has, in "*The Nose*", a short story by this Russian author of *Dead Souls*.

ANSWER: Nikolai **Gogol**

16. Name these physics quantities, FTPE, given some non-SI units used to measure them:

[10] British thermal unit and liter-atmosphere.

ANSWER: **Work**

[10] Ergs per second and calories per hour.

ANSWER: **Power**

[10] Pounds and dynes.

ANSWER: **Force**

17. It first appeared in the collection, *The Sketch Book of Geoffrey Crayon*. FTPE:

[10] The title character of this short story wakes up after a twenty-year long nap to find that America is no longer a British colony.

ANSWER: **"Rip Van Winkle"**

[10] *The Sketch Book of Geoffrey Crayon* is by this American author of *Tales from the Alhambra*.

ANSWER: **Washington Irving** (prompt on "Irving")

[10] Washington Irving also wrote the popular ghost story "*The Legend of Sleepy Hollow*" about a headless horseman, whose real name is this.

ANSWER: **Ichabod Crane** (prompt on "Crane")

18. FTSNOP, give the chemical formula from the name.

[5] Methane.

ANSWER: **CH₄**

[10] Sulfuric acid.

ANSWER: **H₂SO₄**

[15] Hydrazine.

ANSWER: **N₂H₄**

19. Answer some questions about Dante, FTPE:

[10] In his most famous work, *The Inferno*, Dante is guided through the Nine Circles of Hell by this Roman poet.

ANSWER: **Virgil**

[10] *The Inferno* is the first canticle of this epic poem, whose other canticles include *Purgatorio* and *Paradiso*.

ANSWER: *The Divine Comedy or Divina Commedia*

[10] In the third canticle, *Paradiso*, Dante is guided by this character, his idealized woman, based on a Florentine girl he loved in his youth.

ANSWER: **Beatrice**

20. Australia is a dry place, hence it has many deserts. FTPE, name the following.

[10] Found in northwestern Australia, this desert is known for its vast area of sandhills.

ANSWER: **Great Sandy** Desert

[10] Southeast of the Great Sandy Desert, this desert's namesake reserve is accessible via the famous Gunbarrel Highway.

ANSWER: **Gibson** Desert

[10] This desert is found south of the Gibson Desert and north of the Nullarbor Plain. It is named after a British Queen.

ANSWER: **Great Victoria** Desert

YALE
student
academic
competitions

we are the people with buzzers who answer questions

Packet 5

1. In eukaryotes, these recognize the Kozak consensus sequence, while in prokaryotes, they recognize the Shine-Dalgarno sequence. They are composed of 30S and 50S subunits in prokaryotes, where the S is the Svedberg unit, a measurement of sedimentation in centrifugation, and were first observed in the 1950s by George Palade with an electron microscope. They are about forty percent protein and sixty percent nucleic acid, and in eukaryotes they are assembled in the nucleolus. Found in either the cytosol or attached to the rough endoplasmic reticulum are, FTP, these cellular organelles necessary for translation.

ANSWER: **ribosomes**

2. The weeping woman being held by her mother in the left foreground cries since her betrothed and her brothers are about to fight for the honor of their respective cities. As it turns out, she is right to weep as her betrothed, Quintus Curatius, dies along with two of her three brothers, who are holding their swords up rigidly. The striking use of color and the dramatic tension present in the stances of the four characters in the center make, FTP, which painting of Jacques-Louis David, a masterpiece?

ANSWER: Oath of the **Horatii**

3. Recordings of this man on Youtube playing classical works by Haydn early in his career demonstrate his flawless technical ability, but since then, he has focused almost exclusively on jazz. Winner of 9 Grammys and the Pulitzer Prize for Music, he moved from New Orleans to New York to attend Juilliard in 1978 and quickly cut his teeth in the jazz world by joining Art Blakley's Jazz Messengers in 1980. Recently awarded an honorary degree from Yale University, he is probably best known for establishing and leading the Jazz at Lincoln Center program in New York City. FTP, name this jazz trumpeter, widely regarded as the leading jazz educator and musician today.

ANSWER: Wynton **Marsalis**

4. Though this playwright is thought to have completed over ninety plays, only eighteen complete ones and one disputed one survive to this day. Many of his plays center on female characters, including one dealing with the fates of Helen, Cassandra, and Hecuba after the events of the Iliad, titled *The Trojan Women*. Other plays with female protagonists include one where a woman kills the children she had with her lover Jason as revenge for abandoning her, *Medea*, and a play retelling many of the events of the Oresteia while focusing on Orestes' sister, *Electra*. FTP, who is this Ancient Greek playwright of *Alcestis* and *The Bacchae*.

ANSWER: **Euripides**

5. This author wrote not one but two autobiographies: the first, *No Laughing Matter*, dealt with his trials in coping with Guillain-Barré syndrome, while the second, *Now and Then*, dealt with his childhood and the experiences in World War II that would help form his most famous novel. His third novel, *Good as Gold*, was seen as a return to the satire and wordplay that had seemed absent from his previous and much darker novel about Bob Slocum's discontentment with the American Dream, *Something Happened*. His second-to-last novel, *Closing Time*, was a sequel to his first and most famous novel, which concerns the efforts of bombardier, Yossarian, to avoid going into combat. FTP, who is this author of *Catch-22*?

ANSWER: Joseph **Heller**

6. The writer cited William S. Burroughs' "The Unspeakable Mr. Hart" as an influence. Chapter five, titled "Fearful Symmetry," is an epigraph from Robert Blake, and features a symmetric storyboard. Chapter eleven is titled "Look on my Works, ye Mighty," a reference to the character on whom the chapter focuses, Adrian Veidt, also called Ozymandias. The story begins with the murder of Edward Blake, also known as The Comedian. With David Gibbons as artist and Alan Moore as writer, FTP, name this great graphic novel, turned into an unwatchable movie by Zak Snyder in 2009.

ANSWER: **Watchmen**

7. To make this molecule, bactoprenol chauffeurs N-acetylglucosamine and N-acetylmuramic acid through a membrane. Lysozyme continually breaks its NAG-NAM connections, while penicillin binds to proteins that provide cross-links between strands, and thus causes the cell to lyse when it tries to reproduce. Gram negative bacteria use lipoprotein anchors to hold it to the outer membrane, while Gram positive bacteria are surrounded by about forty layers of this molecule, which is also known as murein. FTP, name this polymer that makes up prokaryotic cell walls.

ANSWER: **peptidoglycan** (accept early murein)

8. A proponent of Marshall's economics while a student of Joan Robinson, he discarded his roots and employed social choice theory in his most famous work. In his 1970 article *The Impossibility of a Paretian Liberal*, this economist argued that the Pareto optimality was not value-neutral but rather contradicted the liberalism of Mill. His most famous work was published in another 1970 paper in which he attributed the Arrow Impossibility theorem to his most important development. FTP, identify this author of *Collective Choice and Social Welfare*, the Indian recipient of the 1998 Nobel Prize in Economics.

ANSWER: Amartya **Sen**

9. Closely linked to the compounds theobromine and theophylline, this odorless compound occurs naturally as a white powder or as silky needles, and is characterized by a bitter taste. Scientifically called tri-methyl-xanthine, it is very soluble in hot water, and upon cooling deposits crystals of its namesake monohydrate. A member of the alkaloid group, its toxic oral dosage is 10 grams, and more than half of American adults consume over 3% of that dose daily. A cardiac stimulant and a mild diuretic having formula $C_8H_{10}N_4O_2$, FTP name this substance commonly found in guarana, maté, tea, and coffee.

ANSWER: **caffeine**

10. Pencil and paper ready. Express your answer as a simplified radical. The altitude of a right triangle with hypotenuse 10 is 4. FTP, what is the sum of the lengths of the triangle's legs?

ANSWER: **$6\sqrt{5}$** units [or **6 rad 5**]

11. A successful lawyer in Arras, he soon gained a reputation for being "incorruptible" among his associates. After he became a leading member of the Montagnards, he later tried to set up his "cult of the supreme being" to replace Christianity during the revolution. After he had his friend Danton executed, though, his virtual dictatorship would come to an end with the Thermidorian Reaction. A leader of the Jacobins, this was, FTP, what leader of the Committee of Public Safety who established the Reign of Terror during the French Revolution?

ANSWER: Maximilien **Robespierre**

12. This man gained national attention when serving as the republican governor of Massachusetts, putting down a Boston police strike, after which he famously sent a telegram to Samuel Gompers. When he later became president by defeating John W. Davis, the Washington Naval Treaty was signed just one month into his first term. Other legislation during this man's presidency included the McNary-Haugen farm relief bill, which he vetoed because it did not fall in line with his philosophy that "the business of America is business." FTP, name this 30th president of the U.S., who presided over America's great economic expansion in the roaring 20s and ascended to the presidency after the death of his predecessor-Warren G. Harding.

ANSWER: Calvin **Coolidge**

13. It explains why an aluminum block would fall very slowly when dropped in an MRI. It is popularly demonstrated using by dropping a magnet down a copper tube. According to this law of electromagnetism, a closed wire loop will have a clockwise electric current when a magnet approaches it south-pole-first. A consequence of the conservation of energy, it states that a change in magnetic flux must produce a current such that the magnetic field associated with the current opposes the original field, according to the right-hand rule. FTP, name this law that gives the direction of a current induced by a changing magnetic flux.

ANSWER: **Lenz's** Law

14. One author of this last name was responsible for the revival of literature written in the Occitan language and for his novel *Mirèio*, which formed the basis for a Gounod opera. The other more famous author of this last name was named after the first, and wrote the 1922 poetry collection *Désolacion*, but gained reknown for a 1914 collection of poems about the suicide of her first love and her abandonment by her second. FTP, what is this last name shared by a French author and winner of the 1904 Noble Prize for Literature, and the first Latin American winner of the Noble Prize in Literature, the Chilean poet of *Sonetos de la Muerte* (*Sonnets of Death*)?

ANSWER: **Mistral**

15. The protagonist and title character of this work earns a degree to a respected black college due to his public speaking skills, but only after being forced to box blindfolded in a humiliating "battle royal". After he is expelled by the college president, Dr. Bledsoe, for accidentally revealing to a trustee the harsh realities of black life, the protagonist finds a job at Liberty Paints Plant manufacturing "Optic White". But his public-speaking skills soon get him a new job in the Brotherhood, working for Brother

Jack. After the eruption of a race riot led by Ras the Exhorter, the protagonist begins to live underground in FTP, what novel about a man whom society ignores, by Ralph Ellison.

ANSWER: Invisible Man [Do NOT accept “The Invisible Man”, as that is an entirely different novel]

16. In her writings about her own fiction, this author identified the key moments in many of her stories as the point when her characters found “grace”, an idea influenced by her strong Catholic faith. She also chastised the critical establishment for overstressing the element of “grotesque” in her genre of fiction, which was known as Southern Gothic. Her later short stories are collected in *Everything Which Rises Must Converge* and she wrote only one novel, *Wise Blood*. The title short story of her most famous collection describes the bloodshed that follows when the grandmother of a family on a road trip recognizes an escaped convict known as the Misfit. FTP, who is this Georgia native and author of the short story collection, *A Good Man is Hard to Find and Other Stories*?

ANSWER: Flannery O’Connor

17. Although its effects were much more wide-ranging than its original role would suggest, it was at first simply a letter to the Governor of Bithynia. It was one of a series of letters issued by Licinius to the territory he had conquered from Maximinus, with the help of his more famous co-emperor. Although Galerius had issued a declaration for all religious creeds, the empire was still used to persecutions of the affected group initiated by Diocletian. This document, though, initiated a period known as the “Peace of the Church,” in Christian circles. This was, FTP, what Edict issued by Constantine the Great from the namesake city, ending the persecutions of Christians?

ANSWER: Edict of Milan

18. Although they had been in existence from the 13th century, it wasn't until the mid 19th century that public outrage began to grow against them. Following the formation and campaign of a league against them, they were finally repealed by the conservative government of the time, despite the objections of Benjamin Disraeli. A prime example of mercantilism, and designed to maintain high prices after the Napoleonic Wars, these were, FTP, what set of laws that forbade the export of grain unless the price was low, and forbade import unless it was high, finally repealed by Robert Peel in 1846?

ANSWER: Corn Laws

19. The city had 3 functioning airports up to 2007, but the closure of Tempelhof has temporarily left it with only 2. Even then Tegel in the north is scheduled for closure in 2011, leaving only Schönefeld. Visitors can take the S Bahn train to the neighbouring city of Potsdam, while another S Bahn train leads to the former Nazi concentration camp of Sachsenhausen. The Neue Synagoge in this city was built in the 1880s and features unique Moorish domes, while in the 2005, a new Memorial to the Holocaust was opened, just adjacent to Brandenburg Gate. FTP, name this city, divided into East and West by an infamous namesake wall between 1961 and 1989, the capital of Germany.

ANSWER: Berlin

20. This rather technical work has sections entitled “concerning God,” and “On the Nature and Origin of the Mind.” This work's complexity comes from its axiomatic nature, in which the author, in a step-by-step format, defines various terms, and attempts to speculate upon humanity's place in the natural order and the path to attainable happiness, advocating a rather deterministic viewpoint. Schopenhauer claimed that the author of this work was guilty of “calling God that which is everywhere called ‘the world.’” FTP, name this work of pantheistic thought, the chief work of Baruch Spinoza

ANSWER: Ethics

1. FTPE, answer these related chemistry questions.

[10] This element, discovered by Pierre Janssen and Norman Lockyer, has the lowest known boiling and melting points of any element. It is the first new one formed during nuclear fusion in stars.

ANSWER: **helium**

[10] The helium nucleus is also known as this kind of particle.

ANSWER: **alpha** particle

[10] Alpha particles were used in this famous experiment which refuted the plum pudding model of the atom and provided evidence for the existence of the nucleus.

ANSWER: **gold foil** experiment (also accept Geiger–Marsden or Rutherford experiment)

2. Pencil and paper ready. Consider the 3-4-5 right triangle. Compute the following FTPE.

[10] The tangent of its smaller angle as a simplified fraction.

ANSWER: **3/4**

[10] The degree measure of its largest non-right angle, within 2 degrees.

ANSWER: **55.13 to 51.13 degrees**

[10] The length of the median to the leg of length 4.

ANSWER: **$\sqrt{13}$**

3. Jeremy Rifkin wrote about the “Dream,” of this body, which he compares and contrasts to the United States, FTPE:

[10] Identify this entity, formed by the signing of the Treaty of Maastricht in 1991.

ANSWER: The **E**uropean **U**nion

[10] The formation of the European Union made this previously formed body obsolete, which had itself replaced the European Coal and Steel Community

ANSWER: **E**uropean **E**conomic **C**ommunity

[10] There has been recent talk of admitting this mostly middle-eastern country into the European Union, despite its mostly Muslim population. It has its capital at Ankara

ANSWER: **Turkey**

4. Answer some questions about an important Renaissance family from clues, FTPE:

[10] This member of the Medici was a merchant and established the fortune which his son and great-grandson would greatly benefit from.

ANSWER: **Giovanni** De’Medici

[10] This Great Grandson of Giovanni and probably the most famous Medici helped usher in the renaissance by becoming a lavish patron of the arts in his city of Florence.

ANSWER: **Lorenzo** de Medici

[10] Much Renaissance artwork was destroyed, however, when this man came to rule Florence, in his “bonfire of the Vanities.”

ANSWER: **Savonarola**

5. This man unsuccessfully ran for president 3 times, starting in 1896. FTPE:

[10] Name this man, defeated by McKinley in the election of 1896.

ANSWER: William Jennings **Bryan**

[10] Bryan became famous for his “Cross of Gold” speech, which attacked the gold standard, something opposed by this organization of farmers, which formerly merged with the democratic party in the election of 1896.

ANSWER: The **Grange** Movement

[10] Another entity that largely merged with the democrats for the election of 1896 was this party, which adopted a platform of a graduated income tax, direct election of senators, and the free coinage of silver

ANSWER: **Populist** Party

6. Answer some questions about sculptors who got a “B” in art. FTPE:

[10] This French sculptor created the "Lion of Belfort" in Paris and has a fountain named after him in Washington D.C., but he's most famous for a certain torch-wielding statue in the New York Harbor.

ANSWER: Frédéric Auguste **Bartholdi**

[10] This sculptor's work was considered in his homeland of Romania during the Communist regime, and there were plans to demolish his "Endless Column". Luckily, it was restored in 2000, and his twelve "Bird in Space" sculptures remain intact too.

ANSWER: Constantin **Brancusi**

[10] This 17th century Italian was an architect in addition to be a sculptor, but it his "Apollo and Daphne" and "Ecstasy of St. Theresa" that he will be most remembered for.

ANSWER: Gian Lorenzo **Bernini**

7. FTPE, name these female politicians associated with the junior New York Senate seat.

[10] Hillary Clinton left her Senate seat to take this position in President Obama's Cabinet.

ANSWER: **Secretary of State**

[10] This woman endorsed President Obama in her editorial, "A President Like My Father," before emerging as a frontrunner to replace Clinton. However, as questions emerged regarding her qualifications for the seat, she was forced to withdraw herself from consideration.

ANSWER: Caroline Bouvier **Kennedy**

[10] The suspense ended when this moderate House of Representatives member from the state was appointed by Governor Paterson to fill Clinton's vacated seat.

ANSWER: Kirsten Elizabeth Rutnik **Gillibrand**

8. John Oakhurst is a gambler, Uncle Billy is a drunkard, and Mother Shipton is a brothel owner. FTPE:

[10] These characters are the title group in what Western-themed short story.

ANSWER: "**The Outcasts of Poker Flat**"

[10] "*The Outcasts of Poker Flat*" is by this American author of "*The Luck of Roaring Camp*"

ANSWER: Francis Bret **Harte**

[10] In addition to his short stories, Bret Harte also wrote poems, like this one about the racist perception of Chinese immigrants by native Californians.

ANSWER: **Plain Language from Truthful James**

9. Name these Shinto deities, FTPE.

[10] When Izanagi, the first man, washed his face, his left eye became this sun goddess. The grandmother of the first emperor, Jimmu, she hid in a cave after being mistreated by her brother.

ANSWER: **Amaterasu**

[10] That brother, formed from Izanagi's nose, is the Japanese god of storms and the sea. He killed the serpent Yamata no Orochi and retrieved the Grass-Cutter sword Kusanagi from its tail.

ANSWER: **Susanoo**

[10] A brother of both Amaterasu and Susanoo, he was formed from Izanagi's right eye and became the god of the moon. Because he killed the food goddess Uke Mochi, Amaterasu refused to look upon him.

ANSWER: **Tsukuyomi**

10. FTPE, name these phyla of the animal kingdom.

[10] This phylum of animals contains about 7,000 marine species. The largest phylum with no terrestrial or freshwater representatives, they are characterized by the presence of a water vascular system and radial symmetry.

ANSWER: **Echinodermata** (also accept **echinoderms**)

[10] Animals in this phylum are characterized by their segmented bodies and jointed limbs. They also feature a hemocoel internal cavity protected by a chitin-containing exoskeleton.

ANSWER: **Arthropoda** (also accept **arthropods**)

[10] This phylum consists of bilateral, soft-bodied invertebrate animals that are limited to diffusion-mediated intake of oxygen and nutrients. More than half of the known species in this phylum are parasitic, examples of which include flukes and tapeworms.

ANSWER: **Platyhelminthes** (also accept **flatworms**)

11. Answer some questions about popular music FTPE.

[10] This "artist" went on a 4 year hiatus after 2003's *In the Zone*. She returned with the album *Blackout* in 2007.

ANSWER: **Britney Spears**

[5,5] Britney followed up *Blackout* with *Circus* in 2008. For five points each, name the two Billboard number one singles off the album.

ANSWER: **Circus** and **Womanizer**

[10] Spears has generated some controversy with this song, whose title sounds like a lascivious invitation.

ANSWER: **If You Seek Amy**

12. Experimental particle physics relies on many different methods for finding subatomic particles. FTPE, answer some questions about particle detectors.

[10] This device, developed in 1908, contains an inert gas which briefly becomes conductive when struck by ionizing radiation. The resulting current pulse produces audible clicks.

ANSWER: **Geiger counter** (or **Geiger-Müller counter**)

[10] The inventor of this detector was awarded the 1960 Nobel Prize for physics. Particles pass through a tank of superheated liquid hydrogen, leaving tracks as they vaporize small amounts of the fluid.

ANSWER: **bubble chamber**

[10] Many neutrino detectors use these devices to amplify a tiny light signal produced by rare interactions between the particles and a material such as liquid xenon. They can increase signals up to 100 million times, and are also used in medical imaging and high-end image scanners.

ANSWER: **photomultiplier tubes**

13. Identify some characters from Rudyard Kipling's *The Jungle Book*, FSTPE:

[5] this young boy, often referred to as a "man cub", is the protagonist of *The Jungle Book*.

ANSWER: **Mowgli**

[5] this bear is one of Mowgli's animal teachers. His serious persona in the book contrasts greatly with his fun-loving portrayal in the Disney movie, where he sings "The Bare Necessities".

ANSWER: **Baloo**

[10] along with Baloo and Kaa, this panther completes the trio of animal teachers who guide Mowgli in his development.

ANSWER: **Bagheera**

[10] this crippled tiger's hatred of all mankind leads him to make it his mission to hunt and kill Mowgli, making him one of the chief villains of the book.

ANSWER: **Shere Khan**

14. Answer some questions about novels whose titles have a sense of finality, FTPE:

[10] *The Last Man* is a novel by this author *Frankenstein* and contains portraits of literary contemporaries such as Lord Byron.

ANSWER: **Mary Shelley** (prompt on "Shelley")

[10] *The End of the Affair* is a Catholic-themed post-war novel by this English author of *The Quiet American* and *The Power and the Glory*.

ANSWER: Graham **Greene**

[10] This 1963 novel by Leon Uris centers on the history of Berlin in the 1940's, and shares its name with the site of the final battle between God and the Antichrist in The Book of Revelation.

ANSWER: **Armageddon** or **Armageddon: A Novel of Berlin**

15. This incident involved a cover-up committed in part by H.R. Haldeman, John D. Ehrlichman, and John W. Dean, among others.

[10] FTP name this event organized by CREEP.

ANSWER: **Watergate** Break-in

[10] This man was hired as special prosecutor, and was promptly ordered fired by Nixon.

ANSWER: Archibald **Cox**

[10] This man was the one who Nixon ordered to fire Cox, with him being the new attorney general. However, he chose to resign in protest.

ANSWER: Elliot **Richardson**

16. FTPE, name some famous 20th century French composers from descriptions and works.

[10] This composer's death went largely unnoticed, as it occurred so close to the end of the First World War. Deeply interested in colors in music, he is most famous for works such as *Prelude to the Afternoon of a Faun* and *La Mer*.

ANSWER: Claude **Debussy**

[10] Though primarily active in the 19th century, this composer actually outlived Debussy, living to the ripe old age of 86. His most frequently performed works today include his *Organ Symphony* and the *Carnival of the Animals*.

ANSWER: Camille **Saint-Saens**

[10] Largely seen as a contemporary to Debussy, this Frenchman was a leader in the Impressionist movement in music. He is

best known for orchestrating Pictures at an Exhibition, and works such as Gaspard de la Nuit and Bolero.

ANSWER: Maurice **Ravel**

17. Identify the following tales from Geoffrey Chaucer's Canterbury Tales, FTPE:

[10] "Money is the root of all evil" is the moral of this tale, according to its teller. It concerns three scoundrels who end up killing themselves by trying to cheat each other out of a pile of gold.

