**2021 National All-Star Academic Tournament**

**Round 2 – Tossups**

**Note to moderators: Please read the answerline to tossup 13 carefully**

1. Prior to one of these events, a so-called "great" parliament adopted an act, which Edmund Burke praised as "the noblest benefit received by any nation." The first of these events was satirized in the French engraving *The Twelfth Cake*, and the second one occurred due to nobles who opposed the Constitution of 3 May 1791. In the first of these events, an invading army won the Battle of Lanckorona **(lontz-kuh-ROH-naa)** over the Bar Confederation. The Targowica **(tar-goh-WEET-zuh)** Confederation encouraged a later one in an attempt to restore the "Golden Liberty." During the first one, Catherine the Great invaded a nation ruled by her former lover Stanisław Poniatowski **(poh-nuh-TAHV-skee)**. For 10 points, name this series of events in which Russia, Austria, and Prussia annexed territory from a country whose capital is Warsaw.
ANSWER: **partition**s of **Poland**-Lithuania [prompt on partitions]
<History European 1400-1914 - Caleb Kendrick>

2. This author transcribed a poem from Bonnie Parker calling Clyde Barrow "honest, upright, and clean" while disguised as an Opium Tong Enforcer at a party. After stopping Junkie George from beating his wife, this author was nearly killed by a gang led by Sonny Barger. In an essay, this author dreams about macing "the whiskey gentry" discussing the Black Panthers. This author and the illustrator Ralph Steadman interviewed the owner Lehmann, whose horse Dust Commander wins the title race in "The Kentucky Derby is Decadent and Depraved." A novel by this author of *Hell's Angels* begins with Dr. Gonzo and Raoul Duke "somewhere around Barstow" driving a Cadillac filled with hallucinogenic drugs. For 10 points, name this gonzo journalist who wrote *Fear and Loathing in Las Vegas*.
ANSWER: Hunter S. **Thompson**
<Literature American - Ganon Evans>

3. Benjamin Constant's painting of this figure with a hand on their hip inspired one of Raja Ravi Varma's few paintings of non-Indian subject matter. Komar and Melamid **(meh-lah-MEED)** depicted a young version of this figure standing in front of a red square and Joseph Stalin. Franz von Stuck painted this figure wearing a gold headdress, and the composition of his painting *The Sin* inspired one of two portraits showing a bare-chested Adele Bloch-Bauer posing as this figure for Gustave Klimt. A red curtain appears behind an elderly maid who watches over this woman's shoulder in a painting by Caravaggio. In one painting, this woman kills a man modeled on Agostino Tassi, who was Artemisia Gentileschi's rapist. For 10 points, name this Biblical woman often depicted beheading Holofernes.
ANSWER: **Judith** [accept ***Judith*** *Beheading Holofernes* or ***Judith*** *Slaying Holofernes* or ***Judith*** *with the Head of Holofernes* or ***Judith*** *on the Red Square*]
<Arts Painting - William Grossman>

4. Gertrude Himmelfarb described this place as a "haunted house" of "philosophic radicalism." This place is described as a "heterotopia" in a book which analyzes this place following a discussion of lepers in plague societies. Willey Reveley produced designs for this place, which is described as "the object of information, never a subject in communication" in a work which claims this place's dynamic rises from "visible and unverifiable power" from a single tower. Michel Foucault's *Discipline and Punish* analyzes this place. For 10 points, name this place, a prison in which inmates never know if they're being watched, which was first imagined by Jeremy Bentham.
ANSWER: **panopticon**
<RMP Philosophy/Thought - Ganon Evans>

5. In the hepatitis B virus, a "capsid-associated" relaxed molecule with this property must be covalently ligated for replication to occur. In trypanosomatids **(trip-an-oh-SO-muh-tids)**, molecules named for this property prefixed by "maxi" and "mini'' compose a catenated network called the kinetoplast **(kin-ET-oh-plast)**. A nick is cut at oriC sites in a molecule with this property in the first step of a DNA replication mechanism common in bacteria and viruses. In humans, the mitochondrial genome is encoded by a chromosome with this structural property. Bacteria contain small, self-replicating extrachromosomal DNA molecules with this structural property called plasmids **(PLAZ-mids)**. Linear DNA molecules are contrasted with, for 10 points, DNA with what property of having no ends?
ANSWER: **circular**ity [or **circular** DNA; or a **circle** structure; or a **loop** structure; or a **cyclic** structure; accept maxi**circle**s or mini**circle**s; accept rolling **circle** replication]
<Science Biology - Geoffrey Chen>