ANSWER: "**The Pardoner's Tale**"

[10] Ancient Greece is the setting of this tale about a battle between Palamon and Arcite for the love of the fair maiden, Emily.

ANSWER: "**The Knight's Tale**"

[10] This beast fable tells of the rooster Chaunticleer, husband of hen Pertelote, who is captured through flattery by the crafty fox.

ANSWER: "**The Nun's Priest's Tale**"

18. "The boast of heraldry, the pomp of pow'r, / And all that beauty, all that wealth e'er gave, / Await alike the inevitable hour: / The paths of glory lead but to the grave." FTPE:

[10] The afore-quoted lines are from what poem, most probably composed amongst the gravestones in Stoke Poges, Buckinghamshire?

ANSWER: "**Elegy Written in a Country Churchyard**"

[10] *Elegy Written in a Country Churchyard* is by this 18th century English poet.

ANSWER: Thomas **Gray**

[10] "Far from the madding crowd's ignoble strife", a line from *Elegy*, generated the title for a novel about Bathsheba Everdene by this English author.

ANSWER: Thomas **Hardy**

19. FTPE, answer some questions about layers of the sun.

[10] This is the name for the "surface" of the sun.

ANSWER: **photosphere**

[10] This diffuse layer of plasma is observed around the edges of a total solar eclipse. Studies have shown that it is surprisingly much hotter than photosphere.

ANSWER: **corona**

[10] In this layer between the photosphere and the Radiative Zone, thermal columns carry hot plasma to the surface, where it cools and then sinks back down.

ANSWER: **convection zone** (accept **convective zone** or **zone of convection**)

20. Name these pillars of Islam, FTPE:

[10] This is the Islamic profession of faith, "There is no God but Allah, and Muhammad is his prophet".

ANSWER: **Shahada**

[10] This is ritual Islamic prayer, to be practiced five times a day.

ANSWER: **Salah** or **Salat** or **Namaz**

[10] This is the practice of giving alms to the poor.

ANSWER: **Zakat**

Packet 6

1. This composer spent most of his adult life outside of his home country, settling first in France, and subsequently in the USA, though he did return to his homeland in 1960. He flirted between various styles throughout his career, including neo-classicism with *Pulcinella*, and serialism in the 1950s. He first made his name during the 1910s, through the series of Ballet Russes premiered in Paris by Nijinsky. FTP, name this Russian composer famous for *The Firebird*, *Petrushka* and the *Rite of Spring*.

ANSWER: Igor **Stravinsky**

2. Solutions that do not follow it over a wide range of concentrations cannot be classified as perfect. Those that obey it can be classified as ideal, while others deviate from it based on their activity coefficient relative to one. While a mixture of trichloromethane and ethoxyethane results in a negative deviation, a mixture of water and ethanol positively deviate, though both are examples of azeotropes. FTP, name this law, which states that the component vapor pressure of a substance is equivalent to its mole fraction times its vapor pressure in pure form.

ANSWER: **Raoult's Law**

3. In 1967, this author was jailed in 1967 for his attempting to broker peace during his country's civil war. During that time he wrote the collection *Poems from Prison*. Four years previously, he completed his second play, *A Dance of the Forests*. In 1986, he won Nobel Prize in Literature, making him the first African to do so. His two most famous plays are one about a love triangle between Lakunle, Baroka, and Sidi, and another about the Elesin's failure to commit ritual suicide. FTP, who is this Nigerian playwright of *The Lion and the Jewel* and *Death and the King's Horseman*?

ANSWER: Wole **Soyinka**

4. The hybrid protagonist of this novel is a native of California, but is kidnapped by a gardener's helper, Manuel, and separated from his first owner, Judge Miller. After being moved north he is taught discipline by being beaten with a club. He watches the death of a fellow traveler, Curly, and vows never to let such a thing happen to him. He falls into the company of two French Canadian mail drivers, Francois and Perrault, and engages in a fierce rivalry with one of the leaders of the mail team, Spitz, whom he kills and replaces as leader. He is soon sold to some Americans but eventually finds freedom when his last master, Thornton, dies. FTP, name this novel about Buck, a dog, by Jack London.

ANSWER: *The* **Call of the Wild**

5. The early works of this author are largely autobiographical, fictionalizing his experiences as a cabin boy and later sailor. His first two novels were based on voyages in the South Pacific: *Typee: A Peep at Polynesian Life* and its sequel, *Omoo*. His most famous short stories are collected in *Piazza Tales* and include the story of a slave rebellion on a merchant vessel, *Benito Cereno*. The title character of another story in that collection repeats the phrase "I would prefer not to", *Bartleby the Scrivener*. Another novel contains the characters Tashtego, Starbuck, and Queequeg, and is mainly set aboard a ship called the *Pequod*. This is, FTP, what American author of *Moby Dick*?

ANSWER: Herman **Melville**

6. Her symbol was the eight-pointed star, and her worship involved temple prostitution, primarily at her cult center of Erech. She was worshiped in Babylon, where a gate dedicated to her was constructed by Nebuchadnezzar II, and in Sumer by another name. She is the foe of a certain hero who journeys to the underworld, but in another myth makes that journey herself, passing through seven gates along the way and removing an article of clothing at each one. This journey is undertaken in order to revive her lover, the shepherd Tammuz, and brings her into confrontation with her sister, Ereshkigal. The Babylonian goddess of fertility, sex, and warfare, this is, FTP, what deity that sent the Bull of Heaven to attack Gilgamesh?

ANSWER: **Ishtar** (prompt on **Inanna**)

7. The submucosa of one part of this organ contains Brunner glands, which have a protective function. Its first part secretes secretin, which stimulates the release of sodium bicarbonate from the pancreas, and enterogastrone, which inhibits digestion when the entering chyme is acid-rich. That first part, the duodenum, also secretes cholecystokinin, which stimulates the release of bile from the gallbladder and digestive enzymes from the pancreas. The brush border of this organ's epithelial layer increases its surface area with microvilli and villi. FTP, name this long tube in the alimentary canal located between the stomach and the colon.

ANSWER: **small intestines**

8. In 1997, he formed the *Hot Boys* with Juvenile, Turk, and B.G., and he was featured on Juvenile's hit single, *Back that Azz Up*. He was signed by Cash Money when he was still a teenager, and became president in 2005, after the release of his first platinum album. That album has spawned two sequels with the same name, the third of which dropped in 2008. The fourth album of the same title will be released in 2009, after his rock album, *Rebirth*, is released. FTP, name this New Orleans rap artist of the singles "Stuntin Like My Daddy" and "Lollipop" who will release *Tha Carter IV* in 2009.

ANSWER: **Lil Wayne** [or **Wayne Michael Carter Jr.**]

9. Friedrich Bessel first successfully determined the stellar form for 61 Cygni in 1838. The Hipparcos satellite has used this technique on over 100,000 nearby stars, and it is featured in the definition of the parsec. Human depth perception also functions by this method, in which separate observers measure a difference in the angular position of an object. FTP, name this method for determining distances to stars by triangulation.

ANSWER: **parallax**

10. Pencil and paper ready. FTP, what is the area of a triangle whose vertices are the intersection points of the x and y axes with the parabola: y equals x squared plus seven x minus eight. The height of this triangle is its y intercept, and the base of this triangle is the distance between the two roots of the parabola.

ANSWER: **36** units squared

11. This author's final novel controversially tackled the subject of Zionism, an unusual topic in the Victorian Age, and was titled *Daniel Deronda*. Others more mainstream novels follow the Tulliver siblings who own the title building by the title river, and one about a resident of Hayslope, Hetty Sorrel, who is seduced by the title squire. In addition to those novels, *The Mill on the Floss* and *Adam Bede*, she also wrote a novel subtitled "A Study of Provincial Life", which examines the lives of the many inhabitants of a fictional Midlands town during 1830's. FTP, this is what author of *Middlemarch*.

ANSWER: **George Eliot** or Mary Anne **Evans** (prompt on "Eliot")

12. Attempts by Charles VI to continue this war were ended by the treaty of Rastatt. The coalition formed during the war of the Grand Alliance was revived during this conflict, which saw the Duke of Marlborough and Eugene of Savoy team up to defeat the French at the battles of Blenheim and Malplaquet. It began because Charles II, who was childless, chose Philip of Anjou, grandson of Louis XIV, to be his successor, who would become Philip V of Spain after this war was over. This was, FTP, what war fought over who would rule the Spanish throne, ended by the treaty of Utrecht?

ANSWER: War of **Spanish Succession**

13. He painted his mistress, Madeleine Knobloch, in "Woman Powdering Herself", just before his death by meningitis at age 31. In "Les Chahut" he displayed his theories that certain types of lines could invoke specific emotions, but he is better-known for a technique first expressed in his first major painting, "Bathers, Asnieres", and whose popular name was coined by Felix Feneon, despite the artist's own preference for the term "divisionism". FTP, who was this French painter, who in his masterpiece "A Sunday Afternoon on the Island of La Grande Jatte" utilized the technique of "pointillism"?

ANSWER: George **Seurat**

14. It began when a modernized army reorganized by Albrecht Theodor, Count Von Roon and Moltke attacked Austrian forces in Bohemia. Moltke's victory at Koniggratz brought a swift end to the war, ended by the treaty of Prague. Instigated by Bismarck, this was, FTP, what brief conflict that stemmed from the contested territories of Schleswig and Holstein, fought between Austrian and Prussia.

ANSWER: **Seven Weeks' War** [or **Austro-Prussian War** before Austria is mentioned]

15. 13.6 are required to ionize atomic hydrogen. 210 million are released in the fission on one plutonium-239 atom. Protons in CERN's Large Hadron Collider have 7 trillion just before impact. Richard Feynman called it "a funny unit", and they can be pretty annoying for physics students who don't like conversions. Because mass and energy are equivalent, the masses of particles like the muon and electron are often given in these. FTP, name this non-SI unit of energy, defined as the amount of kinetic energy gained by an electron as it is accelerated through a potential difference of one volt.

ANSWER: **Electron Volt**

16. a female companion named Sinmara, and his homeland helped in the creation of water when it mixed with the ice of Niflheim in Ginnungagap. At Ragnarök, he will defeat his opponent only because that opponent will fight using an antler, having lent his sword to Skirnir. According to the Prose Edda, not only will the rainbow bridge Bifrost break under the weight of this jotunn and the other “sons of Muspell”, but after the end of Ragnarök the entire world will be consumed in the fire of his flaming sword. FTP, name this fire giant and slayer of Freyr.

ANSWER: Surt or Surtr

17. This founding member of the Wednesday Psychology Society worked closely with Freud early in his career, but disagreements over the role of helplessness and his conversion to Protestantism led to their falling out. This pioneer of preventive psychiatry established numerous guidance clinics for children, an experience which he discusses in his book *What Life Should Mean to You*. He also developed the ideas of the inferiority complex and individual psychology while emphasizing aggression in *Understanding Human Nature*. FTP, name this Austrian psychologist who wrote *The Neurotic Constitution*.

ANSWER: Alfred Adler

18. In a 2006 issue of the *American Historical Review*, he was called "the most controversial of all 19th century Americans." Stephen Vincent Benet wrote an epic poem about him, along with the rest of the civil war. He obtained enmity from the south, as well as his common nickname, "ossawatomie," when he responded to a pro slavery raid in Lawrence with a raid of his own at Pottawatomie creek, where he killed five pro-slavery southerners. He would later be captured and hanged, in the process lending his name to a Union marching song. This is, FTP, what man who led an abolitionist raid on Harpers Ferry?

ANSWER: John Brown

19. This agreement modified an earlier papal bull due to the provision that one side was to Christianize the native peoples they encountered. In return for an extra 270 leagues of territory, the Portuguese had to promise to keep to the east. Although it isn't known if the Portuguese were aware of the largest prize they would gain from this treaty-Brazil. Alexander VI arranged, FTP, what treaty between Spain and Portugal that divided up the new world.

ANSWER: Treaty of Tordesillas

20. This author's most-read non-fiction works are a series of tracts on divorce, which supported spousal incompatibility as legitimate grounds, a highly controversial position, and a treatise on censorship, *Areopagitica*. Two of his most famous poems, *Il Penseroso* and *L'Allegro* are pastorals, and he wrote an elegy on the drowning of his friend Edward King, titled *Lycidas*, but he is best known for an epic poem wherein one character gathers his minions at Pandemonium and declares "Better to reign in hell, than serve in Heav'n". FTP, who is this English poet, who wrote of the temptation and fall of Adam and Eve in *Paradise Lost*?

ANSWER: John Milton

1. Andrew Jackson issued this executive order in July 1836 requiring the purchase of public land to be done in only gold, silver, or Virginia scrip, FTPE:

[10] Identify this attempt to try to slow down land speculation and the circulation of paper money.

ANSWER: **Specie Circular**

[10] The issue of the Specie Circular was one cause of this economic depression that saw the failure of over a third of the existing banks and record unemployment levels.

ANSWER: **Panic of 1837**

[10] Another contributor to the Panic of 1837 was Jackson's refusal to renew the charter of this institution, headed by Nicholas Biddle.

ANSWER: **Second Bank of the United States**

2. Name some revolutionary war battles from descriptions FTPE.

[10] This early battle saw the British commanded by Howe capture Charlestown Peninsula, which was defended by American forces led by Israel Putnam. Even though the British were victorious, they suffered heavy casualties.

ANSWER: Battle of **Bunker Hill**

[10] Perhaps the most significant battle of the war, the American victory under Horatio Gates over Burgoyne here convinced foreign powers that an American victory might be possible

ANSWER: Battle of **Saratoga**

[10] This battle, following several defeats in New York, saw Washington command a surprise attack against Hessian forces, it also served to restore the Continental army's flagging morale.

ANSWER: **Trenton**

3. FTPE, name some Mozart operas from description of their plot lines.

[10] The Queen of the Night sends Tamino to free her daughter, Pamina, from the evil Sarastro, but she is actually the real villain of this opera named after a musical instrument

ANSWER: The **Magic Flute**

[10] Belmonte attempts to rescue his beloved Konstanze, who has been kidnapped, from the lair of the evil Turkish Pasha Sultan Selim and his henchman Osmin.

ANSWER: **Abduction from the Seraglio**

[10] A comic opera initially banned in Vienna for its satire of the aristocracy, Susanna and the Countess help Cherubino hide from the philandering Count, while they seek for ways to expose his infidelity.

ANSWER: **The Marriage of Figaro**

4. FTPE, answer these questions regarding a certain controversy that has made the news.

[10] A "populist outrage" has developed over the payment of bonuses to executives at this company, which managed to post a \$61.7 billion 2008 4th quarter loss despite receiving \$170 billion in taxpayer bailouts.

ANSWER: **American International Group (AIG)**

[10] This Republican Senator publically asked AIG executives to "follow the Japanese example and come before the American people and take that deep bow and say, 'I'm sorry', and then either do one of two things: resign or go commit suicide."

ANSWER: Charles Ernest "Chuck" **Grassley**

[10] In response to the controversy, the House of Representatives passed a bill levying a 90% tax on the AIG bonuses.

However, such a tax might prove to be unconstitutional since the Constitution forbids this class of laws that are retroactive in nature.

ANSWER: **ex post facto** laws

5. FTPE, name these related parts of the human body.

[10] This largest organ of the body is divided into four lobes and is responsible for the detoxification of the blood.

ANSWER: **liver**

[10] This much smaller organ is responsible for storing the bile produced by the liver.

ANSWER: **gallbladder**

[10] This short duct connects the gallbladder to the common bile duct and allows for the movement of bile into the small intestines.

ANSWER: **cystic duct**

6. Pencil and paper ready. Do some calculus FTPE.

[10] Find the derivative with respect to x of the function $5y - 3x + 6 = 0$. If you haven't taken calculus, just find the slope of the line.

ANSWER: $\frac{3}{5}$ [or .6]

[10] Find the derivative with respect to x at the point $x = 3$ of the function $x^3 - 3x^2 + 3x - 1$.

ANSWER: 12

[10] Find the derivative with respect to x at the point $x = \pi$ of the function $x^2 \sin x$.

ANSWER: $-\pi^2$

7. This man followed up his famous Narrative with his work "My Bondage My Freedom."

[10] Name this abolitionist who famously escaped from slavery.

ANSWER: Frederick **Douglass**

[10] Douglass went on to establish this publication, which gave African American leaders a voice.

ANSWER: The **North Star**

[10] In addition to William Lloyd Garrison, Douglass was an associate of this abolitionist, who served as president of the American Anti-Slavery Society after the Civil War.

ANSWER: Wendell **Phillips**

8. A grounded conducting material is charged by first being brought near a charged object, and then removing the ground.

[10] Name this electrostatic redistribution of charge.

ANSWER: **induction**

[10] Induction is demonstrated in this instrument, which spreads its thin metal sheets when brought near a charged object.

ANSWER: **gold-leaf electroscope**

[10] Repeated inductions are also used to produce large charges on metal spheres in this popular demonstration apparatus. The sphere produces spectacular sparks and can even make hair stand on end!

ANSWER: **Van de Graaf Generator**

9. Answer some questions about a novelist and his works, FTPE:

[10] A young Indian leaves with his companion Govinda set out on journey to achieve nirvana, in this 1922 novel, whose protagonist, in spite of popular misconception, is not the Buddha.

ANSWER: **Siddhartha**

[10] *Siddhartha* is by this German-Swiss novelist.

ANSWER: Herman **Hesse**

[10] Harry Haller is the protagonist of this Hesse novel, which contains a book-within-a-book pamphlet on a creature whose German name is the title of the novel.

ANSWER: **Steppenwolf**

10. He wrote the phrases "hope springs eternal" and "eternal sunshine of the spotless mind" in his *Essay on Man*, FTPE:

[10] Who is this poet of *Eloise to Abelard* and *The Dunciad*?

ANSWER: Alexander **Pope**

[10] This mock epic poem by Pope describes the Baron's attempt to snip a tress of hair of fair Belinda's hair, which is guarded by an army of sylphs.

ANSWER: "**The Rape of the Lock**"

[10] The line "To err is human, to forgive divine" comes from this poem by Pope on the standards by which poetry should be judged.

ANSWER: "**An Essay on Criticism**"

11. Jamie is an alcoholic, Mary is addicted to morphine, and Eugene died of measles in infancy. FTPE:

[10] This is what 1957 Pulitzer Prize-winning play about the Tyrone family?

ANSWER: **Long Day's Journey Into Night**

[10] *Long Day's Journey Into Night* is by what playwright of *Mourning Becomes Electra*?

ANSWER: Eugene **O'Neill**

[10] In this O'Neill play, the pipe dreams of the alcoholic patrons of Harry Hope's saloon are jolted when traveling salesman Hickey returns with a sober taste of reality.

ANSWER: **The Iceman Cometh**

12. FTPE, name some things from game theory.

[10] This man's namesake equilibrium occurs when every player in a game is playing their best response to whatever the other players are playing.

ANSWER: John **Nash**

[10] This representation is often used when determining a Nash equilibrium, and is also known as the Normal-form of the game. In a two player game it will have 4 quadrants, with values for each player corresponding to the strategies they choose.

ANSWER: **Payoff** Matrix

[10] This term is often used in game theory to denote a situation where players do not have equal amounts of knowledge.

ANSWER: **Information Asymmetry**

13. Answer some questions about the "Big Three" science fiction authors, FTPE:

[10] Once the Vice President of Mensa, this Russian-American author wrote the Foundation series, the Galactic Empire series, and the Robot series.

ANSWER: Isaac **Asimov**

[10] Nominated for the Nobel Peace Prize in 1944, this British author is most famous for penning the novel *2001: A Space Odyssey*, and for co-writing the screenplay for the film version with Stanley Kubrick.

ANSWER: Arthur C(harles) **Clarke**

[10] The oldest of the so-called "Big Three" writers, his novels include *Starship Troopers* and *Stranger in a Strange Land*.

ANSWER: Robert **Heinlein**

14. The introduction to this novel begins with a satirical portrait of the Salem Custom House, where the narrator claims to have found the manuscript that furnishes the story, FTPE:

[10] What is this novel by Nathaniel Hawthorne, which, in spite of what its introduction may suggest, is set in Boston and not Salem?

ANSWER: *The* **Scarlet Letter**

[10] The titular scarlet letter is worn by this protagonist as punishment for having committed the sin of adultery.

ANSWER: **Hester** Prynne (prompt on "Prynne")

[10] Hester committed adultery with this minister, whose guilt causes his health to deteriorate over the course of the novel.

ANSWER: Arthur **Dimmesdale** (prompt on "Arthur")

15. FTPE, answer some questions about structures of vascular plants.

[10] This consists of all of the tissue outside the vascular cambium in dicots that experiences secondary growth.

ANSWER: **bark**

[10] This lateral meristem is one of the layers of bark, and is responsible for producing an external protective shell that often finds commercial uses.

ANSWER: **cork cambium** (also accept **phellogen**)

[10] The cork cambium, cork, and phelloderm constitute the periderm, which is infiltrated by these pores that allow for gas exchange.

ANSWER: **lenticels**

16. Name these battles pitting Europeans against Ottomans, FTPE:

[10] Suleiman the Magnificent defeated the forces of Louis II of Hungary at this 1526 battle.

ANSWER: **Mohacs** [MOE-HAWTCH]

[10] This battle, fought in a town on the Danube, was the result of the last great western crusade. This 1396 battle saw the Franco-Hungarian alliance defeated by the Ottomans.

ANSWER: **Nicopolis**

[10] This battle was one of the first great losses for the Ottomans, and it came at the hands of a mishmash Holy League which defeated the Turkish fleet in the Gulf of Corinth in 1571.

ANSWER: **Lepanto**

17. This principle is the foundation for the First Law of Thermodynamics. FTPE:

[10] Name this law which states that the namesake quantity cannot be created nor destroyed.

ANSWER: Law of **Conservation of Energy**

[10] This law follows the Law of Conservation of Energy for reactions made of multiple steps, saying that the sum of the enthalpies of the steps is equal to the overall enthalpy change of the reaction.

ANSWER: **Hess's** Law

[10] Hess's Law works because it defines energy as this kind of entity, which does not depend on the processes that lead to its current end point. Entropy and temperature are also classified as these.

ANSWER: **state** functions

18. It was discovered by Christian Rene de Duve, and it is surrounded in the cell by a membrane with a proton pump that maintains its acidic environment. FTPE:

[10] Identify this organelle, which is responsible for breaking down macromolecules with its array of hydrolytic enzymes, and which originates by budding from the trans-Golgi membrane.

ANSWER: **lysosome**

[10] Lysosomes are related to these structures found in plants where they are primarily used for water storage. The contractile type is found in protozoans, where it is also used to regulate water.

ANSWER: **vacuole**

[10] The hydrolytic enzymes utilized by the lysosome are tagged with this hexose carbohydrate, which marks them for transport to the lysosome.

ANSWER: **mannose-6-phosphate** [accept **M6P** or **man-6p**]

19. Name these sects of Buddhism, FTPE:

[10] This sect, which emphasizes the ability of laypeople to attain enlightenment, reveres Bodhisattvas and includes such schools as Pure Land and Zen.

ANSWER: **Mahayana**

[10] This oldest surviving Buddhist sect, widely practiced in Southeast Asia, is called the "Teaching of the Elders" and emphasizes monasticism among its practitioners.

ANSWER: **Theravada**

[10] Often seen as a branch of Mahayana and most commonly practiced in Tibet, this "Diamond Vehicle" to salvation emphasizes tantric meditation in order to achieve enlightenment.

ANSWER: **Vajrayana**

20. Natural lakes can be good, but man sometimes deems artificial ones better. FTPE name these found in Africa.

[10] This one is formed from Aswan High Dam on the Nile River. It is named after one of Egypt's most famous Presidents.

ANSWER: Lake **Nasser**

[10] The largest artificial lake in the world, it is formed from Akosombo Dam in Ghana.

ANSWER: Lake **Volta**

[10] This is formed from the namesake dam on the Zambezi River.

ANSWER: Lake **Kariba**

we are the people with buzzers who answer questions

Packet 7

1. MERRF disease causes aberrations in them, while Kearns-Sayre syndrome and Leber's hereditary optical neuropathy result from defective ones. Its DNA is theorized to come from a single entity called "Eve," a source which is aptly named as its DNA is only inherited from the mother. Tom and Tim proteins are needed to transport proteins across its two membranes, which include the protein porin in the outer one and many cytochrome oxidase complexes in its inner folded one. Chemiosmosis and the citric acid cycle occur in the cristae and matrix of, FTP, what organelle, the so-called "powerhouse" of the cell?

ANSWER: **mitochondria**

2. Although the group only did two public exhibitions, in 1911 and 1912, it profoundly influenced the future of painting. Taking its name from a 1903 painting by one of its members, a collection of this group's works is held in the former home of Franz von Lenbach. Gabriele Münter often hosted this artistic group, as they completed works including Study for Improvisation Five and Yellow Cow, the collaboration ended with the World War I deaths of August Macke and Franz Marc. Wassily Kandinsky led, FTP, this expressionistic movement whose quintessential painting may be Marc's Tower of Blue Horses.

ANSWER: Der **Blaue Reiter** or The **Blue Rider**

3. He was born in Santa Claus, Indiana, and shares his name with a winner of the 2006-2007 Mister Olympia bodybuilding title. During his senior year of college, he led his team to its first win over Tennessee in 25 years, prompting John Lynch to say "If this guy can take a bunch of future doctors and lawyers and have them competing... this guy is a stud. Drafted 11th overall in 2006 out of Vanderbilt, he was named to his first Pro Bowl in 2009. But his status on his current team has come into question recently, as new head coach Josh McDaniels tried to trade him for Matt Cassel. FTP, name this Denver Broncos quarterback.

ANSWER: Jay **Cutler**

4. In 1930, this author became the first American to win the Nobel Prize in Literature, with the Academy citing "his ability to create, with wit and humor, new types of characters". Those characters include two residents of the fictitious Midwestern state of Winnepac: one, a brilliant scientist and title character in a novel that won its author the 1926 Pulitzer Prize, Martin Arrowsmith; the other the title middle-aged partner in a real-estate firm, George Babbalanza. However his most popular works today are a satirical novel about a college athlete turned evangelist minister, and a novel centering on the free-spirited Carol Milford. FTP, who is this author of *Elmer Gantry* and *Main Street*.

ANSWER: **Sinclair Lewis** (prompt on "Lewis")

5. Although it is usually attributed to Shakespeare, the real source of this title may be Zola's *Germinal*, or Kipling's *The Gods of the Copybook Headings*. At one point in this novel, hypnopedic methods are exhibited when a voice recites a lesson on Elementary Class Consciousness to a room of sleeping children. These lessons are carried out at the Central London Hatching and Conditioning Centre, under the supervision of the Director. One worker at the Hatchery, Lenina Crowne, ends up as an object of desire for a number of the novel's characters, including a misshapen Alpha, Bernard Marx, and the savage, John. The latter two find their environment to be unsatisfactory in, FTP, what dystopian novel by Aldous Huxley?

ANSWER: **Brave New World**

6. When Kiritsubo dies, her son is taken in by his grandmother. She dies shortly after the return to court, and although of royal blood, the boy has no maternal relatives to support him as a prince. The emperor's eldest son by Lady Kokiden is made crown prince and the emperor subsequently finds a new concubine, Fujitsubo, who resembles Kiritsubo but has better family connections. By the end of the chapter, Kiritsubo's son is married off to the daughter of the Minister of the Left, Princess Aoi. FTP, name this novel, known as the first novel, written shortly after the year 1000 during the Heian era in Japan, commonly attributed to Lady Murasaki.

ANSWER **Tale of Genji**

7. Pencil and paper ready. A rhombus with side length 10 is inscribed within a circle. FTP, what is the circle's area? It may help you to know that opposite angles of a cyclic quadrilateral must be supplementary. Since adjacent angles in a rhombus must also be supplementary, this implies that all the angles of the rhombus are congruent.

ANSWER: **50 pi** units squared (The rhombus is a square)

8. Victory in this sustained battle can be largely attributed to Hugh Dowding, who refused to commit his fighters to defending the convoys in large numbers, or to involve them in mass battles at all, contrary to the wishes of Churchill. Also known as Operation Sea Lion, one reason the attack failed was because the attacking forces did not concentrate their efforts, but rather focused at once on the RAF airfields, the radar stations along the south coast, and attacking the coastal convoys in the channel. Hermann Goering led the Luftwaffe in, FTP, what 1940 engagement which saw German fighter planes fail in their efforts to gain air superiority over a namesake island?

ANSWER: Battle of **Britain**

9. Henry Ford is said to have spent an evening at the White House pleading for this bill's veto. An indirect effect of this legislation was the Bretton Woods agreement, and later, the general agreement on tariffs and trade. One of this bill's creators had earlier helped draft the Fordney-McCumber tariff, which increased tariffs less than this 1930 legislation did. FTP, name this tariff act signed by Herbert Hoover, which resulted in the highest U.S. tariff rates ever.

ANSWER: **Hawley-Smoot** tariff [or **Smoot-Hawley** tariff]

10. It is rich in oxides of magnesium and calcium, but poor in silica. Its namesake flood plains cause the dark "maria" observed on the moon, and formations have been found on Mars and Venus as well as on Earth. Its extrusive form is called gabbro, and the Punalu'u Beach in Hawaii's black sands are made from this material. FTP, name this fine-grained, black or grey volcanic rock formed by rapid surface cooling of lava.

ANSWER: **Basalt**

11. This novel begins: "On a January evening of the early seventies, Christine Nilsson was singing *Faust* at the Academy of Music in New York." At the opera, the protagonist takes an opportunity to eye his future fiancée with possessive approval, an approval that dims when he meets and begins to fall in love with her unconventional cousin, whom Mrs. Manson Mingott is trying to reintroduce into society. However, society's welcome is frosty and the protagonist blames Lawrence Lefferts, the supposed expert on etiquette, for engineering the snubbing of Countess Olenska for leaving her husband. FTP, Newland Archer is the protagonist of what novel by Edith Wharton?

ANSWER: *The **Age of Innocence***

12. After recovering from earlier defeats at Trebia and Trasimene, the Romans felt they needed to confront their enemy head-on. Although Paullus and Varro commanded a numerically superior army, they fell victim to a double-envelopment tactic used by their enemy. Its aftermath saw the defections of Capua and other city-states from the republic. This victory was ultimately in vain, though, as the commander of the winning side was never able to breach the walls of Rome and had to return home to defend his country at the battle of Zama. FTP, what was this victory by Hannibal that nearly ended the second punic war in favor of Carthage?

ANSWER: Battle of **Cannae**

13. Although he pleased the aristocracy by restoring the powers of the parlements, aristocratic opposition to the economic reforms of his advisor Callonne forced him to summon the body that would lead to his downfall. He was unable to give the necessary support to his ministers Turgot and Necker, and refused to sanction the achievements of the National Assembly. Due to popular outrage, he and his wife were forcibly moved to the Tuileries in Paris, after which they attempted to escape to a more friendly foreign power. Dominated by his queen, Marie-Antoinette, this was, FTP, which French king who instigated the French Revolution with his summoning of the Estates-General, the grandson of Louis XV.

ANSWER: **Louis XVI**

14. After her PhD in botany from Cornell, she moved to the University of Missouri before settling at Cold Spring Harbor Lab. While there, she studied mosaicism in the coloration of maize kernels and identified the genetic loci Dissociator (Ds) and Activator (Ac). However, by 1953, she stopped publishing papers regarding these "controlling elements" due to rejection of the concept by her fellow geneticists. Along with Harry Creighton, she demonstrated the physical basis for crossing over, though she is far more famous for discovering transposons. FTP, name this winner of the 1983 Nobel Prize in Physiology of Medicine.

ANSWER: Barbara **McClintock**

15. He offered four variations on a "sighing" theme in the "Variazioni" section of a work featuring movements inspired by the Alborada and Fandango dances, while King Dodon is advised about the Queen of Shemakha by the title mystical

object of one opera. Along with *Capriccio Espagnol* and *The Golden Cockerel*, he used terse violin cadenzas representing the light emanating from Christ's tomb to separate the sections of his *Russian Easter Festival Overture* and the bass motif of the sultan is contrasted with the violin motif of the title character in a work based on *The Arabian Nights*. For 10 points, name this Russian composer of *Scheherazade* and "Flight of the Bumble Bee."

ANSWER: Nikolay **Rimsky-Korsakov**

16. They are used both to change the color of topaz from white to blue and in sterilization for their ability to penetrate and alter living tissue. Produced in radioactive decay or electron-positron annihilation, they are emitted in namesake bursts when stars collapse to form black holes. FTP, name this type of high-energy electromagnetic radiation with a shorter wavelength than x-rays, named for the third letter of the Greek alphabet.

ANSWER: **gamma** rays

17. Though he wrote a trilogy of novels in French: *Molloy*, *Malone Dies*, and *The Unnameable*, this author is most well-known for his plays, written in a style that he shares with Ionesco and Genet, dubbed "Theatre of the Absurd" by Martin Esslin. Servant Clov waits on blind old man Hamm, whose parents live in rubbish bins, in *Endgame*. And another old man protagonist listens to recordings made in his youth in *Krapp's Last Tape*. His most famous play charts the conversations and interactions of two characters, Vladimir and Estragon, over the two days they spend in expectation of a certain individual. FTP, who is this Irish playwright of *Waiting for Godot*?

ANSWER: Samuel **Beckett**

18. A female one named Hylonome is mentioned as committing suicide after learning of the death of her husband in battle, and a wrathful one name Pholus is mentioned as guarding the river of blood in Canto 7 of Dante's *Inferno*, and they were born of two clouds made in the image of Hera named Ixion and Nephele. Their attempt to abduct Hippodamia resulted in their epic battle with the Lapiths, another Thessalian race. A poisonous cloak given by one of these named Nessus resulted in the death of Heracles, but perhaps the most famous one was the only gentle member of this race, the tutor of Asclepius, Jason, Theseus, and Achilles, who was named Chiron. FTP, name these creatures who include Ronan, Magorian, Bane, and Firenze in the Harry Potter universe, and are part man, part horse.

ANSWER: **centaurs**

19. Thousands of packages were presumably lost when one of these recently occurred at Narita. Minutes later, a similar incident ended at a graveyard in Butte, Montana, costing the lives of as many 17 people. On February 25th in Amsterdam, the event ended in a field with the death of 9 people. Earlier in the month, it occurred in Buffalo, NY when icing was a significant issue. Chesley Sullenberger narrowly avoided one back in January when he decided to glide into the Hudson River. FTP, name these types of incidents which involve the loss of machines like the MD-11F, PC-12, 737, and A320.

ANSWER: **airplane crashes** (also accept reasonable equivalents)

20. This man somehow lends his name to a St. Louis group that followed his teachings. His *Science of Logic* argued that the structure of thought and reality are identical, an argument he presented a condensed version of in the logic section of his *Encyclopedia of the Philosophical Sciences*. Schelling built on his evolutionary conception of the universe, while Feuerbach was a member of the so called "left" group that considered themselves disciples of this man. His work *Elements of the Philosophy of Right* argued that the march of history leads to the ever-increasing actualization of freedom. Perhaps his most important work, though, *The Phenomenology of Spirit*, laid out his conception of the thesis and antithesis being replaced in a synthesis of the two. FTP, name this influential German idealist.

ANSWER: Georg Wilhelm Friedrich **Hegel**

1. FTPE, name these phase changes involving gases.

[10] Solid to gas.

ANSWER: **sublimation**

[10] Plasma to gas.

ANSWER: **deionization**

[10] Gas to liquid.

ANSWER: **condensation**

2. The Unification of Italy is perhaps second only to Bismarck's schemes to unite Germany in the way to use Realpolitik to one's advantage.

[10] This writer argued in his "Duties of Man" that Italy could be unified only through force, and his Young Italy movement was instrumental in rallying popular support for the unification of Italy.

ANSWER: Giuseppe **Mazzini**

[10] This man was the real architect of Italian Unification, which he orchestrated while prime-minister of Piedmont

ANSWER: Count Camillo **Cavour**

[10] This man, the king of Piedmont-Sardinia, didn't really do much to help with the unification but was crowned king of a united Italy in 1861.

ANSWER: **Victor Emmanuel II**

3. There were some important injuries that have affected the Men's NCAA Basketball tournament. Answer some questions about their teams FTPE.

[10] Guard Chester Frazier sat out with a broken hand as this Bruce Weber-coached team fell to Orlando Mendez-Valdez and the Western Kentucky Hilltoppers in the first round.

ANSWER: **Illinois** Fighting Illini

[10] Point guard and ACC Player of the Year Ty Lawson sat out this team's first round blowout of Radford, but played through the pain in a difficult second-round game against LSU.

ANSWER: **North Carolina** Tar Heels

[10] Following Lawson, point guard Dominic James thought about making a comeback from a foot injury for this team against Missouri in the second round.

ANSWER: **Marquette** Golden Eagles

4. Mexican-American war has been called one of the basest acts of Imperialism in history, FTPE:

[10] This treaty ended the war.

ANSWER: Treaty of **Guadalupe Hidalgo**

[10] This hero of the Mexican-American war would later become 12th president of the United States, but he died soon after taking office.

ANSWER: Zachary **Taylor**

[10] This commander of the army during the war was unsuccessful in his 1852 attempt at the presidency. Later on, he came up with his failed Anaconda plan to defeat the Confederacy during the Civil War.

ANSWER: Winfield **Scott**

5. Name these famous psychology experiments FTPE:

[10] In this experiment, the use of confederates demonstrated a drive towards a namesake concept, especially with large groups.

ANSWER: **Asch's conformity** experiment

[10] Subjects chose to apply what they thought were painful, potentially deadly electric shocks when told to do so by an authority figure even if it conflicted with their personal consciences.

ANSWER: **Milgram obedience** experiment

[10] This experiment in the basement of a psychology building ended after 6 days since participants went far beyond what was expected of them in their assumed roles.

ANSWER: **Stanford Prison** Experiment (accept Zimbardo's experiment before mention)

6. Based on a play by David Belasco, it details the adventures of Minnie, the owner of a polka saloon in California. FTPE:

[10] Name this 1910 opera by Giacomo Puccini.

ANSWER: The **Girl of the Golden West** [or La **Fanciulla del West**]

[10] Minnie, the title Girl of the Golden West, is involved in a love triangle with Sheriff Jack Rance and this man, who is actually the bandit Ramerrez.

ANSWER: Dick **Johnson**

[10] Another Belasco play formed the basis for this other Puccini opera about Benjamin Franklin Pinkerton, an American naval officer who marries, impregnates, and then abandons Cio-Cio [Cho-Cho] San.

ANSWER: **Madame Butterfly**

7. Both of the men are fully clothed and sit in the foreground, but the two women, one sitting in the foreground with the men, the other in the background, bathing, are in the nude. FTPE:

[10] What is this 1863 painting?

ANSWER: Le *déjeuner sur l'herbe* or The **Luncheon on the Grass**

[10] The Luncheon on the Grass is by this French impressionist of "The Bar at the Folies-Bergeres".

ANSWER: Édouard **Manet**

[10] Manet shocked the Parisian art scene with this painting of a nude courtesan attended by her black servant.

ANSWER: **Olympia**

8. FTPE, name these current members of President Obama's Cabinet.

[10] This man worked at Covington & Burling before serving on Obama's vice presidential selection committee. He is now the nation's Attorney General.

ANSWER: Eric Himpton **Holder**, Jr.

[10] This Nobel Laureate and former director of the Lawrence Berkeley National Laboratory is now the Secretary of Energy.

ANSWER: Steven **Chu**

[10] Before serving as the Secretary of Education, this man was the CEO of Chicago Public Schools.

ANSWER: Arne **Duncan**

9. FTPE, name these common plant hormones.

[10] This compound is associated with the tripple response and the process of fruit ripening. Unlike other hormones, it is a gas.

ANSWER: **ethylene**

[10] This plant hormone binds to G protein-coupled receptors of guard cells, which results in the closing of stomata. It also promotes bud dormancy.

ANSWER: **abscisic acid** (also accept **ABA**, **abscisin II**, or **dormin**)

[10] Indole acetic acid is one of the most common compounds in this class of plant hormones, which promotes apical dominance and cell elongation through an increase in water intake as well as in cell elasticity.

ANSWER: **auxins**

10. Although this document gave the government the authority to declare war and borrow money, more importantly, it did not endow it with the ability to collect taxes.

[10] For these reasons, name, FTP, this document that was decided to be replaced in 1787.

ANSWER: **Articles of Confederation**

[10] The articles had few successes, one of which was this act, which, preceding the Northwest Ordinance, established guidelines for organizing the northwest territory into townships.

ANSWER: **Land Ordinance of 1785**

[10] This state was the last to ratify the Articles, waiting three years before New York and Virginia agreed to cede their claims in the Ohio River valley.

ANSWER: **Maryland**

11. Imperialism sort of stinks. FTPE:

[10] Imperialism in Africa soon got out of control as powers raced to claim land. Bismarck, organized this conference to sort it all out.

ANSWER: **Berlin** Conference

[10] One of the sadder examples of European imperialism was the Belgian Congo, turned into a rubber exporting factory under this king of Belgium who used it as his personal playground

ANSWER: **Leopold II**

[10] Across the Atlantic, one of the primary exponents of U.S. imperialism was this man, who advocated a large navy in his work "The Influence of Sea power Upon History"

ANSWER: Alfred T. **Mahan**

12. Tituba is the first to confess, followed by Abigail Williams, who uses the opportunity to accuse John Proctor's wife, FTPE:

[10] What is this play about the Salem Witch Trials?

ANSWER: *The **Crucible***

[10] *The Crucible* is by this playwright of *Death of a Salesman*.

ANSWER: Arthur **Miller**

[10] Joe, who was suspected of selling faulty airplane parts but exonerated, and Kate, who refuses to believe that her son died in World War II, are the heads of the Keller family in this Miller play.

ANSWER: **All My Sons**

13. Galaxies are classified according to size, shape, and composition. FTPE, name the galaxy classifications.

[10] The Milky Way and Andromeda galaxies are both of this type, named for their distinctive shape.

ANSWER: **Spiral** galaxies

[10] These galaxies dominate the universe and contain many older stars than spiral galaxies. They are generally smooth and nearly featureless.

ANSWER: **elliptical** galaxies

[10] The Magellanic Clouds are an example of these orbiting dwarf galaxies. Astronomers observe far fewer of these than predicted by current galaxy formation theory, leading many to predict that most are made of dark matter.

ANSWER: **Satellite** galaxies

14. Answer the following about a work FTPE:

[10] This novel details the homecoming of brothers Mitsu and Takashi Nedokoro to their native village Okubo to learn about their family's involvement in a 19th century peasant riot.

ANSWER: The **Silent Cry** or **Man'en gan'nen no futtoboru**

[10] This is the author of *The Silent Cry* as well as a work in which a teacher nicknamed Bird struggles to balance duty and desire, *A Personal Matter*.

ANSWER: Kenzaburo **Oe**

[10] This descendent of Korean immigrants owns the supermarket in Okubo that drove out local businesses; Takashi encourages the townspeople to turn a giveaway promotion into an opportunity to loot this man's store.

ANSWER: The **Emperor** or **Paek Sun-gi** (accept either part of the second answer)

15. Answer some questions about unsolved problems in mathematics FTPE.

[10] This unresolved question asks whether problems that have answers that can be efficiently determined to be correct have solutions which can be efficiently computed. It is widely believed to be false.

ANSWER: **P = NP** problem [or equivalents]

[10] This unresolved problem claims that there are infinitely many pairs of prime numbers whose difference is two.

ANSWER: **Twin prime** conjecture

[10] The first trillion solutions to this problem's eponymous zeta function have been computed, and all lie along the line with real part equal to one half.

ANSWER: **Riemann** hypothesis

16. FTPE, name these types of processes involving closed gas systems.

[10] This term describes a process in which the temperature of a gas is kept constant. When a gas expands in this manner, its pressure must decrease.

ANSWER: **Isothermal**

[10] Horizontal lines on a PV diagram represent expansions or compressions of this type. They occur under constant pressure.

ANSWER: **Isobaric**

[10] In this type of gas expansion, no net work is done on or by the system. Depending on whether the process is reversible, it can also be termed either isentropic or isenthalpic.

ANSWER: **Adiabatic**

17. Lawyer Gabriel Utterson becomes concerned in the case when he finds that his friend signed a check to pay for a crime seemingly committed by another man. FTPE:
 [10] What is this novella about a London physician who takes a transformative potion to help him release his inner demons?
 ANSWER: *Strange Case of Dr. Jekyll and Mr. Hyde*
- [10] Jim Hawkins gains possession of a map showing the way to Captain Flint's hidden gold in this adventure novel, featuring the character of Long John Silver.
 ANSWER: *Treasure Island*
- [10] *The Strange Case of Dr. Jekyll and Mr. Hyde* and *Treasure Island* are by this Scottish author.
 ANSWER: Robert Louis Stevenson
18. Characters in this work include the hedonistic Lord Henry Wotton and the beautiful actress Sibyl Vane, FTPE:
 [10] Basil Hallward is creator of the title work of art in what 1890 novel.
 ANSWER: *The Picture of Dorian Gray*
- [10] *The Picture of Dorian Gray* is by this Irish author and playwright.
 ANSWER: Oscar Wilde
- [10] The quote "each man kills the things he loves" comes from this poem Oscar Wilde wrote based on a hanging he witnessed while in the title prison.
 ANSWER: "The Ballad of Reading Gaol"
19. Robert Cohn is an ex-boxer, Pedro Romero is a bullfighter, and they both love Lady Brett Ashley. FTPE:
 [10] Eunuch and protagonist Jake Barnes and his friends travel their way around Europe, leaving behind broken hearts and empty bottles in what novel?
 ANSWER: *The Sun Also Rises*
- [10] *The Sun Also Rises* is by this American author of *The Snows of Kilimanjaro*.
 ANSWER: Ernest Hemingway
- [10] Robert Jordan is an American in Spain during the Spanish Civil War in this Hemingway novel that takes its title from a poem by John Donne.
 ANSWER: *For Whom the Bell Tolls*
20. Identify some concepts from psychology FTPE.
 [10] Robert Sternberg has a tripartite model of this concept. The component parts in his model are intimacy, commitment, and passion.
 ANSWER: Love
- [10] This concept describes the short-term improvements in performance created when workers are observed or otherwise treated as an exception.
 ANSWER: Hawthorne effect
- [10] The murder of Kitty Genovese, and the failure of her neighbors to report or respond to it, gave rise to research on this effect, according to which the likelihood that someone will help is inversely proportional to the number of people present.
 ANSWER: Bystander effect

Packet 8

1. They can form spherical embryoid bodies *in vitro* and multi-tissue-containing teratomas *in vivo*. Their unique abilities can be partially attributed to the transcription factors like Nanog and Oct-4. The hematopoietic and mesenchymal ones found in bone marrow allow for the production of a broad variety of blood and connective tissue cells, respectively, thus demonstrating the differentiating ability of these. Some cancer tumors are believed to contain mutated varieties of these that contribute to the disease's metastatic abilities. FTP, name this class of self-renewing cells that come in fetal, adult, and embryonic varieties with varying degrees of potency.