6. This company's plant near Palma in Mozambique represents the largest private investment in African history at over twenty billion dollars. The support of the Norwegian sovereign pension fund enabled a group holding .002 percent of this company's stock to win outsized support. A shareholder revolt at this company was sparked by pay raises given to CEO Darren Woods despite this company's 25 billion dollar loss in 2020. A lobbyist for this company dubbed Joe Manchin “the Kingmaker” on a leaked list of 11 senators identified as crucial for fighting climate change legislation. Before being Secretary of State, Rex Tillerson was the CEO of this company. For 10 points, name this Irving, Texas-based company that is the largest American oil and gas firm and merged in 1998 with Mobil.
ANSWER: **Exxon**Mobil
<Current Events - Matt Weiner>

7. The Terrazas family established a ranching dynasty under this leader, whose rule was undermined by the Plan de la Noria. This leader's minister Francisco Zarco created the *rurales* police force. While working in a New Orleans cigar factory, this leader formed the Revolutionary Junta with Melchor Ocampo and José Guadalupe Montenegro. This leader's namesake law abolished legal privileges called *fueros* for the military and Catholic Church. Signees of the Tripartite Convention of London occupied Veracruz after this leader skirted foreign debt. This liberal fought Félix Zuloaga's conservatives during the Reform War, and his general Ignacio Zaragoza won the Battle of Puebla against French forces on May 5, 1862. For 10 points, name this Oaxaca-born Zapotec president of Mexico who ousted Emperor Maximillian.
ANSWER: Benito **Juárez**
<History World - Ganon Evans>

8. A composer from this country included movements like "Floral Dance" and "Negative Prelude" in his *Pleiades Dances* and wrote a piano concerto nicknamed "Memo Flora." Another composer from this country secluded himself to a mountain villa with scores of Debussy pieces to write his piece *November Steps*. The book *Absolutely on Music* centers on a musician from this country who served as conductor of the Boston Symphony Orchestra for 29 years. A composer from this home country of instruments like the biwa and shakuhachi included "One Summer's Day" in his score for *Spirited Away*. For 10 points, name this country home to Tōru Takemitsu, Seiji Ozawa, and Studio Ghibli composer Joe Hisaishi.
ANSWER: **Japan** [accept **Nihon**-koku or **Nippon**-koku] [The first composer is Takashi Yoshimatsu]
<Arts Music - Noah Sheidlower>

9. Florence Stratton's criticism of this character's "rejection of female qualities" was lambasted in Ken Harrow's "I'm Not a Western Feminist, but...". A friend of this character marries a woman who has several miscarriages before bearing a son who renames himself Michael in a short story that ends with Grace holding her grandmother's hand. This character's "piercing a boy's heart" with "a piece of iron" is labelled an inadvertent "female" crime. A priest of the earth goddess rejects this character's kola nut offering. This character's wife mumbles about "guns that never shot," spurring him to shoot at her. This character breaks the Week of Peace by beating his wife and helps murder his adopted son Ikemefuna. For 10 points, name this protagonist of Chinua Achebe's *Things Fall Apart.*
ANSWER: **Okonkwo** [do not prompt on or accept "Obi Okonkwo"]
<Literature World / Classical / Misc - Ganon Evans>

10. An organization in this country secretly sabotaged the S-boxes in the implementation of DES. An advanced persistent threat called The Equation Group is generally considered to be tied to this country's government. An organization in this country discovered the EternalBlue exploit, which was leaked and used in another country’s WannaCry ransomware attack. SHA-1 and SHA-2 were developed in this country. This country and Israel are widely believed to have collaborated on Operation Olympic Games, which produced the Flame malware and a worm that caused centrifuges to destroy themselves, called Stuxnet. An organization in this country collected internet traffic and metadata en masse under the PRISM program. For 10 points, name this country whose hackers are sometimes sponsored by the NSA.
ANSWER: **United States** of America [or the **US**A or **America**]
<Science Computer Science - Steven Liu>

11. The title character of *The Posthumous Memoirs of Bras Cubas* refutes a claim this character makes on the creation of noses via the example of a milliner who walks by a rival milliner. This character angers an old man in a mosque by being slow in picking up a young woman's bouquet. After spotting this character engaged in "experimental physics" with a maid, a woman flirtatiously drops her handkerchief for the protagonist. A surgeon tries to dissect this character after he survives an auto-da-fé in Lisbon. This character's worldview is contrasted with that of the Manichaean scholar Martin. In a parody of Leibniz, this character argues that we live in "the best of all possible worlds." For 10 points, name this naïve tutor of Candide.
ANSWER: Dr. **Pangloss** [or Professor **Pangloss**]
<Literature European - Tim Morrison>