ANSWER: **stem** cells

2. This instrument has possibly the largest family presently in active use, though the Contra-alto and Contra-bass varieties are largely confined to the concert band. Tchaikovsky's 6th Symphony contains a bassoon passage in the first movement that is often transferred to the bass variety of this instrument. This instrument has a usual range of 2 and a half octaves, with a lowest note of E. FTP, name this instrument, usually tuned to B flat, of which Benny Goodman is probably the most famous player.

ANSWER: **clarinet**

3. In January 2003, this painting was defaced when a former guard at the Metropolitan Museum glued a picture of the 9/11 attacks onto it; luckily there was no permanent damage. Though it is now a classic piece of Americana, this 1851 work was painted by a German. The occupants of the boat in the foreground represent a cross-section of the American demographic at the time, including a character wearing Scottish garb, an African American, a Native American, and even future president James Monroe. FTP, what is this painting by Emanuel Leutze of a Christmas night mission before the Battle of Trenton?

ANSWER: **Washington Crossing the Delaware**

4. The romantic notions of this character are shown when she treasures as a keepsake a cigar box dropped by a viscount at a ball she attended, and her distaste for husband is made clear when she throws her bridal wreath into the fireplace. Her unsuitability as a mother is shown when in a fit of bad temper she shoves her infant daughter Berthe away from her, and child cuts herself from the fall. Shortly after this incident, she begins her first of two major affairs with a wealthy landowner, who abandons her after she insists that she wants to leave Charles to run away with him. Rodolphe and Léon are the lovers of, FTP, what title character of a novel by Gustave Flaubert?

ANSWER: **Emma Bovary** or **Madame Bovary** (prompt on "Bovary")

5. With regards to this agreement, Thomas Jefferson wrote that he "considered it at once the Knell of the Union. The logistics of this agreement were complicated by the entrance of Alabama as a slave state the previous December, making the number of slave and free states equal. The Tallmadge amendment to this would have required that children born of slave parents would be freed when they became twenty five in the namesake state. A possible crises was averted by Henry Clay when Maine applied for statehood as a free state. FTP, name this 1820 compromise which prohibited slavery north of the 3630' line in the former Louisiana territory.

ANSWER: **Missouri Compromise**

6. Two weeks after this author's death in 2005, the Virginia Theatre on Broadway was renamed after him. This author is most famous for the "Century Cycle" of ten plays set mostly in the Hill District of Pittsburgh, with each play representing a different decade: *Seven Guitars* representing the 1940's, and *Radio Golf* representing the 1990's. The only play not set in Pittsburg is one focusing on a blues singer and her jazz band in 1920's Chicago, *Ma Rainey's Black Bottom*. However, the two that received the Pulitzer Prize were one about two siblings' dispute over selling an heirloom instrument, and one about retired baseball player Troy Maxson. FTP, who is this playwright of *The Piano Lesson* and *Fences*.

ANSWER: August **Wilson**

7. It may have first been prepared for a French chef of the Grand Hotel named Balzac in 1866 by a Chinese delegation. Other attribute its development to British-American physicist Benjamin Thompson, whose discovery of why meringue did not melt when heated opened the way for baked desserts with cold centers. Its first known preparation in America was in 1876 at Delmonico's Restaurant in New York City, which named it after a new American territory. Prepared by surrounding ice cream with sponge cake and meringue, FTP, name this dessert, also called a Norwegian omelette.

ANSWER: **Baked Alaska**

8. They are refracted slightly as they pass the boundary between the mantle and the liquid outer core. These longitudinal waves can travel through gases, liquids, and solids. They can provide an early warning for deep, distant earthquakes, arriving up to a minute before other destructive waves. FTP, name these seismic waves that travel faster than S-waves.

ANSWER: **P-waves** (**primary** waves)

9. Under the leadership of David Lilienthal, it became a model for efforts to modernize third world societies. One branch of this authority produces tritium for use in nuclear weapons, while another saw completion of Tellico Dam in the 1970s. It provided much of the electricity needed for Uranium enrichment for the Manhattan Project, at one of its chief facilities at Oak Ridge. Now, though, it is responsible for nearly 30 hydroelectric dams, 11 fossil-powered plants, and three nuclear point. This is, FTP, what organization created in the New Deal that provides electricity and other amenities to regions of Kentucky, Alabama, Mississippi, and Tennessee?

ANSWER: **Tennessee Valley Authority**

10. Lee Breuer's 2004 experimental production of this play featured the female characters all played by tall statuesque actresses, and the male characters all played by midgets, as well as scenery depicting the title object populated by puppets. The play had to be premiered in Germany instead of the playwright's home country, because the female protagonist's actions in the play ran so counter to the Victorian morality of the day, but they since have been taken as a rallying cry for women's rights. Nils Krogstad threatens blackmail, and Nora rises up against her husband Torvald, in, FTP, what play by Henrik Ibsen?

ANSWER: A **Doll's House**

11. Overdosing on this vitamin can result in polyuria, polydipsia, and kidney failure, a problem which sufferers of Williams' syndrome must look out for due to their increased sensitivity to it. This fat soluble vitamin can be synthesized from 7-dehydrocholesterol, and it is important for the regulation of phosphorus plasma levels as well as the function of parathyroid hormone. Its effects on hydroxyapatite in bone explain why deficiency of it results in diseases such as osteomalacia and Rickets. FTP, name this blood calcium level-regulating vitamin that is produced in the skin from sunlight exposure and commonly used to fortify milk.

ANSWER: **vitamin D**

12. Although he at first had successes in taking the cities of Kazan and Astrakhan, the Livonian war was less successful for him. He became prince at the age of three, born into an environment that shaped his character for the worse, under the influence of the boyars. One of his predecessor's had been the first to overthrow the golden horde's grip, and this man made continued progress. Although he had formed a new state, he was given to periodic mental outbursts, like when he murdered his son and heir Ivan. This was, FTP, what first man to be proclaimed czar of all Russia?

ANSWER: **Ivan the Terrible** or **Ivan IV**

13. Written in a style that echoes that of the King James Bible due to the author's devotion to Christianity, this novel is a social protest against the structures of the society that would later give rise to apartheid. He depicts the Whites as affected by 'native crime', while the Blacks suffer from social instability and moral issues due to the breakdown of the tribal system. "As was the custom" or "it was not the custom" are phrases which are repeated throughout this novel when regarding relations between Whites and Blacks. FTP, name this novel by Alan Paton, published in 1948, in opposition of the soon to be established apartheid legislation in his native South Africa.

ANSWER: **Cry the Beloved Country**

14. In its final period it defined the mass as a true sacrifice, while in its second period it issued decrees on episcopal jurisdiction and clerical discipline. Pope Paul III also issued an Index of prohibited books during it. It set the number of sacraments at seven, while repudiating Martin Luther's doctrine of justification by faith. Convened in response to the reformation, this was, FTP, what 1545-63 church council which made sweeping reforms and revitalized the Catholic Church in response to the reformation?

ANSWER: **Council of Trent**

15. Formulator of the Carlsbad decrees, which advocated censorship and the stifling of German nationalism, this man secured the marriage of Napoleon to Francis I of Austria's daughter, Marie Louise. He organized the congress of Verona in 1822, the last meeting of the quadruple alliance. After Louis Kussuth's rise to power in Hungary, he was ousted in the

revolutions of 1848. He is probably best known for organizing another congress, one attended by Castlereagh, Talleyrand, and Alexander I. Presiding over his namesake age, this was, FTP, what Austrian foreign minister responsible for the Congress of Vienna?

ANSWER: Clemens von **Metternich**

16. This man is said to have accurately predicted an eclipse of the sun, after which he was acknowledged as one of the seven wise men of Greece. One of his students, Anaximander, believed that all matter was a form of apeiron, or “the boundless,” he apparently didn’t differ too much from his teacher, who also believed all matter was composed of one element. Bertrand Russell, in his *History of Western Philosophy*, acknowledged that all of philosophy can be said to have begun with him. FTP, name this Milesian philosopher who thought the world was made of water.

ANSWER: **Thales**

17. Pencil and paper ready. FTP, How many 6-letter words made of three X’s and three Y’s are there such that the word always has at least as many X’s as Y’s. Those of you familiar with combinatorics should know that this is another way of computing the third Catalan number. Another way to do this problem is to compute the total number of six-letter words that you can make with three X’s and three Y’s. The word cannot start with a Y or end with an X, so divide that answer by four.

ANSWER: **5**

18. One was a component of a seismometer used by Han dynasty scientist Zhang Heng. Robert Hooke suggested one could be used to measure the force of gravity. Pierre Bouguer used one to produce measurements used to estimate the density of the Earth. Foucault used one to demonstrate Earth’s rotation. Galileo found their periods were independent of both swing amplitude and mass. FTP, name this device, commonly found in metronomes and grandfather clocks, consisting of a freely swinging weight on a rod.

ANSWER: **pendulum**

19. This author’s enormous popularity in his lifetime led to him being dubbed one of the five Fireside Poets, since families would gather round the hearth to read his poems. Lectures on Goethe inspired his *A Psalm of Life*, which was collected in *Voices in the Night* with a poem where the title character stands “Under a spreading chestnut-tree”, *The Village Blacksmith*. His most well-known poem contains the lines “By the shores Gitche Gumme / By the shining Big-Sea-Water / Stood the wigwam of Nokomis” and tells of the title character’s love for Minnehaha. FTP, who is this poet of *Paul Revere’s Ride* and *The Song of Hiawatha*?

ANSWER: Henry Wadsworth **Longfellow**

20. It posits that God is the universe itself, and those vulnerable to the Five Evils- ego, anger, greed, attachment, and lust- suffer separation from God. Followers of this religion derive their name from the sanskrit word meaning "disciple". 75% of followers live in the Indian state of Punjab, and its tenth guru, Gobind Singh, ordered that baptised followers must always wear, a small comb, a special undergarment, a circular iron bracelet, uncut hair, and a ceremonial short sword. FTP, name this fifth largest organized religion.

ANSWER: **Sikhism**

1. FTPE, give the Valence Shell Electron Pair Repulsion (VSEPR) shape of these molecules.

[10] Sulfur dioxide.

ANSWER: **bent**

[10] Sulfur tetrafluoride.

ANSWER: **seesaw**

[10] Sulfur hexafluoride.

ANSWER: **octahedral**

2. Answer some questions about the rise of capitalism, FTPE:

[10] This man's Iron law of wages followed the pessimistic vein of Thomas Malthus by predicting that the competition for jobs will result in inevitable starvation for some.

ANSWER: David **Ricardo**

[10] This most important work of Ricardo's laid out his economic concepts.

ANSWER: **Principles of Political Economy and Taxation**

[10] Ricardo is well known for his elucidation of this concept, which usually takes the form of an amount fixed by a contract and usually paid by a tenant.

ANSWER: economic **rent**

3. Ever wanted to bro out and chill with the bros? Answer some questions about mediocre American comedies FTPE.

[10] This film, starring Jason Segel and Paul Rudd, revolves around Rudd's desire to find a best man for his wedding and sell a house that belonged to Lou Ferigno. In the trailer, Ferigno puts Segel in a headlock.

ANSWER: **I Love You, Man**

[10] Whereas *I Love You, Man* is decent, this movie, starring Napoleon Dynamite from *Napoleon Dynamite*, Jackie Moon from *Semi-Pro*, and Pam from *The Office*, is terrible.

ANSWER: **Blades of Glory**

[10] One of the first and greatest bromances is the 2003 film in which Frank Ricard says: "You're crazy man. I like you, but you're crazy."

ANSWER: **Old School**

4. It was first mentioned by Alexander Hamilton in one of the Federalist papers, but it was not until the next century that this program became a popular topic. FTPE:

[10] What was this program championed by Henry Clay that sought to develop the infrastructure and economy of the U.S.?

ANSWER: **American System**

[10] Henry Clay was apparently involved in many other plans and schemes during his time, for which he is sometimes known by this moniker, indicative for his seemingly limitless capability to bring people together.

ANSWER: **Great Compromiser**

[10] One of Clay's best known compromises the Missouri compromise, was preceded by this amendment, which sought to see all children born of slave parents in Missouri freed upon reaching the age of 25

ANSWER: **Tallmadge** Amendment

5. Most of this work consists of ten "considerations."

[10] FTP, name this work whose final section end with the appeal "therefore let everyone that is out of Christ, now awake and fly from the wrath to come.," and throughout this work hellish imagery is in great abundance

ANSWER: **Sinners in the Hands of an Angry God**

[10] Sinners in the Hands of an Angry God, the most famous work of Johnathan Edwards, was important in the development of this movement, which sought to revitalize colonial spiritual life.

ANSWER: First **Great Awakening**

[10] Along with Edwards, this itinerant preacher was famous for his enthusiasm and rhetorical ability, which served to spark the Great Awakening

ANSWER: George **Whitefield**

6. Classical music has frequently found its way into Hollywood. FTPE, answer these questions about these famous usages of classical music.

[10] Stanley Kubrick's 1968 film 2001: A Space Odyssey now cannot be disassociated with the opening of this Richard Strauss tone poem, named after a work of a German philosopher. A low organ rumble gives way to a C-G-C theme in the

trumpets signifying the rising sun.

ANSWER: **Also Sprach Zarathusa**

[10] Roman Polanski's 2002 film *The Pianist* is set in World War 2 Poland, and tells the story of a pianist who survives the Holocaust. Much of the haunting music in the movie comes from this Polish composer, including his *Ballade No. 1 in G Minor*.

ANSWER: **Frederic Chopin**

[10] *Fantasia 2000* is a particular hotbed of classical music, including this piano concerto by George Gershwin. It begins with a very distinctive clarinet glissando.

ANSWER: **Rhapsody in Blue**

7. Answer some questions about royal portraits, FTPE:

[10] This German artist painted famous portraits of Henry VIII and Anne Boleyn, as well as important religious figures such as Martin Luther, Thomas More, and Erasmus.

ANSWER: **Hans Holbein the Younger**

[10] He painted many portraits of the Infanta Margarita, including one where she is surrounded by her handmaids, *Las Meninas*.

ANSWER: Diego **Velasquez**

[10] Flemish Baroque painter Anthony Dyck's did several portraits of this King of England, including a particularly famous one from 1635, 14 years before that monarch's demise.

ANSWER: **Charles I**

8. FTPE, name these concepts from ethology, the study of animal behavior:

[10] This class of behavior apparently diminishes the fitness of the donor for the benefit of the recipient.

ANSWER: **altruism**

[10] Apparently altruistic acts are often just a form of this evolutionary mechanism, whereby an organism increases the fitness of its relatives.

ANSWER: **kin selection**

[10] This equation helps calculate the inclusive fitness of a specific action. r stands for the coefficient of relatedness, B the reproductive benefits reaped by the altruist, and C the reproductive cost of an act. An act is fit if $r*B$ is greater than C .

ANSWER: **Hamilton's Rule**

9. FTPE, name these corporations intimately involved with the current economic crisis.

[10] Besides its recent acquisitions, this Charlotte, North Carolina-based entity is also known for acquiring Fleet Boston Financial, US Trust, and La Salle Bank Corporation. It is headed by CEO Kenneth Lewis and is the largest financial services company in the world.

ANSWER: **Bank of America**

[10] The current US housing bubble crisis can be largely attributed to this now Bank of America-owned company, which was responsible for many of the subprime loans that precipitated this disaster. Many of its former executives now head up PennyMac, a startup formed to profit off of the current crisis by buying up delinquent home loans.

ANSWER: **Countrywide** Financial

[10] After Lehman Brothers failed, CEO John Thain guided the purchase of this company by Bank of America. Employees have recently come under fire for taking billions in bonuses in December 2008.

ANSWER: **Merrill Lynch**

10. FTPE, name these model organisms studied by biologists.

[10] This nematode was first studied by Sydney Brenner. It features a basic nervous system and easy breeding.

ANSWER: **Caenorhabditis elegans**

[10] This organism was used by Thomas Hunt Morgan to study heredity at Columbia University, and continues today to be a part of many high school biology labs on genetics.

ANSWER: **Drosophila melanogaster** (also accept fruit flies)

[10] The budding and fission types of this organism are used for simpler, less demanding experiments in genetics.

ANSWER: **yeast**

11. Name these warrior women from classical myth, FTPE:

[10] One of the Argonauts, she drew first blood in the hunt for the Calydonian Boar and married Hippomenes when he beat her in a foot race with the help of Aphrodite's magical apples

ANSWER: **Atalanta**

[10] A queen of the Amazons and sister of Hippolyta, she was killed during the Trojan War by Achilles, who reputedly afterward fell in love with her corpse

ANSWER: **Penthesilea**

[10] According to the Aeneid, this queen of the Volsci helped Turnus and the Rutuli in their fight against Aeneas, but was killed by Arruns.

ANSWER: **Camilla**

12. FTPE, answer some questions about volcanoes.

[10] This most common type of volcano is tall, conical, and formed of many layers of hardened lava and ash. Examples include Vesuvius and Mt. St. Helens.

ANSWER: **composite** or **stratovolcano**

[10] These volcanoes are very large and broad because they form from low-viscosity lava. Examples include Mauna Kea in Hawaii and Olympus Mons on Mars.

ANSWER: **shield** volcano

[10] Ngorogoro Crater and Yellowstone lie in this cauldron-like volcanic feature formed when the top of a volcano collapses or gets blown off.

ANSWER: **caldera**

13. This work includes an alphabetized list of martyrs along with the ways they died, and in one episode the main character bizarrely curses a fig tree for failing to bear fruit out of season. FTPE:

[10] Identify this revisionist history similar to one of the plotlines of *The Master and Margarita*.

ANSWER: The **Gospel According to Jesus Christ** [or O **Evangelho Segundo Jesus Cristo**]

[10] This author of such works as *The Cave* and *Blindness* wrote *The Gospel According to Jesus Christ*.

ANSWER: Jose de Sousa **Saramago**

[10] Saramago is a Nobel Prize-winning writer from this country whose national epic is *The Lusiads*.

ANSWER: **Portugal**

14. Name these mythical figures who took the form of monkeys, FTPE:

[10] This Monkey King and self-styled "Great Sage Equal to Heaven" who accompanied the monk Xuanzang to India is the main character of the Journey to the West.

ANSWER: **Sun Wukong**

[10] This devotee of Rama and Sita led a monkey army against the demon king Ravana's kingdom of Lanka, according to the Ramayana.

ANSWER: **Hanuman**

[10] This Egyptian god of wisdom, though usually depicted with the head of an ibis, also took the form of a baboon.

ANSWER: **Thoth**

15. A member of the Alabama State Legislature before the action of the novel, this character lives in Maycomb with his two children and maid, Calpurnia. FTPE:

[10] Who is this lawyer who defends Tom Robinson, father of Scout and Jem?

ANSWER: **Atticus** Finch

[10] Atticus and Scout Finch are the main characters of this novel by Harper Lee.

ANSWER: **To Kill a Mockingbird**

[10] The character of Dill, a friend of Scout's in the novel, is based on this author of *Breakfast at Tiffany's* and *In Cold Blood*, who was an actual childhood friend of Harper Lee's in real life.

ANSWER: Truman **Capote**

16. Name these mathematicians FTPE.

[10] Perhaps more famous as a philosopher, this Frenchman has a famous "Law of Signs," and the xy-plane is sometimes named after him.

ANSWER: René **Descartes**

[10] This seventeenth-century mathematician has primes named for him that are equal to two to the two to the n plus one, as well as famous "Little" and "Last" theorems.

ANSWER: Pierre de **Fermat**

[10] This Norwegian mathematician was a founder of modern algebra, and commutative groups are given his name. He proved the insolubility of the quintic.

ANSWER: Niels **Abel**

17. Answer some questions about French novelists, FTPE:

[10] *The Life of Gargantua and Pantagruel* is a series of five satirical novels by this 16th century French master.

ANSWER: François **Rabelais**

[10] This 19th century author wrote novels such as *Indiana* and the autobiographical *Elle et Lui*, while carrying on affairs with the likes of Alfred de Musset and Frédéric Chopin.

ANSWER: George **Sand**

[10] The nearly one hundred novels, stories, and essays that make up his *La Comédie Humaine* were written over a period of over fifty years and include *La Cousine Bette* and *Le Père Goriot*.

ANSWER: Honoré de **Balzac**

18. Answer these related physics questions FTPE.

[10] This famous 1905 theory deals with physical measurements in inertial reference frames, but does not incorporate the effects of gravity.

ANSWER: **Special relativity**

[10] The twin paradox arises from this effect, a consequence of special relativity.

ANSWER: **Time dilation**

[10] Observers in different inertial reference frames will also observe different physical dimensions for the same object. In this effect, named for a Dutch physicist, an object becomes shorter when traveling near the speed of light.

ANSWER: **Lorentz Contraction**

19. Answer some related questions about literature FTPE:

[10] What is this novel by Willa Cather about Jim Burden's feelings for the title member of the Shimerda family.

ANSWER: **My Antonia**

[10] Both of the title characters commit suicide in his Shakespeare tragedy: one with a sword and one with an asp.

ANSWER: **Antony and Cleopatra**

[10] Anthony Burgess is the author of this novel about the mental reprogramming of violent criminal Alex, set in dystopian England.

ANSWER: **A Clockwork Orange**

20. He wrote about the conflict between the traditionalist and nihilistic generations of the Bazarov and Kirsanov families in *Fathers and Sons*, FTPE:

[10] Who is this Russian author of *A Sportsman's Sketches*?

ANSWER: Ivan **Turgenev**

[10] Ivan Turgenev and philosophers Alexander Herzen and Mikhail Bakunin are characters in *The Coast of Utopia*, a trilogy by this playwright of *Jumpers* and *Arcadia*.

ANSWER: Tom **Stoppard**

[10] In this, his most famous play, Stoppard retells the event Hamlet from the perspective of two characters who played very minor roles in the original Shakespeare.

ANSWER: **Rosencrantz and Guildenstern Are Dead**

Packet 9

1. Before the 1783 publication of his first collection of poems, *Poetical Sketches*, this author had studied to be an engraver and painter, and he would continue to illustrate nearly all of his own publication using a method called relief etching, which he himself created. His simultaneous reverence for the Bible and distaste for the conventional religious attitudes of the Church can be found in his *The Marriage of Heaven and Hell*. But it is the collection, *Songs of Innocence and Experience*, that contains his most famous poem, which describes the title creature as “burning bright / in the forest of the night”. FTP, who is this English poet and painter, whose poems include “*The Lamb*” and “*The Tiger*”?

ANSWER: William **Blake**

2. Organisms in this phylum collect food through amoebocytes and can be found in three body types known as the asconoid, leuconoid, and syconoid. In the syconoid type, choanocytes create currents in them, while apopyles serve as pores that allow for water transport from the atrium into the choanocyte chamber. Totipotent archeocytes allow them to reproduce, though they are better known for an epidermis layer of pinocytes as well as excretory systems known as oscula. Sclerocytes produce their skeletal system, which features spicules. FTP, name this invertebrate phylum that shares a common name with an absorbent cleaning material.

ANSWER: **Porifera** (also accept **sponges**)

3. One conflict that took the name of this city was ended by the treaty of Ryswick, where the namesake league of England, Spain, and the Holy Roman Empire defeated the forces of Louis XIV. Another event involving this city's name was formulated by Philip Melancthon, a "confession" of the Lutheran faith. But perhaps the most famous event involving this city was, FTP, what 1555 peace which ended the Wars of religion in Germany?

ANSWER: Peace of **Augsburg**

4. He was trained by Chiron and fathered by one of the argonauts named Telamon, the king of the island off the coast of Attica named Salamis. He is the only Greek warrior not to be wounded in any of the battles of the Iliad, even though he fights Hector in book 7 in a fight that turns out to be a draw. In Book 9, he is sent with Odysseus and Phoenix to try to persuade Achilles to rejoin the fighting, and he takes back the body of the fallen Patroclus with the help of Menelaus. Portrayed as a bumbling meat-head in Shakespeare's *Troilus and Cressida*, he is the subject of a play by Sophocles. Known for going mad with rage after Achilles' armor is given to Odysseus rather than him, this is, FTP, what Greek hero who bears a huge tower-shaped shield?

ANSWER: **Ajax** (accept Telamonian Ajax)

5. He holds a weekly podcast with Scott Mosier, called the Smodcast, which has featured Jennifer Schwalbach and Jason Mewes three times. With Mosier, he has created View Askew Productions, which has financed all of his films. Justin Long portrayed the most hilarious character, Brandon Saint Randy, in his most recent film about two friends, who are portrayed by Elizabeth Banks and Seth Rogen. The character he plays says the phrase “No Ticket,” and nothing else in his movie *Dogma*. That rarely-speaking character first appeared outside the Quick Stop convenience store along with his friend, Jay in this director's acclaimed first film. Silent Bob is portrayed by, FTP, this very fat director of *Clerks*.

ANSWER: Kevin **Smith**

6. The sixth part pays homage to the "rage aria" found in opera buffo, and is sung in D minor as "Rolling in foaming billows.". The librettist Baron von Swieten's instructions were not followed in a section about whales, where a bass soloist delivers his line accompanied by cellos and violas. The primary soloists of this work are a soprano, tenor, and bass representing Gabriel, Uriel, and Rafael. Its most famous section is the very first, written in C minor with no cadences, called "The Representation of Chaos," and this is followed by a massive C-major chord for chorus and orchestra depicting the phrase "let there be light." FTP, name this oratorio depicting the Book of Genesis by Franz Josef Haydn.

ANSWER: The **Creation** or Die **Schopfung**

7. Facing La Disputa in the Stanza della Segnatura, elements of this painting are reminiscent of Leonardo's *The Last Supper*, Bramante's design for St. Peter's Basilica, and the works of Michelangelo, who appears at bottom center. The background contains statues of Apollo and Athena overlooking a mass of people gathered around four steps. The table in the front center is being written upon by Pythagoras, while to the side Euclid is seen drawing triangles. The center is

dominated by Aristotle, Plato, and Socrates. Located in the Vatican Palace, FTP, name this 1511 fresco by Raphael.

ANSWER: The **School of Athens**

8. The protagonist of this novel meets Sedley and attempts to entice him into marriage, however Captain Osborne intervenes and Sedley proves to be too shy. She then leaves for Sir Pitt's house where she secretly marries his second son, the favorite to inherit Miss Crawley's £70,000 fortune. Captain Osborne marries Amelia, the protagonist's friend from Miss Pikerton's Academy for Young Ladies, but soon grows bored of Amelia and begins to pursue Becky. Due to her efforts at social climbing, Becky ends up destitute in Germany where Amelia encounters her towards the end of this, FTP, satirical novel written in 1847 subtitled "A novel without a Hero" about early 18th century British society by William Makepeace Thackeray.

ANSWER: **Vanity Fair**

9. The protagonist of this novel was sold when she was thirteen to the Garners, a rich southern family who were known to practice a comparatively benevolent kind of slavery. After the death of Mr. Garner, Mrs. Garner asks her brother-in-law, known as schoolteacher, to help her run the farm. Halle goes mad after seeing the protagonist, Sethe, raped by Mr. Garner's nephew, even though Sethe was pregnant. She names her daughter after the woman who helped her when she was running away from the Garners' plantation. When schoolteacher locates Sethe and her family in Cincinnati, she attempts to kill her children, succeeding only with her eldest daughter who lends her name to, FTP, this novel by Toni Morrison.

ANSWER: **Beloved**

10. Pencil and paper ready. Express your answer as a radical in simplified form. FTP, What is the area of a triangle with side lengths 5, 7, and 8? Knowing that half the perimeter of this triangle is 10 will allow you to solve this problem using Heron's theorem, which is a special case of Brahmagupta's [BRAH-ma-GOOP-tahs] Theorem. But this problem is much easier if you discover that the angle between the legs of length 5 and length 8 is 60 degrees, which allows you to use the law of sines to compute the area.

ANSWER: **$10\sqrt{3}$** units squared [or **10 rad 3**]

11. This battle formed part of the basis for Stephen Crane's *The Red Badge of Courage*. It began with Union forces crossing the Rappahannock River, with a force that outnumbered the confederates almost two-to-one. Joseph Hooker, was relieved shortly after this stunning defeat for the Union. Although Lee's forces were victorious, he paid a heavy price, in terms of both his men, which he lost some 25% percent of, and, the loss of a man which Lee likened to "losing his right arm." FTP, what was this May 1863 battle which saw confederate general Stonewall Jackson accidentally shot and killed by one of his own men?

ANSWER: **Chancellorsville**

12. At the age of 21 he was appointed Bishop of Lucon, from which he would later rise in the church hierarchy. After he had risen in power, he was able to undermine the credibility of Wallenstein and possibly helped arrange for his assassination. He also persuaded Gustavus Adolphus to intervene in the thirty years war, in his constant fight against the Hapsburgs. Perhaps his political machinations were why he was made a villain in Dumas' *The Three Musketeers*. This is, FTP, what French Cardinal and advisor to Louis XIII?

ANSWER: Cardinal **Richelieu**

13. Sir George Stokes measured this quantity for small spheres, allowing him to compute the viscosity of fluids. It is calculated by equating the buoyant force, as determined by viscous drag, with the force of gravity on an object, making net force and acceleration zero. FTP, 614 miles per hour is the skydiving world record set by Joseph Kittinger for what maximum speed attained by an object falling through a fluid?

ANSWER: **terminal velocity**

14. James Russell Lowell in his *A Fable for Critics* wrote of this author: ". . . the women he draws from one model don't vary / All sappy as maples and flat as a prairie." The simile is particularly apt since the fifth in his most famous series of novels is set in and titled *The Prairie*. The most popular in the series is titled after son of Chingachgook, but all the books in the series feature a frontiersman whose nicknames amongst whites and Indians generate the titles for two of the entries: *The Pathfinder* and *The Deerslayer*, but whose real name is Natty Bumppo. This is, FTP, what American author whose *Leatherstocking Tales*, includes *The Last of the Mohicans*?

ANSWER: James Fenimore **Cooper**

15. One of this man's more autobiographical novels concerns a boy, Peter, who lives in Pennsylvania with his father, a science teacher. It is metafictional insofar as the automobile mechanic, Mr. Hummel, is linked to Hephaestus, and the boy's father, George Caldwell, is linked to both Prometheus and Chiron. Other metafictional novels, besides that one, *The Centaur*, include a 2000 novel that casts itself as a prequel to a Shakespearean play. Amleth, or Hamlet, is mostly absent from the action in *Gertrude and Claudius*. FTP, name this recently deceased American man of letters, who also wrote *The Witches of Eastwick* and a four-volume series on the life of Rabbit Angstrom.

ANSWER: John Updike

17. Born near modern-day Tehran in the year 763, he ruled from a city currently the seat of Jalal Talabani's government. His court was controlled by the Barmakids, and he had diplomatic relations with both the Tang and the Carolingian empires. He was on particularly close relations with the Holy Roman Emperor of the latter, sending mechanical clocks and an albino elephant named Abbu al-Abbas to Charlemagne as presents. The elephant was named after the founder of his dynasty, the Abbasids, of which he was the fifth caliph. FTP, name this ruler of Baghdad whose reign is immortalized in the *Thousand and One Nights*.

ANSWER: Harun al-Rashid

16. It can be used to determine the net charge of a protein at a given pH, however, its usefulness is limited in cases where dilute solutions are being used or if the reagents are far from neutral pH. The equation, which assumes no acid dissociation or base hydrolysis, sets the logarithm of the quotient of a base and its conjugate acid plus its acid dissociation constant (pK_a) equal to pH. FTP, name this equation often used in the analysis of buffer solutions.

ANSWER: Henderson-Hasselbach equation

19. Born in Le Haye en Touraine, France, in 1596, he was interested in neuroscience, and thought that the pineal gland was the seat of the human soul. In philosophy, he broke dramatically with scholasticism, though he carried a copy of Francisco Suarez' Disputations with him wherever he went. Instead, he founded a philosophical tradition that was continued by such figures as Leibniz, Berkeley, Hume, and finally Immanuel Kant. This tradition focused primarily on epistemology and the relationship between body and soul. On the latter subject, he was a dualist, believing that the body and soul are wholly separate, while on the former subject, he claimed that sensory data could not be trusted, since one could always be either dreaming or confounded by an evil demon. FTP, name this French author of the *Meditations on First Philosophy* and *Discourse on Method*, who famously stated *Cogito ergo sum*, or I think, therefore I am.

ANSWER: Rene Descartes

17. After the British victory in the Battle of Cape St. Vincent, he was promoted to rear Admiral. After winning the Battle of Copenhagen, he was appointed commander in chief of the navy, probably due in part to his previous resounding victory at the Battle of the Nile, forcing the French under Napoleon to return to France. His most famous victory though, came with his death on board the HMS *Victory*, again fighting Napoleon's navy. The hero of the battle of Trafalgar was, FTP, what man who ensured that Napoleon would not gain control of the seas during the Napoleonic wars?

ANSWER: Horatio Nelson

20. Like Christians and Jews, they are recognized as an official religious minority by the Iranian Constitution, though unlike followers of the two former religions, they are dualists rather than true monotheists. Though little is known about its prophet, he is traditionally considered to have lived in the Median empire between the 6th and 7th centuries B.C. This religion's ideas were incorporated, together with those of Christianity and Buddhism, into Manichaeism, and a sect called the Parsis currently reside in India. According to this religion, the six benevolent beings named the Amesha Spentas are contrasted with the evil spirits known as the Daevas. FTP, What is this Iranian religion which believes that the evil deity Angra Mainyu will eventually be defeated by the god Ahura Mazda.

ANSWER: Zoroastrianism or Mazdaism

1. La Rochelle and Montauban are probably the most famous of its designated "places of sanctuary," garrisoned by protestant troops, FTPE:

[10] What was this document repealed by the edict of Fontainebleau in 1685?

ANSWER: Edict of Nantes

[10] This French king issued the Edict of Nantes in 1598, reportedly saying "Paris is worth a mass," when he converted to Catholicism, largely ending religious conflict in France.

ANSWER: **Henry IV**

[10] One of the results of those religious conflicts was the St. Bartholemew's Day massacre, which had occurred during the rule of this man.

ANSWER: **Charles IX**

2. FTPE, Answer some questions about force-carrying particles in the standard model.

[10] These particles, with a name suggesting their function, mediate the nuclear strong force, causing protons and neutrons to adhere to one another in the nucleus.

ANSWER: **Gluons**

[10] These particles are exchanged in the electromagnetic interaction. They also strongly stimulate human rod cells.

ANSWER: **Photons**

[10] Along with W and Z particles, photons and gluons are experimentally confirmed members of this class of particles, which are exchanged in fundamental interactions between elementary particles.

ANSWER: **Gauge Bosons**

3. Name some conflicts with Native Americans FTPE.

[10] This conflict was estimated to have killed nearly 7 out of 8 Native Americans in New England, it began with the death of Massasoit, who had been able to maintain peace with the English colonists for decades.

ANSWER: **King Philip's War** (or **Metacom** war, uprising)

[10] This incident, centered on the Great Lakes Region, followed the French and Indian war, and began with a botched attack by the Ottawa chief on Fort Detroit.

ANSWER: **Pontiac's rebellion**

[10] This conflict began in 1715 in South Carolina saw trade abuses by the colonists lead to war, where the colonists received help from the nearby Cherokee eventually prevailed, dispatching the namesake tribe, who fled south to join the Seminoles.

ANSWER: **Yamasee War**

4. The upper row of the center panel shows Christ seated between Mary and John the Baptist, and below it is the famous Adoration of the Mystic Lamb. FTPE.

[10] What is this 1432 polyptych panel painting?

ANSWER: The **Ghent Altarpiece**

[10] This Dutch master painted "The Ghent Altarpiece" along with "Portrait of a Man with a Red Turban".

ANSWER: **Jan Van Eyck**

[10] One of Van Eyck's most famous paintings is this depiction of a standing couple holding hands and a little dog standing between them in a room in Bruges.

ANSWER: The **Arnolfini Portrait** or **The Arnolfini Wedding** (accept nearly anything with "Arnolfini" in it)

5. Identify some operas with similar endings FTPE.,

[10] In this Shostakovich opera, Katerina, having poisoned her father-in-law, commits suicide by drowning herself in a river, but not before killing Sergei's new lover, Sonyetka.

ANSWER: **Lady Macbeth of the Mtsensk District** or **Ledi Makbet Mtsenskogo uezda**

[10] In this Tchaikovsky opera based on a Pushkin short story, Lisa kills herself by jumping in a river just before her lover Herman loses all his money when the titular card turns up.

ANSWER: The **Queen of Spades** or **Pikovaya dama**

[10] In this Cesar Cui opera, Fatima drowns herself after setting free the title character.

ANSWER: **The Prisoner in the Caucasus** or **Kavkazskiy plennik** (accept equivalents)

6. FTPE, answer these transport-related biology questions.

[10] This is the process by which a cell can absorb materials dissolved or suspended in its extracellular fluid by engulfing it with their cell membrane.

ANSWER: **endocytosis**

[10] A specific form of endocytosis, this process involves the vesicular ingestion of solid matter such as bacteria from the extracellular fluid. It occurs only in certain specialized cells such as neutrophils, macrophages, and the amoeba.

ANSWER: **phagocytosis**

[10] These are temporary projections of cells formed by microtubule and filament structures. The cell surface projects a membrane process called the lamellipodium via actin polymerization, which then fills with cytoplasm. These projections

play a locomotive role in some unicellular organisms but are also important in eukaryotic cells for cell signaling and phagocytosis.

ANSWER: **pseudopodia**

7. The selection of the cabinet is one of the President's most important early decisions. Name some more or less famous cabinets from U.S. History FTPE.

[10] This term came into use during the reign of Andrew Jackson's cabinet, and came to describe it as well, being as it was an informal group which gathered in a particular section of the white house

ANSWER: **Kitchen Cabinet**

[10] This group, although not really a cabinet, were a group of advisors to Franklin Roosevelt whose name comes from their perceived high intelligence.

ANSWER: **Brain Trust**

[10] This man's cabinet was often referred as "the best and the brightest," or the presidents "whiz kids," as they helped this man through the Cuban Missile Crisis

ANSWER: John Fitzgerald **Kennedy**

8. Answer some questions about the Colbert Report FTPE.

[10] Colbert recently challenged this new chairman of the Republican National Committee to a rap battle. When he did not show up, Colbert cut together clips of this man on news shows

ANSWER: Michael **Steele**

[10] Cynthia Lummis from Wyoming was recently on this 435-part series of the Colbert Report, allowing him to fill in the entire state of Wyoming on his map.

ANSWER: **Better Know A District**

[10] This current White House Chief of Staff instructed freshmen congressmen not to appear on *Better Know a District* when he was chairman of the Democratic Caucus in 2007.

ANSWER: Rahm **Emanuel**

9. Name these Ancient Egyptian deities from the animals held sacred to them, FTPE:

[10] The Falcon was held sacred not only to Horus, but to this sun god and head of the Egyptian pantheon

ANSWER: **Ra**

[10] The jackal was sacred to this god of embalming who was also a guide to souls in the underworld

ANSWER: **Anubis**

[10] The crocodile was sacred to this god of the Nile, worshiped extensively at Arsinoe

ANSWER: **Sobek**

10. FTPE, answer some questions about a famous telescope.

[10] This telescope was launched in 1990. Its position outside the earth's atmosphere allows it to take extremely sharp images of distant objects, such as the Ultra Deep Field image.

ANSWER: **Hubble** Space Telescope

[10] The Hubble Space Telescope uses curved mirrors to focus light and form an image, so it is of this family of telescopes.

ANSWER: **Reflecting** Telescope (accept **reflector**)

[10] Soon after beginning operation, it was discovered that Hubble's primary mirror had been incorrectly ground. This is the term for the lack of focus observed in the Telescope, resulting from a flawed mirror shape.

ANSWER: **Spherical Aberration**

11. His works include *The Uprooted Pine* and *The Battle of Coxinga*, FTPE:

[10] Who is this 17th century playwright sometimes called the "Japanese Shakespeare"?

ANSWER: **Chikamatsu** Monzaemon

[10] Chikamatsu was most famous for writing plays in this genre.

ANSWER: **Joruri** or **Buraku**

[10] Two of Chikamatsu's most famous *joruri* plays are *Shinju at Amijima* and *Shinju at Sonezaki*; the word *shinju* roughly translates to mean this action.

ANSWER: **Double Suicide** or **Love-Suicide** (prompt on "suicide")

12. The title character's girlfriends include "The Pilgrim", "The Pumpkin", and "The Monkey," FTPE:

[10] What is this novel about a young Jewish man's sexual frustrations and misadventures, and his complicated

relationship with the mother of all Jewish mothers?

ANSWER: **Portnoy's Complaint**

[10] *Portnoy's Complaint* is by this author.

ANSWER: Phillip **Roth**

[10] Phillip Roth won the Pulitzer Prize in 1998 for this novel about Nathan Zuckerman's attempt to reconstruct the life of Seymour "Swede" Levov and his fugitive, activist daughter Merry.

ANSWER: **American Pastoral**

13. The successor to the kingdom of Magadha, its capital was Pataliputra, and it was ruled by Bindasura and Brhadraha, after whose death the empire fell in 186 BCE. FTPE:

[10] Name this first great empire of India, founded by Chandragupta.

ANSWER: **Mauryan** Empire

[10] Ruling from 269 to 232 BC, this grandson of Chandragupta substantially enlarged Mauryan holdings before becoming a pacifist and dedicating himself to spreading Buddhism.

ANSWER: **Asoka** [or **Ashoka**]

[10] Ashoka became a pacifist after waging war against this coastal kingdom, which roughly corresponds with the present-day Indian state of Orissa. It was ruled by the Gangas and was home to the temple of the Juggernaut.

ANSWER: **Kalinga**

14. She complained that the repunctuation of her poetry by magazine editors, drastically changed their meanings.

Modern critics agree. FTPE:

[10] Who is this American poet of "I Heard a Fly Buzz when I died"?

ANSWER: Emily **Dickinson**

[10] In one of Dickinson's most famous poems this line follows the line "Because I could not stop for Death".

ANSWER: **"He kindly stopped for me"**

[10] In another one of Dickinson's most widely-quoted poems, this is described as "the thing with feathers / That perches in the soul / And sings the tune without the words / And never stops at all"

ANSWER: **Hope**

15. Answer some questions about the geometry of solids FTPE.

[10] This solid with four faces also gives its name to the geometry of a molecule of methane.

ANSWER: **Tetrahedron**

[10] The tetrahedron, along with the cube, octahedron, and dodecahedron, are members of this group of self-similar polyhedra.

ANSWER: **Platonic** solids

[10] This Platonic solid has the greatest number of faces: 20 triangles, with five meeting at each intersection point.

ANSWER: **Icosahedron**

16. Its publication sparked a celebrated trial in 1960 for violation of the Obscene Publications Act of 1959, for which it was acquitted. FTPE:

[10] What is this novel about the titular noblewoman's affair with the gamekeeper, Oliver Mellors?

ANSWER: **Lady Chatterley's Lover**

[10] *Lady Chatterley's Lover* is by this English novelist.

ANSWER: D.H. **Lawrence**

[10] The Brangwen sisters, Gudrun and Ursula, are the protagonists of two of D.H. Lawrence's most popular novels. Name either one, for ten points.

ANSWER: **The Rainbow** or **Women in Love**

17. Name these African rulers, FTPE:

[10] The military reforms of this Zulu leader gained him victory against the British at Isandlwana, though he was eventually defeated by the Europeans.

ANSWER: **Shaka**

[10] This was the most famous and powerful emperor of Mali. He was so wealthy that the alms distributed during his Hajj to Mecca caused massive inflation throughout the dar al-Islam.

ANSWER: **Mansa Musa**

[10] This 17th century warrior queen of Ndongo in modern-day Angola maintained fierce resistance against Portuguese colonization and was said to have had numerous manservants.

ANSWER: **Nzinga**

18. The first version of this novel, written when the author was nineteen, was titled Elinor and Marianne, names retained by its protagonists. FTPE:

[10] What is this novel about the romances of the Dashwood sisters?

ANSWER: **Sense and Sensibility**

[10] *Sense and Sensibility* is by this British author.

ANSWER: Jane **Austen**

[10] Catherine Morland, the heroine of this Jane Austen novel, is too obsessed with Gothic novels and is disappointed to find that life is not filled with such darkness and mystery.

ANSWER: **Northanger Abbey**

19. Name these characters from the *Odyssey*, FTPE:

[10] This is the son of the titular hero, who helps him defeat the suitors that have invaded their house.

ANSWER: **Telemachus**

[10] This is the sorceress of the island of Aeaea who turned Odysseus' men into swine.

ANSWER: **Circe**

[10] This is the blind Theban prophet that Odysseus visited during his journey to Hades. He is better known for prophesying the fate of the titular hero in Sophocles' drama *Oedipus*.

ANSWER: **Tiresias**

20. Name these Chinese schools of philosophical thought, FTPE:

[10] Including such philosophers as Mencius and Xun Zi, its tenets include filial piety and loyalty to superiors. It is named after its founder, whose sayings are collected in the *Analects*.

ANSWER: **Confucianism**

[10] This rival school of Confucianism teaches its adherents to follow the titular Way or Path of balance between yin and yang. Its founder was the sage Lao Tzu.

ANSWER: **Daoism**

[10] This political philosophy of the warring states period emphasizes the superiority of rule of law over the well-being of the subjects, and has been denounced as a system of totalitarian realpolitik.

ANSWER: **Legalism**

we are the people with buzzers who answer questions

Packet 10

1. Its effectiveness is greatly limited by botulinum toxin, atropine, curare, and the antibodies involved in myasthenia gravis. That disease can be treated by neostigmine, which increases its effectiveness by stimulating its target nicotinic and muscarinic receptors. It plays a role in memory, though it is much better known for its release from both sympathetic and parasympathetic neurons and its breakdown by a namesake esterase. FTP, name this neurotransmitter that is necessary for proper muscle contraction.

ANSWER: **acetylcholine**

2. In his *On Free Choice of the Will*, this man argues with Evodius that free will and god's omnipotence, while seemingly contradictory at first, are nevertheless compatible. In his *City of God*, this Christian philosopher first rebukes that notion that Christianity was the cause of the fall of Rome and goes on to describe the differences between the City of God and the City of Man, to argue his theology on numerous points such as concerning the fallen nature of man, the evil of naturalistic, uncontrolled sexuality and the linearity of history, and to incorporate ideas of Platonism into Christianity. FTP, name this Bishop of Hippo Regius, author of the autobiographical *Confessions*, who was born in 354 AD and is an early Saint of the Catholic Church.

ANSWER: **St. Augustine**

3. This man was once a Communist candidate for President, a member of his country's senate, and an ambassador to France. He was however more famous for the role he played in the development of Modernismo. He wrote Odes to his socks, an onion, and a cat in his collection *Elemental Odes*, and, while in hiding after expulsion from the Senate, he wrote an epic that praised Joseph Stalin and covered the sweep of Latin American history, *Canto General*, the second canto of which is "The Heights of Machu Piccu." FTP, name this Chilean poet of *Twenty Love Poems and a Song of Despair*.

ANSWER: Pablo **Neruda** (or Neftalí Ricardo **Reyes Basoalto**; accept "Reyes" or "Basoalto")

4. Grand unified theories have typically predicted the decay of these into a pion and a positron, but experiments estimate that their theoretical minimum half-life is on the order of 10 to the 36 years. They were discovered when Ernest Rutherford's scintillation detectors saw their signature after he shot alpha particles into nitrogen atoms, and they can be created by beta decay. They are composed of two up and one down quark, have spin of one half, and after electron capture they transform into another baryon. FTP, name this positively-charged nucleon that determines elements' atomic number.

ANSWER: **protons**

5. He is a two-time winner of the Playstation Skills Challenge, but that is far from his most impressive accomplishment. Drafted after LeBron James, Carmelo Anthony, and Chris Bosh, of the top five picks in the 2003 draft, only he and Darko Milicic have won championship rings. He famously recorded only the third triple-double in NCAA tournament history, leading the Marquette Golden Eagles in an upset of top-ranked Kentucky in the 2003 Midwest Regional. FTP, name this five-time All-Star and 2006 NBA Finals MVP, the star shooting guard of the Miami Heat, nicknamed Flash.

ANSWER: Dwyane **Wade**

6. Like Thomas Tallis, he produced some *Lamentations of Jeremiah the Prophet*, though he resigned afterwards in protest of the way choirboys were fed. His *Mottetorum liber secundus* includes motets by his brother and two sons, two of his 250 motets, an early book of which was dedicated to Pope Julius III and resulted in his admittance to the Cappella Sistina. His most famous work, for six voices, demonstrated that the mass could be intelligible in the context of polyphony and was submitted to the Council of Trent. FTP, name this 16th century composer of the Roman School, best known for his Pope Marcellus Mass.

ANSWER: Giovanni Pierluigi da **Palestrina**

7. Donatello's 1415 marble of this person with a forked beard and book is in the Duomo while El Greco's unorthodox depiction of him with a bear-skin and cross has a lamb at lower-right. Masaccio depicts him with St. Jerome on the Colonna Altarpiece and shows his death alongside that of St. Peter on the Pisa Altar. Rodin depicts him "Preaching" and the Ansidei Altarpiece includes Nicholas of Bari and this man. Ghirlandaio relates his life in Santa Maria Novella. Michelangelo's The Holy Family with this person is also known as the Doni tondo; he is also depicted as an infant in the

Madonna of the Rocks. FTP, name this Saint often depicted in art performing his most famous function: baptizing Jesus Christ.

ANSWER: **St. John the Baptist** (prompt on St. John)

8. In one scene in this novel, a character feels her heart “beating like a rabbit” and a “terrible hurt” after listening to the sounds of Beethoven’s Eroica Symphony coming from a neighbor’s radio. That character, Mick, is the teenage daughter of the Kellys, a family that takes in the protagonist of this novel, a silver engraver, after his close friend and roommate of ten years, Antonapoulos, is taken away to an asylum at the end of the first part of this novel. John Singer is a deaf-mute living in 1930s Georgia in, FTP, what 1940 debut novel by Carson McCullers?

ANSWER: **The Heart is a Lonely Hunter**

9. He adopted a moderate policy with regards to Poland,, granting it partial autonomy. He introduced a limited form of local self-government in his country through Zemstovs, this coming on the heels of his Edict of emancipation, which freed the serfs. He was ruler of Russia during the so called Three Emperors' League, and Alaska was sold to the United States under his rule. His somewhat liberal reforms were not enough to save him from a hand thrown bomb, however. Assassinated by the People's Will, this was, FTP, what Czar of Russia who succeeded Nicholas I?

ANSWER: **Alexander II**

10. The murder in this story is prefigured by the death-watch beetles in the walls that the narrator listens to at night. If we believe the narrator, he is not at all insane, merely suffering from “over-acuteness of the senses”. But our suspicions of this claim must be aroused when he find that he killed the old man because “One of his eyes resembled that of a vulture - a pale blue eye with a film over it”. His efforts to hide the body from the police are successful at first until he hears from the floorboards where the body is concealed “a low, dull, quick sound” that grows louder and louder, until he can stand it no longer and confesses to the murder. FTP, what is this Gothic horror short story by Edgar Allan Poe?

Answer: **“The Tell-Tale Heart”**

11. Pencil and paper ready. The square root of the number 12345 has a fractional part that is very close to one divided by n for some positive integer n. FTP, what is n? It may help to recognize that 11 squared is 121, and that 111 squared is 12321.

ANSWER: **9** ($\sqrt{12345} = 111.108\dots$)

12. The ontological argument was first advanced by a member of this movement. Another work of this movement, Albertus Magnus' Physica, which was a presentation the the world as Aristotle saw it, combined with Christian Theology. Perhaps the most famous member of this movement, though, is a disciple of Albertus Magnus, one who wrote a work in the form of a series of questions and answers and with five proofs for the existence of God, the *Summa Theologicae*. FTP, what theological and philosophical movement, beginning in the 11th century, included such men as Peter Abelard, St. Anselm, Roger Bacon, and Thomas Aquinas?

ANSWER: **Scholasticism**

13. This colony's charter prohibited slavery due to the fact that its populace might often be called upon to defend the border. Although it began as a proprietary colony, it was later made a royal possession under the influence of George II. It's founder envisioned the colony to be a possible home for the "worthy poor," which presumably included debtors. This was, FTP, what colony founded to serve as a buffer against Spanish Florida in 1732 by James Oglethorpe.

ANSWER: Colony of **Georgia**

14. His parliament enacted the Clarendon Code, which was designed to shore up the newly re-established Church of England. Following his defeat at the Battle of Worcester by Oliver Cromwell, he spent the next decade in exile on the continent. Titus Oates sparked the exclusion crisis during his reign when it was revealed that his brother James was a catholic. The Popish plot, along with the Rye House Plot, were two conspiracies that sought to kill, FTP, what British monarch whose reign constituted the restoration of the monarchy after the English civil war and a decade of rule by Oliver Cromwell?

ANSWER: **Charles II**

15. He slew his sister Coyolxauhqui and flung her severed head into the heavens for their mother to look at, thus creating the moon. In order to accomplish this feat, he sprung forth in full armor from the body of his mother, who wears a skirt of serpents. He rose to prominence in the pantheon thanks to the efforts of Tlalacael, who was thus able to emphasize

warfare and human sacrifice among the Nahuas. It was supposedly on his wish that Tenochtitlan was founded where an eagle was seen devouring a serpent, and his temple was equal in grandeur to that of Tlaloc. FTP name this son of Coatlique and Aztec god of warfare and the sun, whose name means “Hummingbird on the Left”.

ANSWER: **Huitzilopochtli**

16. It is greater for lithium-ion than for nickel-cadmium batteries, and tends to increase with use. Mostly due to the electrolyte between electrodes in an electrochemical cell, it is considered the output impedance for batteries. It explains why the theoretical EMF of a cell, calculated from reduction potentials, will always be greater than the actual voltage measured across the battery. FTP, name this minimum resistance associated with any battery when current is drawn.

ANSWER: **Internal Resistance** (accept output impedance early)

17. Though this author has been cited as a contender for the Nobel Prize for Literature several times in the 1990's, he has never won, though he did receive a MacArthur Fellowship in 1988. Yale's own Harold Bloom referred to him as one of the four major American novelists still alive and considers his best work to be 1997's *Mason & Dixon*. Benny Profane is the protagonist of his first novel about the search for the mysterious title entity, *V*, while the muted posthorn is a prominent symbol in another novel about Oedipa Mass and a mail distribution company known as the Tristero: *The Crying of Lot 49*. FTP, who is this author of *Gravity's Rainbow*?

Answer: Thomas **Pynchon**

18. It started in 184 AD, during the reign of emperor Ling. Initially confined to Shandong and Henan provinces, but soon spread to Shaanxi, Hebei, and Liaoning. He Jin, the half-brother of empress He, was charged with suppressing it, but Liu Bei was more successful, rescuing Dong Zhuo from the rebels. It was not fully stopped until 192, when Cao Cao stopped the rebel army after their march to Yanzhou. The main leader of the rebellion was Zhang Jiao, but he received help from two of his brothers, who were also radical Taoists. FTP, name this Chinese rebellion during the Han dynasty, immortalized in the Romance of the Three Kingdoms and familiar to players of the Play Station game Dynasty Warriors, named for the distinctively colored head coverings worn by the rebels.

ANSWER: **Yellow Turban** Rebellion

19. After his conquest of Rhodes, he allowed the Knights Hospitallers to flee and establish a new order in Malta. His conquests continued when he won at Mohacs, defeating Louis II of Hungary. Charles V rallied his forces and took back control of Buda, only to have this man attack in full force, where he was barely repulsed at Vienna. Probably best known for reforming the ottoman legal code and patronizing the arts, this was, FTP, what longest ruling Ottoman sultan?

ANSWER: **Suleiman the Magnificent**

20. This author first gained fame for his early poetry: his first collection *Odes et poésies diverses*, which was followed by *Odes et Ballades*. His plays were often adapted into operas including *Le Roi s'amuse*, which was adapted into *Rigoletto*, and *Hernani*, which became an opera of the same name. One novel by this author follows an ex-convict who is convinced by Bishop Myriel to change his life, Jean Valjean. While in another novel, Captain Phoebus, Archdeacon Frolo, and Quasimodo all vie for the beautiful gypsy girl, Esmerelda. FTP, who is this author of *Les Misérables* and *The Hunchback of Notre Dame*.

ANSWER: Victor **Hugo**

1. FTPE, answer these questions about intermolecular forces.

[10] This is the general term for intermolecular forces of a non-electrostatic nature. It is named after a famous Dutch scientist.

ANSWER: **van der Waals** forces

[10] This subset of van der Waals forces describes cases of repulsion or attraction due to dipole-induced dipoles from the changing instantaneous positions of electrons.

ANSWER: **London** dispersion forces

[10] Since the strength of van der Waals forces depend on the relative orientation of molecules to one another, they have this property that characterizes any entity with directional dependence.

ANSWER: **anisotropy**

2. Answer these questions about the Crusades FTPE.

[10] Saladin's victory at the Horns of Hattin in 1187 led Pope Gregory VIII to declare this crusade. Richard the Lionhearted, Phillip II, and Frederick Barbarossa participated.

ANSWER: The **Third** Crusade or the **King's Crusade**

[10] This Crusade was supposed to reach the Holy land through Egypt but ran into financial difficulties when they couldn't pay their Venetian fleet. Its sacking of Constantinople exacerbated the Great Schism.

ANSWER: The **Fourth** Crusade

[10] This set of migrations in 1212 is seen by some modern scholars to be simply movements of the wandering poor. Traditional accounts of it say that a boy claimed to have been visited by Jesus and told to convert the Muslims to Christianity peacefully. Many of its participants were ultimately sold into slavery.

ANSWER: The **Children's** Crusade

3. Originating as a reaction to classicism, principal painters of this movement included Rosso Fiorentino and Giulio Romano. FTPE:

[10] Identify this artistic movement of 16th century Italy, whose mature form is exemplified in Michaelangelo's Last Judgement.

ANSWER: **Mannerism**

[10] One of the most famous exponents of Mannerism, this artist is known for such works as Self-Portrait in a Convex Mirror and Madonna of the Long Neck.

ANSWER: **Parmigianino** or Girolamo Francesco Maria **Mazzola**

[10] Parmigianino himself was strongly influenced by this other Parma-based painter, known for such mythological scenes as The Rape of Europa and Jupiter and Io.

ANSWER: **Corregio** or Antonio **Allegri**

4. Answer some related music questions FTPE:

[10] This Puccini work features the aria, "Nessun domra" in which Calaf reveals his name to the titular princess. Emperor Altoum is her father.

ANSWER: **Turandot**

[10] Based on a Gogol short story, this Mussorgsky opera finds Solopoy Cherevik, Khavronya Nikiforovna, and Paraska traveling to the title location to sell a horse.

ANSWER: **Sorochintsi Fair** (**Sorochinskaya varmarka**)

[10] Turandot and Sorochintsi Fair are often referred to as this type of work, a distinction they share with Schubert's 8th Symphony.

ANSWER: **Unfinished**

5. FTPE, name these enzymes involved in the process of DNA replication:

[10] This class of enzyme adds nucleotides to the 3' end of a newly-forming DNA strand.

ANSWER: DNA **polymerase**

[10] Utilizing energy from nucleotide hydrolysis, this protein plays a key role in the separation of nucleic acid duplexes and be described as a sliding clamp.

ANSWER: **helicase**

[10] This type of enzyme regulates the processes of DNA supercoiling and knotting. It transiently cuts one or both strands of DNA through a tyrosine catalytic residue to allow for DNA replication.

ANSWER: **topoisomerase**

6. Answer some questions about America's sixth-leading sport, after baseball, football, NASCAR, basketball, and hockey. Soccer, FTPE:

[10] This Englishman is now the most capped player in the history of the English National soccer team. The Los Angeles Galaxy extended his loan to AC Milan by two months so he could help them qualify for the Champions League.

ANSWER: David **Beckham**

[10] This man is the most prolific goal scorer in the history of the US soccer team. He was loaned to Bayern Munich in 2009, but only made six appearances before returning to the Galaxy.

ANSWER: Landon **Donovan**

[10] This most dominant MLS team of the 2008 season won the Supporter's Shield, the league cup, and the season itself. Brian McBride is their top scorer, with 62 goals.

ANSWER: **Columbus Crew [or New York Red Bulls]**

7. FTPE, name these features from glacial geology.

[10] This is the term used for any material dumped by a glacier. The lateral type is deposited along the sides, while the terminal kind is left at the bottom and back of the advancing glacier.

ANSWER: **Moraine**

[10] These round, bowl shaped valleys are dug out by alpine glaciers. Two adjacent ones form a ridge feature called an arête.

ANSWER: **cirque**

[10] This is the term given to the straight, parallel grooves and scratches cut into rocks by the movement of a glacier.

ANSWER: Glacial **striations**

8. Name these empires of Persia established by foreign conquerors, FTPE:

[10] After its conquest by Alexander the Great, Persia was ruled by this dynasty named after an officer of Alexander.

ANSWER: **Seleucid** empire

[10] After its conquest by the mongols, Persia was ruled by this khanate, whose first ruler was Hulagu, grandson of Genghis Khan.

ANSWER: the **Ilkhanate**

[10] This dynasty of mixed Azeri and Kurdish origin conquered Persia primarily through reliance on Sufi Islam rather than military takeover.

ANSWER: **Safavid** empire

9. Christopher Durang parodied this play in a one-acter called *For Whom the Southern Belle Tolls*, FTPE:

[10] Jim O'Connor is the "gentleman caller" that Tom has brought back home for Laura in this play about the Wingfields.

ANSWER: *The* **Glass Menagerie**

[10] *The Glass Menagerie* is by this American playwright.

ANSWER: Tennessee **Williams**

[10] The marriage of the beautiful Maggie and aging football star Brick is on the rocks, while the family hides from Big Daddy the fact that he's dying in this Williams play.

ANSWER: **Cat on a Hot Tin Roof**

10. Answer some questions about pre-Columbian North America. FTPE:

[10] This culture thrived from about 900 AD and spread primarily along river valleys of what is now the Eastern United States. It had its capitol at Cahokia.

ANSWER: **Mississippians**

[10] This culture of the Woodland period succeeded the Adena culture and took root mainly in Ohio and Illinois.

ANSWER: **Hopewell** Culture

[10] The Mississippian and Hopewell cultures were both primarily known for the great earthen constructs they made for burial, residential, and ceremonial purposes, and so are known by this collective name.

ANSWER: **Mound** Builders

11. Answer some questions about the works of Gabriel García Márquez works, FTPE:

[10] Macondo is the setting for this novel that charts seven generations of the Buendia family.

ANSWER: **One Hundred Years of Solitude** or **Cien Anos de Soledad**

[10] No one stops Pedro and Pablo Vicario from butchering Santiago Nasar in this high school Spanish classroom favorite novella of García Márquez.

ANSWER: *Chronicle of a Death Foretold* or *Crónica de una muerte anunciada*

[10] García Marquez's first novella was his favorite because he felt it was his most spontaneous. All the events take place in one room in a half hour period.

ANSWER: *La Hojarasca* or *Leafstorm*

12. European socialism is a wonderful thing, both in the present day and in the past, FTPE:

[10] This first major socialist thinker's ideas tended to take a positivist view of things, fitting as how Auguste Comte worked as his assistant in the early 1820s

ANSWER: Henri de *Saint-Simon*

[10] Saint-Simon, along with Charles Fourier, were two prominent proponents of this type of socialism, which sought to establish ideal societies

ANSWER: Utopian *Socialism*

[10] Utopian socialism was heavily critiqued by this thinker with his brand of scientific socialism, in works such as his *Das Kapital*

ANSWER: Karl *Marx*

13. Identify some plays by Aristophanes, FTPE:

[10] A battle of the sexes erupts in this play when the title character convinces all the women of Greece to withhold sex from their husbands, to force them to end the Peloponnesian War.

ANSWER: *Lysistrata*

[10] Dionysus, frustrated with the current terrible state of Athenian drama, goes down to Hades to bring back a great tragedian, but has to decide between Aeschylus and Euripides in this play.

ANSWER: *The Frogs*

[10] Pisthetairos and Euelpides search for the king Tereus in the realm of the title creatures in this Aristophanes play.

ANSWER: *The Birds*

14. Name these heroines from Greek tragedies, FTPE:

[10] The titular heroine of a play by Sophocles, this daughter of Oedipus is imprisoned by Creon for attempting to bury her brother Polynices

ANSWER: *Antigone*

[10] This sorceress from Colchis fell in love with Jason and helped him steal the Golden Fleece from her father. In a tragedy by Euripides, she kills her own children when Jason abandons her

ANSWER: *Medea*

[10] This wife of Agammemnon murders him upon his return from Troy with the help of her lover Aegisthus in an Aeschylus drama

ANSWER: *Clytaemnestra*

15. He was one of only four members to survive an expedition to what is now Tampa Bay, Florida. FTPE:

[10] FTP, name this explorer who subsequently wondered around the Gulf region of Texas. His tales of the Seven Cities of Cibola undoubtedly inspired others.

ANSWER: *Cabeza de Vaca*

[10] This man had earlier explored Florida for Spain, searching for the Fountain of Youth

ANSWER: Juan *Ponce De Leon*

[10] After Coronado had explored the Rio Grande valley nearly 50 years before, this man was sent in by Philip II to colonize it, occupied most of what is now New Mexico, where he is famous for multiple conflicts with the Pueblo Indians

ANSWER: *Don Juan de Onate*

16. A slightly modified version of the most famous line of this poem was intoned by Lyndon Johnson in the famous "Daisy" campaign ad, FTPE:

[10] "We must love each other or die" states this poem whose title gives the date of the outbreak of World War II.

ANSWER: *"September 1, 1939"*

[10] "September 1, 1939" is by this Anglo-American poet of "Funeral Blues".

ANSWER: W(ystan) H(ugh) *Auden*

[10] Auden wrote this poem about the paintings of Pieter Breughel the Elder, in particular his "Landscape with the Fall of Icarus"; it is titled after the museum where it was housed.

ANSWER: **“Musée des Beaux Arts”**

17. Answer some questions about a playwright and his works FTPE.

[10] Ben and Gus are hitmen waiting for instructions to come down the title machine in this 1957 play.

ANSWER: *The **Dumb Waiter***

[10] *The Dumb Waiter* is by this playwright of *The Homecoming*.

ANSWER: Harold **Pinter**

[10] Emma, who is married to Robert, has an affair with his best friend Jerry in this play that uses reverse chronology. The sitcom *Seinfeld* did a tribute to this play in Season 8, in an episode that had the same title with the word “the” added.

ANSWER: **Betrayal**

18. Name these mythical creatures, FTPE:

[10] Identified with the Bennu bird, the zhar-ptitsa, and the fenghuang, this avian symbol of rebirth is the namesake of Achilles' tutor. It is capable of apparition and its tears have healing properties in a certain popular series of novels

ANSWER: **Phoenix**

[10] The offspring of queen Pasiphae's lust for a particularly attractive bull, this creature of Crete was imprisoned by Daedalus in the labyrinth and eventually killed by Theseus

ANSWER: **Minotaur**

[10] This child of Typhon and Echidna had the head of a lion, the middle of a goat, and a tail terminating in a snake's head. It was killed by Bellerophon with the help of Pegasus

ANSWER: **Chimera**

19. Pencil and paper ready. Answer some questions about a circle with radius 6 FTPE.

[10] What is its area?

ANSWER: **36 pi** square units

[10] What is the area of its inscribed square?

ANSWER: **72** square units

[10] What is the area of its inscribed equilateral triangle?

ANSWER: **27√3** [or **27 rad 3**] square units

20. FTPE, Answer some questions about the physics of music.

[10] This is the lowest frequency produced when a standing wave is produced on a taught string. Its wavelength is twice the length of the string.

ANSWER: **fundamental** frequency (or fundamental tone, or just fundamental)

[10] A plucked string vibrates at many frequencies simultaneously. Give the name for the frequencies produced above the fundamental, produced when multiple wave nodes arise between the two ends of the string.

ANSWER: **harmonics** (accept **overtones**)

[10] In instruments like whistles and recorders, fast air flowing past an obstruction produces a large range of vibrations. Those vibrations whose wavelength match the length of the tube produce the tone heard. Name the fluid process that produces these vibrations.

ANSWER: **vortex shedding**

Packet 11

1. There exist chiral, countercurrent, simulated moving-bed, and reversed-phase versions of this scientific technique. More common varieties include the gas type, which uses a detector, a carrier gas, and a column, the size-exclusion type in which larger molecules avoid pores in the stationary phase, and the thin-layer type, which relies on capillary action. The paper variety of this technique is often used to separate pigments, and along with the thin-layer variety, calls for the calculation of R_f values. FTP, name this technique for separating the parts of a mixture that commonly employs both stationary and mobile phases.

ANSWER: **chromatography**

2. This artist resided in Louisiana shortly after the Franco-Prussian War, where he produced one of his first notable paintings, "The New Orleans Cotton Exchange". He created several different paintings of nude woman in different stages of bathing, including "The Tub" and "After the Bath". Another painting by this artist shows a man and a woman at the Nouvelle-Athenes café staring into space as the table holds a glass of title liquor, "L'Absinthe". However, his two favorite subjects for painting are evidenced in "Horseracing in Longchamps" and "The Dance Class". FTP, who is this French painter famous for his pictures of racecourses and all forms of ballet and dancing?

ANSWER: Edgar **Degas**

3. Many actors have died before getting the chance to play this role on film, including John Belushi and Chris Farley. He believes the majority to be "without theology or geometry," and he has completed but not yet submitted articles including "The Danger of Eight-Cylinder Automobiles." Trapped into working for a hot dog vendor, he inadvertently gets caught up in the pornographic ring of Lana Lee. He often speaks of "the wheel of Fortune," a testament to his love for Boethius's *Consolation of Philosophy*. FTP, Myrna Minkoff eventually convinces this man to leave New Orleans, the protagonist of John Kennedy Toole's *A Confederacy of Dunces*.

ANSWER: **Ignatius J. Reilly**

4. Liz Lemon sang part of this song to Kenneth on 30 Rock, claiming it was part of a lullaby that her grandmother used to sing to her. It has also been used on the soundtracks of movies including *Grosse Pointe Blank*, *Eurotrip*, and *Watchmen*. The song was conceived by guitarist Carlo Kages, and tells of an apocalypse that occurs when two enemies see a strange formation in the sky. Hitting number two on the US billboard charts, FTP, name this song by Nena, the only German-language song to chart in the US in the last forty years.

ANSWER: **99 Luftballons** [or **99 Red Balloons**]

5. Schubert's "Death and the Maiden" quartet is in this key, as is Rachmaninoff's Piano Concerto Number 3. Many of Scarlatti's piano works are in this key, and Bach was enamored of this key. Other pieces in this key include Mozart's requiem, and Bruckner's 9th Symphony. Bruckner's decision to put his 9th symphony in this key was influenced by Beethoven, whose 9th Symphony is also in this key. The key of Bach's famous Toccata and Fugue, FTP, name this minor key, the relative minor key of F major.

ANSWER: **D minor**

6. Albereio is at it's head, while its brightest star, Deneb, is at its tail. It also contains a namesake x-ray source, the first black hole discovered. Containing the "northern cross" asterism, this constellation has nine main stars and borders Cepheus, Draco, and Pegasus. In Greek mythology, Orpheus was transformed into this bird and placed in the sky next to Lyra, his lyre. FTP, name this constellation, whose name is Latin for "Swan".

ANSWER: **Cygnus**

7. His daughter Edie was at one time married to Geraldo Rivera. In his short story "All the King's Horses" an army colonel must play a deadly game of human chess against the evil Chinese Pi Ying. In the story that shares its name with the collection, mandatory birth control pills make people feel like root beer, and people are urged to commit ethical suicide. More famous for novels that feature crude drawings and are populated by his alter ego Kilgore Trout, FTP name this late author of the aforementioned story collection *Welcome to the Monkey House* and novels like *Breakfast of Champions* and *Slaughterhouse Five*.

ANSWER: Kurt **Vonnegut** Jr.

8. This author wrote about the flaring of Charu's emotions due to the arrival of Amal, her husband's cousin, in *The*

Broken Nose. The author of such dramas as *The Post Office* and *Red Oleanders*, he wrote about an activist who longs for the wife of the noble Nikhil in his novel *The Home and the World*. He also authored the poetry collections *Cycle of Spring*, *Sheaves*, and *The Golden Boat*. His *Janaganamana* and *Amar Shonar Bangla* were adopted as national anthems, but he remains best remembered for a collection of 103 poems translated as "Song Offerings." A longtime friend of William Butler Yeats, this is, FTP, what Bengali author of *Gitanjali*?

ANSWER: Rabindranath **Tagore**

9. Pencil and paper ready. Express your answer as a simplified fraction. A biased coin comes up heads two-thirds of the time. FTP, what is the probability of getting at least 2 heads in 4 coin flips? It may help you to know that the fifth row of Pascal's triangle reads 1, 4, 6, 4, 1. It may also be easier to try and compute the probability of getting 3 or more tails.

ANSWER: **8/9** ($P(2 \text{ or more heads}) = 1 - P(3 \text{ tails}) - P(4 \text{ tails}) = 1 - 4 \cdot (2/81) - 1 \cdot (1/81)$)

10. Towards the end of this work the author is concerned that the Irish missionaries have accepted the wrong date for Easter. Throughout the work, the author emphasizes events of the seventh century, when his native Northumbria was strongest. The first twenty-one chapters, covering the period before the mission of Augustine, are compiled from earlier writers, as the author could find few documentary sources in England at that time. FTP, what is this chronicle that covers the history of the church as well as political history in England from the time of Julius Caesar to the eighth century, written by Venerable Bede.

ANSWER: **Historia ecclesiastica gentis Anglorum** or **Ecclesiastical History of the English People**

11. According to Garilasco de la Vega, he was born in Quito, though there are many errors in this account, and it is usually agreed upon that he was born in the capital of the Tahuantinsuyu. After the death of his father and a lesser-known brother named Ninan Cuyochi from what was probably smallpox, his half-brother took the throne of the empire. Civil war eventually broke out between these two sons of Huayna Capac, with this man achieving victory at the battle of Chimborazo over Huascar, thus gaining the title of Sapa Inca. His victory would not last for long, however, as his force of nearly 7,000 elite warriors was ambushed and brutally slaughtered by a small band of less than 200 Spaniards at the battle of Cajamarca. FTP, name this last Incan emperor who was captured and eventually executed by Francisco Pizarro.

ANSWER: **Atahualpa**

12. This man ascended to his most famous post under the name Codomannus, largely through the machinations of the Vizier Bagoas, who killed off this man's predecessor, Artaxerxes III. His incompetence was soon to show, however, at the battle of Issus, where his troops outnumbered the opposing force by 2 to 1. After the battle of Gaugamela, he took flight and was hunted down and killed by Bessus, one of his lieutenants, which was later delivered to Alexander the Great. FTP, which ruler of Persia saw the end of the Achaemenid empire through the conquests of Alexander the Great.

ANSWER: **Darius III**

13. Besides increased risk for germ cell cancer and certain linguistic and learning disabilities, this disease causes taurodontism and gynecomastia. However, it does impart added protection from any recessive, sex-linked diseases due to the presence of an extra Barr body. Increased height, breast enlargement, and decreased body hair can all be attributed to high levels of follicle-stimulating and luteinizing hormones and low levels of testosterone production associated with this ailment. FTP, name this male-only syndrome best characterized by infertility and a XXY trisomy of the sex chromosomes.

ANSWER: **Klinefelter's Syndrome**

14. In his publication "A New View of Society," he maintained that a system of villages of cooperation were better than large, unplanned industrial towns. In partnership with Jeremy Bentham, he set up industrial welfare programs with improved housing and schools at his factories in New Lanark, Scotland. He later took his ideas to the United States, where he established the utopian community at New Harmony, Indiana. FTP, name this early reformer of industrial society.

ANSWER: Robert **Owen**

15. Although the Germans quickly captured the outlying forts of Douaumont and Hardaumont, resistance soon stiffened. The Germans chose to attack here because they thought the French would defend it to the last man, and so it fit in well the the Germans' strategy of war by attrition. Although, in the end, after the Battle of the Somme had diverted German attention, the Germans had sustained roughly the same number of casualties as the French. The longest battle of World War I, this was, FTP, what 1916 site where the French under Petain would hold the German advance?

ANSWER: **Verdun**

16. It is considered one of Shakespeare's worst plays, and is based on the story of Procne and Philomela from Ovid's *Metamorphoses*. In its day, however, its sensational violence made it hugely popular. Aaron the Moor is the lover of Tamora, who disguises herself as Revenge, a friend to the title character. The title character recognizes her as the Queen of the Goths and asks her two sons to stay while she runs an errand. He then avenges their rape of his daughter by binding Chiron and Demetrius and cutting their throats, draining their blood to include in a pie. At the subsequent dinner engagement the title character stabs Tamora, Saturninus stabs him, then Lucius stabs Saturninus, and Lucius emerges as the new Emperor of Rome. FTP name this first and bloodiest of Shakespeare's tragedies.

ANSWER: **Titus Andronicus**

17. The second war by this name was known as the Arrow war. It had its origins in reversing the flow of silver out of British hands. The results of this war probably had a significant impact in fomenting the later Taiping Rebellion. Although the Ching emperor had appointed Lin Zexu to confiscate the namesake substance, the Chinese population was quickly becoming addicted, making China even more vulnerable to the depredations of foreign powers. Ended by the treaty of Nanjing, this was, FTP, what war in which the Chinese attempted to stop the smuggling of a certain drug into Chinese ports?

ANSWER: **First Opium War** or **First Anglo-Chinese War**

18. Kopp's rule provides estimates of this quantity for pure ionic solids. For a given volume of solution, it generally increases with concentration because of increased density. Less commonly termed "thermal mass", this extensive property is important in the selection of building materials and in the operation of bomb calorimeters. The intensive "specific" version is computed by dividing it by the system's mass. FTP, name this ratio, measured in joules per Kelvin, which multiplies "delta T" in an equation for heat gained or lost by a system and measures ability to store heat.

ANSWER: **Heat Capacity** (do not accept specific heat capacity)

19. At the conclusion of this work the sound of a snapped string dies away mournfully, an ax thuds in the background, and a man lies on the stage motionless because he is old and has been forgotten by the other characters. That man, Firs, is always talking about how things were in the past; he is especially fond of recounting how life was before the serfs were freed. His master is the only character in the play with a lover and is appropriately named Lyuba Ranevsky. She eventually sells some land to a businessman named Lopakhin, and leaves for Paris. FTP, what this play Anton Chekhov, about the title part of the Ranevsky estate.

ANSWER: *The* **Cherry Orchard**

20. Although he has many lovers, the only one that elicits his wife's jealousy is Fand, the daughter of a sea god. He has another affair with the warrior woman Aife, the evil rival of his martial arts teacher, after he defeats her, and this union produces a son whom he later accidentally kills. He was sent to train with this teacher, Scathach, by the father of his wife Emer, and as a result masters the terrible seven-barbed spear Gae Bulg, which is used effectively against his son Connla. His most famous adventure, however, occurs when he must single-handedly defend his homeland from the forces of Connacht, headed by his foster-father Fergus mac Roich. During this war, he is visited by the Morrigan, who tries to hinder him as an eel, a wolf, and a cow, and by the god Lugh, who reveals to him that he is his father with Deichtine, sister of the king of Ulster. Formerly named Setanta, this is, FTP, what "hound of Culann," a foe of queen Maeb and hero of the Ulster cycle of Irish mythology.

ANSWER: **Cuchulain**

1. FTPE, name these chemical processes which are all similar in nature and which all start with the letter A.

[10] In this process, a molecule enters the bulk phase of a gas, liquid, or solid material to form a solution.

ANSWER: **absorption**

[10] If a gas or liquid solute forms a layer or film of molecules on the surface of a liquid or solid material, this kind of chemical interaction has occurred.

ANSWER: **adsorption**

[10] The mechanical, dispersive, electrostatic, diffusive, and chemical models of this phenomenon all attempt to explain the attractive forces that can be found between two different kinds of molecules.

ANSWER: **adhesion**

2. Co-founded by Ellen Gates Starr and located in Chicago, it eventually grew to include over 13 buildings, which held space for its social, educational, and artistic programs. FTPE:

[10] Name this early settlement house that supported immigrants

ANSWER: **Hull House**

[10] This winner of the 1931 Nobel Peace prize was primarily responsible for the founding and development of Hull House

ANSWER: **Jane Addams**

[10] This New York settlement house founded by Lillian Wald, was nearly as large as Hull House

ANSWER: **Henry Street Settlement**

3. Answer some questions about a poet and his works, FTPE:

[10] This is the title of a poem whose first stanza reads "I have eaten / the plums / that were in / the icebox".

ANSWER: **"This is Just to Say"**

[10] "*This is Just to Say*" is by this pediatrician and imagist poet of "*The Red Wheelbarrow*"

ANSWER: William Carlos **Williams**

[10] William Carlos Williams wrote this five-book poem as a monument to the titular city in New Jersey, his hometown.

ANSWER: **Paterson**

4. FTPE, answer some questions about a U.S. policy of the 19th century.

[10] The primary force behind this policy was British foreign minister George Canning, who controlled the British Navy

ANSWER: **Monroe Doctrine**

[10] The Monroe doctrine was mostly the idea of this man, who served as Monroe's secretary of state

ANSWER: **John Quincy Adams**

[10] Under the authority of the Roosevelt Corollary, the United States took over the management of the finances of Nicaragua during the presidency of this man.

ANSWER: William Howard **Taft**

5. It is usually performed as the first movement of the suite which contains it, though by position it ought to come somewhere after "The Bringer of Peace" and before "The Bringer of Jollity." FTPE:

[10] Name this march in 5-4 time, which contains strings played with the wooden side of the bow and sharply struck kettle drums in a long crescendo.

ANSWER: "**Mars**, the Bringer of War"

[10] "Mars, the Bringer of War" is one movement of *The Planets*, a suite by this tromboner who also composed *St. Paul's Suite*, *The Golden Goose*, and *Egdon Heath*.

ANSWER: Gustav(us) Theodore von **Holst**

[10] This song from *West Side Story*, in which Anita and Rosalia argue about emigrating, is sometimes wrongly said to be in 5-4 time. It is actually in a mixed meter of 6-8 and 3-4 meter.

ANSWER: **América**

6. Right out of high school, straight into the pros. If you get the Nelly reference, you're too old to be playing in this tournament. Answer some questions about young professional basketball players FTPE.

[10] This Oak Hill Academy graduate, who projects to be a high pick in the 2009 NBA draft, is currently playing in Italy after failing to become academically eligible to play in college.

ANSWER: Brandon **Jennings**

[10] This six-eleven power forward of Farragut High School in Chicago was the first high school player to enter the NBA in twenty years when he was drafted 5th in 1995 by the Minnesota Timberwolves.

ANSWER: Kevin **Garnett**

[10] One of the greatest busts out of high school is this six-eleven center recently dealt to the Detroit Pistons. Drafted first overall by the Wizards in 2001, he has notoriously small hands.

ANSWER: Kwame **Brown**

7. FTPE, answer these questions about parts of the immune system.

[10] In mammals, these lymphocytes largely form in the bone marrow, though they are named for the Bursa of Fabricius, the organ in which they mature in birds. After turning into plasma cells, they produce the antibodies that are central to adaptive immunity.

ANSWER: **B** Cells

[10] One variety of antibody produced by B cells is this dimer. These immunoglobulins are critical to mucosal immunity, and are also found in tears, saliva, and intestinal juice.

ANSWER: **IgA** (also accept **Immunoglobulin A**)

[10] These granulocytes are the most abundant variety of white blood cells in the body and are essential components of innate immunity. Some scientists believe their short lifespans are an adaptation against parasitic pathogens.

ANSWER: **neutrophils**

8. FTPE, answer these questions about flowers.

[10] This term collectively describes the stigma, style, and ovary and refers to the basic unit of the female reproductive system of the flower.

ANSWER: **carpel**

[10] These green structures collectively form the calyx and are usually less prominent than petals. Merosity refers to number of them in a given flower.

ANSWER: **sepals**

[10] The transcription factor-based development of both the carpel and sepal can be described by this model, which was proposed by Coen and Meyerowitz in 1991.

ANSWER: **ABC** Model of Flower Development

9. Answer some questions about the *Si Da Ming Zhu* or *Four Major Classical Novels* of Chinese Literature, FTPE:

[10] The earliest of the *Four Major Classical Novels* to be written, this events of this novel start during the Yellow Turban Rebellion and include the famous episode of the Battle of the Red Cliff.

ANSWER: **Romance of the Three Kingdoms**

[10] *The Romance of the Three Kingdoms* was by this 14th century Chinese author.

ANSWER: **Luo Guanzhong** or **Lo Kuan-chung** or **Luo Ben**

[10] Though this the second of the *Four Major Classical Novels* is officially attributed to an author by the name Shi Naian, many suspect that this was a pseudonym for Luo Guanzhong. It follows the stories of 108 outlaws and the corrupt government official Gao Qiu.

ANSWER: **The Water Margin** or **Outlaws of the Marsh** or **All Men Are Brothers** or **The Marshes of Mount Liang**

10. Answer some questions about courtroom dramas, FTPE:

[10] William Jennings Bryan and Clarence Darrow were fictionalized into Matthew Harrison Brady and Henry Drummond in this play by Jerome Lawrence and Robert Edwin Lee.

ANSWER: **Inherit the Wind**

[10] He adapted his most famous novel, *The Caine Mutiny*, into a courtroom drama called *The Caine Mutiny Court Martial*.

ANSWER: Herman **Wouk**

[10] This author wrote the courtroom drama "*The Witness for the Prosecution*", based on a short story of the same name. She also wrote the mystery play *The Mousetrap*, the longest running play in history.

ANSWER: Agatha **Christie**

11. Dr. Aziz is a Muslim physician, Cyril Fielding is the English headmaster of a British-run college, and Adele Questead is an English schoolmistress abroad. FTPE:

[10] Racial tensions explode during a journey to the Marabar Caves in what 1924 novel?

ANSWER: **A Passage to India**

[10] *A Passage to India* is by this English novelist of *A Room with a View*.

ANSWER: E(dward) M(organ) **Forster**

[10] The Wilcoxes, Schlegels, and Basts are the families in this Forster novel set at the title location.

ANSWER: **Howard's End**

12. All roads lead to Rome: Name these politicians FTPE.

[10] The Roman empire reached its greatest geographic extent in 125 AD under this man. He followed Trajan and built his wall was built to guard against the Picts in northern England.

ANSWER: **Hadrian**

[10] This tribune tried to implement land reforms, but his opponents feared that he wished to crown himself in the process, and beat him to death with the senators' chairs. His brother Gaius later also became tribune and met an untimely end.

ANSWER: **Tiberius Gracchus**

[10] This last Roman emperor was installed by his father Orestes and deposed by Odoacer while he was still a child in 476. He disappeared from the historical record soon afterwards.

ANSWER: **Romulus Augustus** or **Romulus Augustulus**

13. Name these novels of Virginia Woolf, FTPE:

[10] In this work, Woolf's first novel, Rachel Vinrace travels to South America, falls in love with Terence Hewet, and dies.

ANSWER: **The Voyage Out**

[10] In addition to her novels, Woolf also produced this extended essay discussing the importance of granting independence to female artists to allow them to produce artwork on par with that produced by men.

ANSWER: **"A Room of One's Own"**

[10] The title character is Clarissa, who turned down Peter Walsh and has her party delayed by the suicide of Septimus Smith.

ANSWER: **Mrs. Dalloway**

14. Answer some questions about numbers FTPE.

[10] This well-ordered set can be constructed from the Peano axioms, along with the principle of mathematical induction.

ANSWER: **Natural** numbers

[10] This set consists of the positive and negative natural numbers, plus zero.

ANSWER: **Integers**

[10] Integer primes of the form $4n + 1$ can be factored over this ring, which is the collection of points in the complex plane of the form $a + bi$, where a and b are integers. They are named for the 19th century mathematician who first studied them.

ANSWER: **Gaussian** Integers

15. Name these periods in Japanese history, FTPE:

[10] This period, lasting from 794 to 1185, saw the peak of Chinese influence in Japan. It began with the reign of the Kammu emperor and included a major rivalry between the Fujiwara and Taira clans. It also saw the development of Shingon Buddhism and the writing of the *Tale of Genji*

ANSWER: **Heian** period

[10] After the Gempei wars brought about the decline of the Heian period, rule was seized by the namesake shogunate of this feudal period in Japanese history lasting from 1185 to 1333, which saw the spread of Zen Buddhism and the repulsion of the Mongol invasions

ANSWER: **Kamakura** period

[10] After Tokugawa Ieyasu seized power and established his namesake shogunate, he moved the capital to a city which gave the period its name, and which is now the capital of Japan, though under a different name

ANSWER: **Edo** period (do not accept Tokugawa or Tokyo)

16. Answer these questions about Caribbean Geography FTPE:

[10] This Caribbean island maintains its status as a Free-Associated State with the United States. It has its own constitution and has voted to maintain its "status" as recently as the 1999 Plebiscite.

ANSWER: **Puerto Rico**

[10] This Caribbean nation has taken a step toward democracy after a series of dictators and military rule. Its flag mirrors that of the old revolutionary flag of Puerto Rico because they were meant to be sister nations.

ANSWER: **Dominican Republic**

[10] This body of water lies between the Dominican Republic and Puerto Rico.

ANSWER: **Mona Passage**

17. Name these children of Loki, FTPE:

[10] The oldest of Loki's children with the giantess Angrboda is this savage wolf who kills Odin at Ragnarok.

ANSWER: **Fenrir** or **Fenris**

[10] The second of Loki's children is this huge serpent that encircles the world, who is killed by Thor at Ragnarok but poisons the god with its deadly breath.

ANSWER: **Jormungand** or **Jormungandr** (prompt on **Midgard Serpent**)

[10] The Last of Loki's children is this goddess of the dead at Niflheim, whose hound Garm kills Tyr at Ragnarok.

ANSWER: **Hel**

18. Answer some questions about physics FTPE.

[10] Physicists are still puzzled by the asymmetry in the early universe that arose due to an imbalance in the baryogenesis of this kind of particle compared to the type of particles that make up the observable universe.

ANSWER: **Antiparticles** (accept **Antimatter**)

[10] This British theoretical physicist predicted the existence of antimatter as a consequence of his namesake equation.

ANSWER: Paul Adrien Maurice **Dirac**

[10] This device uses magnetic fields to store antiparticles at CERN in Switzerland. In Dan Brown's *Angels and Demons*, it has only a 24 hour back-up battery, which becomes problematic.

ANSWER: **Penning trap**

19. Name these things about the labors of Heracles, FTPE:

[10] Heracles' first labor was to kill this beast who could not be pierced by metal weapons. He later wore its hide as an impenetrable armor.

ANSWER: **Nemean lion**

[10] Heracles' last labor was to bring this three-headed guard dog of Hades up to earth. King Eurystheus was so frightened of it that he hid in a jar.

ANSWER: **Cerberus**

[10] Heracles' sixth labor was to kill these creatures with wings, beaks, and claws of metal. He did this by clashing cymbals and then shooting them with arrows as they flew away.

ANSWER: **Stymphalian birds**

20. Name these leaders of Pakistan, FTPE:

[10] This head of the Muslim League during the Indian Independence movement was the founder and first Governor-General of modern-day Pakistan

ANSWER: Muhammad Ali **Jinnah**

[10] She served two separate terms as Prime Minister of Pakistan, becoming the first woman to be head of state in a Muslim nation. She was recently assassinated, allowing her husband Asif Ali Zardari to flirt shamelessly with Sarah Palin

ANSWER: Benazir **Bhutto**

[10] This President of Pakistan between 2001 and 2008 seized power in a bloody military coup and subsequently helped promote democracy in Afghanistan as a U.S. ally in the War on Terror. He was ousted by the Pakistani people early this year.

ANSWER: Pervez **Musharraf**

Packet 12

1. He drew up designs for a stadium in Baghdad, which eventually came to be named Saddam Hussein Gymnasium. He invented his own system of proportions using human measurements known as the Modulor. Commissioned to replace a war-ravaged church, he designed a gigantic white stone-and-concrete structure with a sweeping roof, eccentric windows, and a silo-like projection, the Notre Dame du Haut. He discussed his five points of architecture in his influential essay collection *Towards a New Architecture*, a strategy exemplified in his Villa Savoye, and he co-designed the U.N.'s New York headquarters. FTP, name this early proponent of the International School, a Swiss-French architect.

ANSWER: **Le Corbusier** or Charles-Édouard **Jeanneret-Gris**

2. Salamanders of the genus *Ambystoma* use a related process that rarely allows for mutations to be inherited. Kaguya was recently created by it, though Gregory Pincus holds the distinction of producing the effect first in mammals when he did so in 1937 with rabbits. It was first discovered by Charles Bonnet in aphids, though it took more than 150 years before it was artificially induced, an achievement which belongs to Jacques Loeb. FTP, name this sperm-less process by which an unfertilized egg develops into an organism, a form of asexual reproduction.

ANSWER: **parthenogenesis**

3. Today, this opera is mostly remembered for its overture, which features sections called prelude, storm, Ranz de Vaches (or call of the cows), and a finale which features a cavalry charge led by the trumpets and horns. Mathilde, a Hapsburg princess, and Arnold Melcthal confess their love for each other in this opera, which is forbidden by the political situation. The title character sings “sois immobile” at the opera’s climax, and Gesler, the governor of Uri and Schwyz is toppled, as the protagonist’s son stands still. The last opera of Gioachino Rossini, FTP, name this opera based on a Friedrich Schiller play, the story of a Swiss folk hero.

ANSWER: **William Tell**

4. This dynasty got its start when Childeric I defeated the Alemanni. This kingdom gained most of its power under Childeric's son, however, who won the battle of Tolbiac, after defeating the Roman governor, Syagrius, north of the Loire river. Afterwards, he was allegedly persuaded by his wife to adopt the Christian faith, and soon defeated the Visigoths at the Battle of Vouille, uniting most of Gaul under this dynasty. FTP, what was this dynasty that ruled Gaul from the fall of Rome until they were overthrown by Pepin the Short?

ANSWER: **Merovingians**

5. Homer Simpson claimed that he once knew this man, and that many of the things said about him are not true. He was introduced in the early 1920's, and the first story about him tells how his daughter Nan eloped with a man and stole his money. In sequels to the first story, he retrieves his money, but gets chased by his daughter to Manhasset. Originally the subject of the Chicago Tribune's Limerick Challenge, most of the poems he features in are very, very dirty. FTP, name this person from just south of Cape Cod.

ANSWER: The **Man from Nantucket**

6. The alleged instigators of this event, Isaac Harris and Max Blanck, were successfully defended at trial by Max Steuer, after which they received estimated compensation of about \$400 per victim. Although they were believed to have kept one of the doors locked on the 9th floor of the Asch building, which made escape impossible. A New York Times article at the time thought it might have been caused by engines running the sewing machines. This event is said to be the largest industrial disaster in the history of New York, and its aftermath spurred the growth of the International Ladies' Garment Workers' Union. This was, FTP, what 1911 fire at the namesake industry building, which saw the deaths of 146 garment workers?

ANSWER: **Triangle Shirtwaist Factory Fire** or **Triangle Shirtwaist Company Fire** (accept any answer containing “Triangle Shirtwaist” and “fire”)

7. In one of this man's novels, a man stands in an empty house in the South of France and awaits what he believes will be “the most terrible morning of my life.” That man, David, is alone because has been left by his girlfriend, Hella, but the morning is terrible because it is the morning that Giovanni, his lover, will be executed for the murder of his employer, Guillaume. That novel, *Giovanni's Room*, was notable for concerning only white characters; he would treat racial themes in a set of essays, *Nobody Knows My Name*, and in a later novel, *Another Country*. FTP, name this American author, best known for his works *The Fire Next Time* and *Go Tell It On the Mountain*.

ANSWER: James **Baldwin**

8. Though not known primarily for his poetry, this man is said to be the first to distinguish between events beyond human control and those within human control. When he was entrusted with full legislative powers, he abolished distinctions of birth for requirements of office. He later formed a new council, alongside the Areopagus, to advise the Ekklesia, or Assembly of Citizens. He classified all of his cities inhabitants by income into four groups, by which liability for taxes and military service were determined. He reduced many of the harsh laws promulgated by his predecessor, Draco. Ending the power of the landed classes in Ancient Greece was, FTP, what leader of Athens?

ANSWER: **Solon**

9. The Council of Pisa, nominally summoned to end this event, merely perpetuated it with the election of Alexander V. Its had its origins nearly a hundred years before, when Pope Clement V took his papacy to Avignon, where it remained until this event occurred, with the election of Pope Urban VI by the Italians, who soon alienated his supporters, resulting in the election of another pope, Clement VII, who went back to Avignon while Urban VI stayed in Rome. This was, FTP, what tumultuous period in western Christendom finally ended at the Council of Constance with the election of Martin V?

ANSWER: **Great Schism** (accept "**Western Schism**" or "**Papal Schism**")

10. A version of this type of compound that includes silicon is commonly used as a protecting group for hydroxyl groups, while the crown variety is synthetically useful to form complexes with metal cations. They are commonly formed via the Williamson synthesis in which an alkoxide attacks an alkyl halide through an SN2 mechanism to form both symmetrical and asymmetrical versions. Epoxides are a cyclic version of them, with the simplest being ethylene oxide. FTP, name this functional group, an oxygen atom single bonded to two carbon atoms.

ANSWER: **ether**

11. Theodosius allowed them to settle in Moesia for purposes of defending the frontier. Which was far better treatment than they got from the Romans previously, when, after being oppressed by taxation, they plundered the Balkan provinces and killed emperor Valens in the process at Adrianople. After settling in Roman territory, though, their leader Alaric marched on Rome and sacked it. Afterwards, though, they redeemed themselves somewhat by helping the Romans fight off Attila the Hun, losing their new leader, Theodoric. The Huns were responsible for pushing them westwards in the first place, separating them from their eastern neighbors, the Ostrogoths. This is, FTP, what barbarian tribe that eventually settled in Spain?

ANSWER: **Visigoths**

12. Pencil and paper ready. FTP, Factor the following polynomial completely into irreducible terms. Two x to the eighth, minus 512.

ANSWER: **2(x-2)(x+2)(x²+4)(x⁴+16)** [any order]

13. Its implications were challenged in the 1935 Einstein, Podolsky, and Rosen article titled "Can Quantum-Mechanical Description of Physical Reality be Considered Complete?" In a quantum computer, it allows for qubits to hold not only ones or zeroes, but many combinations of the two. Generally, it states that if a particle can be in each of two states, then it can be in a combination of the two states. FTP, name this quantum principle, famously illustrated by Schrodinger's simultaneously living and dead cat, and whose consequences include quantum entanglement and spooky action-at-a-distance.

ANSWER: Quantum **Superposition**

14. Novels by Philip Roth and Cormac McCarthy take their titles from lines from this poem. The first stanza describes the place the speaker has left, where "Fish, flesh, or fowl, commend all summer long / Whatever is begotten, born, and dies". In the third stanza, the speaker asks "sages" to consume his heart, which is "fastened to a dying animal". The second stanza contains the image of a scarecrow: "An aged man is but a paltry thing / a tattered coat upon a stick" and the title location is first mentioned in the stanza's final line. "That is no country for old men" is the first line of, FTP, what William Butler Yeats poem about a journey to Constantinople?

ANSWER: **"Sailing to Byzantium"**

15. This man ran in the Democratic primary for mayor of New York City in 1969, under the slogan "throw the rascals in," and finished fourth in a field of five. He was probably unelectable in part because he had stabbed his second wife, Adele Morales, with a penknife at a party nine years before. He is better known as novelist and for his role in the formulation of

the New Journalism. He wrote an essay on hipsters, *The White Negro*, in 1957, reported on the March to the Pentagon in the Pulitzer Prize winning work *The Armies of the Night* in 1968, and co-founded the Village Voice in 1955. FTP name this man, best known for his novels *The Naked and the Dead* and *The Executioner's Song*.

ANSWER: Norman **Mailer**

16. An independent Upanishad and Purana are dedicated to him, and he is known as Periya Thiruvadi in Tamil Vaishnavism. He is identified with the constellation Aquila, and is represented today by the Brahminy kite. He is called Syena in the Vedas, which tell of his bringing nectar to earth from the heavens, and in Buddhism, a race of divine creatures who are at war with the snakelike Nagas shares his name. Krishna invokes his name on the battlefield in the Bhagavad Gita, though the fullest account of his life comes from the Mahabharata, where he is said to be the son of Kashyapa and Vinata. He was said to have defeated an entire host of gods in full battle array while on his quest to steal the amrita, or elixir of immortality, but made peace with both Indra and Vishnu, to whom he became a loyal servant and mount. Said to have burst forth from his egg as a raging inferno and to be large enough to block out the sun, this is, FTP, what Hindu bird deity, whose flapping wings chant the Vedas?

ANSWER: **Garuda**

17. The protagonist's works of fiction include an epic on the life Frederick the Great and a discourse on Mind and Art reminiscent of Schiller. He is inspired to go on his trip after bumping into a red-haired man while walking through a Byzantine church in Munich. On his trip, he meets a hideously made-up old man, whose appearance is not unlike one he will affect near the end of the book. Mid-way through his stay, it becomes clear that it is unwise to remain in the title location as there are clear signs of a cholera epidemic, but he does stay, due to his new-formed passion for the young Polish boy, Tadzio. FTP, Gustave Aschenbach is the protagonist of what novella by Thomas Mann.

ANSWER: **Death in Venice** or **Tod in Venedig**

18. It is in a cellar, in a house on Garay street, which is owned by Carlos Argentino Daneri. In it can be seen a bunch of grapes, snow, tobacco, and steam; a sunset in Querétaro, horses on the Caspian Sea, and a Persian astrolabe. Daneri uses it to help him write the poetry that wins him second place in the Argentine National Prize for Literature. FTP name this "only place on earth where all places are seen from every angle, each standing clear, without any confusion or blending", the titular point in space in a Jorge Luis Borges short story, which shares its name with the first letter of the Hebrew alphabet.

ANSWER: **The Aleph**

19. After earning his PhD at Harvard, he became the Superintendent of the Bureau of Weights and Measures in the Philippines before settling at the University of California, Berkeley in 1912. His work in photochemistry expanded understanding of phosphorescence's triplet state and led to his coining of the term "photon," while his seminal paper, "The Atom and the Molecule," first established the concept of the covalent bond. FTP, name this chemist best known for being the first to purify deuterium oxide and for his namesake acid-base definitions and dot structures.

ANSWER: Gilbert Newton **Lewis**

20. After meeting Euthyphro outside of the Athenian law court, this man tries to pry out of Euthyphro a true definition of impiety to prove his innocence. At the end of his life, he argues with Cebes and Simmias that a philosopher should find joy in death since death removes him from his limiting body. At a symposium where Agathon, Erixymachus and others give their own views on love, this man rebukes them using the ideas of a woman named Diotima. In a discussion with Polemarchus, Glaucon, Adeimantus and others, this man attacks Thrasymachus' view that justice is only the advantage of the stronger. FTP, who is this man that defends himself in the Apology against false charges but is nevertheless convicted of corrupting the youth of Athens and punished with death by drinking poison hemlock. He was a teacher of Plato.

ANSWER: **Socrates**

1. FTPE, answer these related chemistry questions regarding mixtures.

[10] If one substance is not evenly distributed in another substance, this kind of heterogeneous mixture is formed. Sedimentation can occur in these.

ANSWER: **suspensions**

[10] Unlike suspensions, this kind of mixture has an even distribution of one substance within another. They consist of a dispersed phase and a continuous phase.

ANSWER: **colloids**

[10] This kind of light scattering can be seen in both suspensions and colloids because the particles in the mixtures are not completely dissolved in solution.

ANSWER: **Tyndall** effect

2. Answer these questions about a long conflict FTPE.

[10] This struggle between England and France officially lasted from 1337 to 1453, but similar conflicts over English claims in France date back to the 12th century.

ANSWER: The **Hundred Years' War**

[10] This man rejected an offer to become Holy Roman Emperor in 1348 but laid a claim to the throne of France, a claim every British Monarch would also make until 1801. He later renounced his claim for the throne in exchange for Aquitaine.

ANSWER: **Edward III**

[10] This man won his ostrich plumes at the Battle of Crecy and was one of the original Knights of the Garter. He was a great warrior, defeating the French at Poitiers in 1356, but predeceased his father, Edward III.

ANSWER: **Edward the Black Prince** (accept "**Edward of Woodstock**")

3. Answer some related music questions FTPE:

[10] Bach wrote 15 of these pieces, also called 3-part inventions, to go with his 15 2-part inventions.

ANSWER: **sinfonias**

[10] Ralph Vaughan Williams Seventh Symphony is given this title, since he took the theme from the score of a movie he wrote about the last expedition of Robert Scott.

ANSWER: **Sinfonia Antarctica**

[10] This E flat major work of Mozart is widely performed. It features a violin and viola duet playing over an orchestra.

ANSWER: **Sinfonia Concertante** K.364 in E flat major

4. FTPE, answer these questions about receptors.

[10] These are the molecules that bind to receptors. They are often substrates, inhibitors, or activators, and they typically induce a conformational change in the receptor.

ANSWER: **ligands**

[10] Members of this family of proteins are typically activated when a receptor-mediated conformational change allow these proteins to exchange a namesake triphosphate for its diphosphate variety. In eye cells, they go on to activate adenylate cyclase and thereby produce cyclic AMP.

ANSWER: **G proteins** (also accept **guanine nucleotide-binding proteins**)

[10] This pigment in the retina is the namesake for an entire class of G protein-coupled receptors. It has two components, a cofactor known as retinal, and a seven transmembrane protein which binds it.

ANSWER: **rhodopsin**

5. Are you a Dickie V or a Dick Enberg? Find out by giving mascots from schools in the NCAA Men's Division I Basketball tournament FFPE.

[5] University of Oklahoma

ANSWER: **Sooners**

[5] UCLA

ANSWER: **Bruins**

[5] University of Arizona

ANSWER: **Wildcats**

[5] Villanova University

ANSWER: **Wildcats**

[5] Virginia Commonwealth University

ANSWER: **Rams**

[5] Western Kentucky University

ANSWER: **Hilltoppers**

6. This strong anti-colonial play involves mystical creatures and catapulted its author to fame in his native country. FTPE:
[10] Name this play, whose main characters include people, ghosts, and animals. The play begins with Aroni, the Lamé One saying “I know who the Dead Ones are.”

ANSWER: **A Dance of the Forests**

[10] Name the Nigerian author of *A Dance of The Forests*, who is, allegedly, more famous for *Kongi's Harvest* and *The Swamp Dwellers*.

ANSWER: Akinwande Oluwole "Wole" **Soyinka**

[10] In this Soyinka work, the title equestrian Elesin Oba fails to commit suicide during a ritual and is disgraced to his fellow tribe members.

ANSWER: **Death and the King's Horseman**

7. Answer some questions about important early cases in the history of the Supreme Court, FTPE:

[10] This first important decision of John Marshall ruled that the federal government had jurisdiction in the case of an individual against another state.

ANSWER: **Chisholm v. Georgia**

[10] This case, named after a certain other Ivy League school, ruled that states could not arbitrarily alter contracts.

ANSWER: **Dartmouth v. Woodward**

[10] This case ruled that Georgia could not remove the Cherokee Indians living within it, but was not adhered to by president Andrew Jackson, who reportedly said of Marshall and his decision “Let him enforce it”

ANSWER: **Worcester v. Georgia**

8. Henry Fielding wrote two novels spoofing the works of this author, in particular his 1740 novel *Pamela*, FTPE:

[10] Who is this author of *Clarissa*, the longest novel in the English language?

ANSWER: Samuel **Richardson**

[10] *Pamela* and *Clarissa* are both examples of this kind of novel, popular in the 18th century, which is told entirely through letters and documents written by the characters.

ANSWER: **Epistolary** Novel

[10] One of the most famous and still-read epistolary novels of the 18th century is this one by Pierre Choderlos de Laclos about the Vicomte de Valmont and Marquise de Merteuil, who use sex to ruin and control people.

ANSWER: **Les Liaisons Dangereuses** (accept “**Dangerous Liaisons**”, but shoot them a look of pure loathing)

9. Parts of this novel are titled “A Voyage to Brobdingnag” and “A Voyage to the country of the Houyhnhnms.” FTPE:

[10] Lilliput and Blefuscu are island nations in what satirical novel.

ANSWER: **Gulliver's Travels**

[10] *Gulliver's Travels* is by this Anglo-Irish author of *A Modest Proposal*.

ANSWER: Jonathan **Swift**

[10] Swift's first major satire was this story of three brothers, each representing a different branch of Christianity.

ANSWER: **A Tale of the Tub**

10. Answer some questions about data structures FTPE.

[10] This data structure supports random access, but insertions and deletions take linear time.

ANSWER: **array**

[10] This data structure, often used to symbolize function calls, support only pushes and pops from the top.

ANSWER: **stack**

[10] This data structure, similar to a stack, allows pops from the front, and pushes from the back. A deck allows pushes and pops at both ends.

ANSWER: **queue**

11. FTPE, name any three of the four passive circuit elements.

[10, 10, 10]

ANSWER: **Resistor, Capacitor, Inductor, Memristor** (any three)

12. Answer some questions about famous works of war literature, FTPE:

[10] Paul Baumer is the protagonist of this iconic World War I novel by Erich Maria Remarque about young German soldiers in the trenches.

ANSWER: **All Quiet on the Western Front**

[10] Winner of the 1952 National Book Award for Fiction, this novel by James Jones follows the experiences of Captain Dana “Dynamite” Holmes and Sergeant Milt Warden in Hawaii during World War II.

ANSWER: **From Here to Eternity**

[10] This 1990 collection of stories by Tim O’Brien was a finalist for the Pulitzer Prize, and is based on the author’s experiences in Vietnam.

ANSWER: **The Things They Carried**

13. Answer some questions about the poetry of Robert Frost, FTPE:

[10] Frost declared his favorite among his own poems to be this one, whose final stanza reads: “The woods are lovely, dark, and deep / But I have promises to keep / And miles to go before I sleep / And miles to go before I sleep”.

ANSWER: **“Stopping by the Woods on a Snowy Evening”**

[10] “Two roads diverged in a yellow wood” begins this Frost poem, often mistakenly thought of as anthem for nonconformity, an interpretation that Frost found amusing.

ANSWER: **“The Road Not Taken”** [Laugh at any poor chumps who think the title is “The Road Less Traveled”]

[10] Though scholars suggest that the proverb “good fences make good neighbors” dates back to the 17th century, its resurgent use in common speech is largely due to its prominence in this Frost poem.

ANSWER: **“Mending Wall”**

14. Name these loa from Voodoo, FTPE:

[10] The first loa invoked in any Voodoo ceremony is this guardian of the crossroads and intermediary between the loa and humanity. He is portrayed as an old man with a pipe and straw hat.

ANSWER: **Papa Legba**

[10] Casting voodoo curses or creating zombies requires the help of this loa of the dead. Depicted as wearing a top hat, sunglasses, and a tuxedo, he is named after a certain day of the week

ANSWER: **Baron Samedi**

[10] This warrior loa of fire and iron is depicted with a saber or machete, and is derived from a Yoruba deity who was a patron of smiths and the forge.

ANSWER: **Ogoun**

15. This man served three terms as governor of Ohio before becoming president, FTPE:

[10] Name this man who would go on to controversially win the election of 1776

ANSWER: Rutherford B. **Hayes**

[10] This law, passed over Hayes’ veto, required that the government purchase \$2-\$4 million worth of silver bullion monthly, pleasing the bi-metallists

ANSWER: **Bland-Allison** act

[10] The first stirrings of organized labor outbursts could be seen during Hayes’ presidency, especially during the Scranton mining riots of this secret Irish mining group

ANSWER: **Molly Maguires**

16. Certain biological macromolecules are found in very large quantities in nature. FTPE, name the following ones.

[10] This polysaccharide is the most common on Earth due to its prevalence in the cell walls of plants.

ANSWER: **cellulose**

[10] This is the most common protein found in animals.

ANSWER: **collagen**

[10] This is the most common protein found on Earth. It is an important enzyme in photosynthesis.

ANSWER: **rubisco**

17. Name the following existentialist philosophers, FTPE:

[10] This 19th century Danish Christian theologian and author of such works as *Fear and Trembling*, *Sickness unto Death*, and *Either Or* believed existentialism to be compatible with Christianity

ANSWER: Soren **Kierkegaard**

[10] This World War II veteran and friend of Franz Fanon was the leading figure of postwar French existentialism. He is known for such works as *No Exit*, *The Flies*, and *Being and Nothingness*

ANSWER: Jean-Paul **Sartre**

[10] This feminist thinker and author of *The Second Sex* had a lasting affair with Sartre.

ANSWER: Simone de **Beauvoir**

18. Name these famous French kings, FTPE:

[10] This Capetian king ruled between 1214 and 1270. Well known for his piety and fairness, as well as for his crusading, he was canonized as a Saint, and gives his name to a city in Missouri.

ANSWER: **Louis IX** or **Saint Louis**

[10] This Valois king of the Renaissance had a salamander as his symbol, and is best known for his patronage of Leonardo DaVinci, whom he convinced to bring the *Mona Lisa* to France

ANSWER: **Francis I** or **Francois I**

[10] This first king of the Bourbon dynasty put an end to the Wars of Religion by converting to Catholicism, commenting that "Paris is worth a mass". He is known as The Good, and was assassinated by Ravallac.

ANSWER: **Henry IV**

19. Given a continent, name the highest peak on that continent, FTPE:

[10] North America.

ANSWER: **McKinley**

[10] South America.

ANSWER: **Aconcagua**

[10] Europe.

ANSWER: **Elbruz**

20. Answer these questions about the history of New Zealand, FTPE:

[10] The first British contact with New Zealand came in the form of an expedition headed by this explorer and captain of the Endeavor, whose other achievements include the discovery for Europe of Australia and Hawaii.

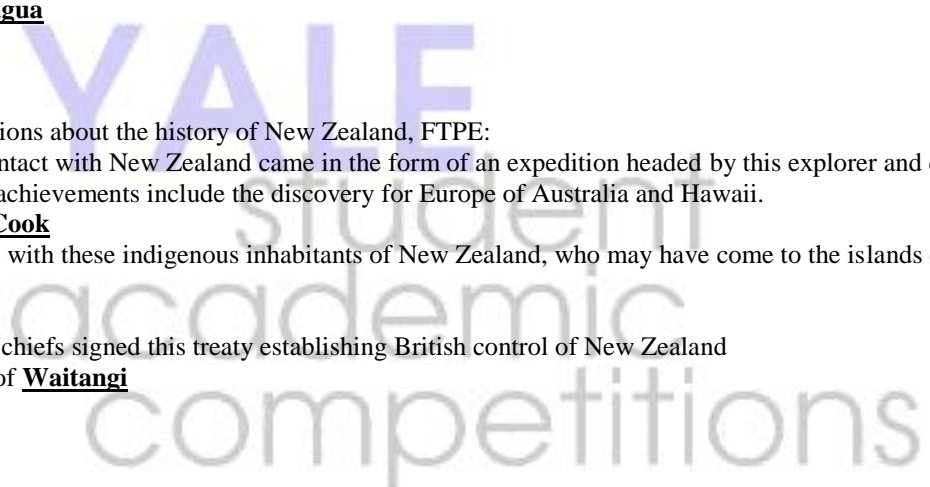
ANSWER: James **Cook**

[10] Cook made contact with these indigenous inhabitants of New Zealand, who may have come to the islands circa 1300 AD.

ANSWER: **Maori**

[10] In 1840, the Maori chiefs signed this treaty establishing British control of New Zealand

ANSWER: Treaty of **Waitangi**



we are the people with buzzers who answer questions