12. A "cusp" of a quantity describing these particles is guaranteed by Kato's theorem. The potential of a system is uniquely determined by a quantity describing these particles according to the first Hohenberg-Kohn theorem. The kinetic energy of these particles is proportional to the volume integral of the five-thirds power of their density in the Thomas-Fermi model, a precursor to density functional theorem. Arnold Sommerfeld devised a "free" theory of these particles that extends the Drude **(DROO-duh)** model. These particles annihilate quasiparticles called holes in carrier recombination. The band gap of a material is the energy range these particles cannot occupy. For 10 points, name these particles which carry currents in conductors.
ANSWER: **electron**s [or **electron** density; or the free **electron** model]
<Science Physics - Steven Liu>

13. *Description Acceptable.* Plutarch's **(ploo-tarks)** *Life of Lycurgus* identifies the Apothetae **(ah-poth-eh-tah-ee)** as a site for this action in Sparta which led to the Kaiadas **(kee-ah-dahs)**. While grieving the death of Pyrrha **(peer-ha)**, Deucalion performed this action, which was often believed to be the first of the "Leucadian" **(loo-kah-dee-an)** versions of it. Ino was deified as the goddess Leucothea **(loo-cah-thee-ah)** after performing this action. After trying to seduce Hippodamia **(hip-poh-day-mee-ah)**, Pelops caused Myrtilus **(meer-ti-luss)** to undergo this action. The southern part of the Capitoline Hill was named for Tarpeia **(tar-peh-ah)** after this action happened to her. It's not being eaten by a giant turtle, but the bandit Sciron **(see-ron)** performed this action on travelers. For 10 points, the Aegean **(eh-gee-an)** sea got its name after Aegeus **(ah-gee-us)** drowned after performed what action upon seeing black sails on his son's ship?
ANSWER: **falling** off a cliff [accept any and all answers indicating someone **falling** off a mountain or cliff or rock; accept someone **jumping** or **leaping** or being **pushed** off a cliff or somewhere high; accept **drowning** before mention; prompt on killing someone or murdering someone or committing suicide with "How did they die?"; prompt on infanticide with "How did they die?"]
<RMP Greek/Roman Myth - Ganon Evans>

14. A school originally named for this group was the subject of a letter by superintendent Andrew Moulder arguing that "trouble will follow" if they were allowed in. The violation of the rights of members of this group led a city to reopen Spring Valley School after a state Supreme Court ruling in *Tape v. Hurley*. A law requiring permits for laundromats in wooden buildings led to a Supreme Court case concerning members of this group against Sheriff Peter Hopkins. The 1943 Magnuson Act repealed, and the Geary Act extended, a policy promoted by governor John Bigler that "excluded" members of this group who were often processed at Angel Island. For 10 points, name this ethnic group, massive amounts of whom went to California during its Gold Rush, and some of which settled at their namesake "town" in San Francisco.
ANSWER: **Chinese**-Americans [prompt on Asian-Americans]
<History American (1865-1945) - Steven Liu>

15. A sculptor from this country commissioned Mexican workers to produce terracotta figurines for his work *Field*; that artist is best known for a sculpture of a reddish humanoid figure with outstretched wings called *The Angel of the North.* *Torso in Metal* is part of a sculpture from this country that shares its name with a section of Ezra Pound's *The Cantos*. Exhibitions titled *Sensation*, *Freeze*, and *Beautiful Inside My Head Forever* were held by artists from this country. Charles Saatchi patronized many artists from this home country of Antony Gormley. An artist from this country covered a skull in diamonds in *For the Love of God* and preserved a shark in formaldehyde for another work. For 10 points, name this country, the home of Damien Hirst.
ANSWER: **U**nited **K**ingdom [accept **England** or Great **Britain**] (the unmentioned artists are Antony Gormley and Jacob Epstein)
<Arts Sculpture - Hari Parameswaran>

16. In a play by this author, a clergyman is told "Knowledge is power … and I never sell power" by "Ms. Vavasour" after failing to buy the love letters he wrote to her. One of this playwright's title characters recalls the death of her half-sister Anne Marie from lead factory work while lamenting the lack of "better opportunities for women." This author penned an essay about why one of their female protagonists rejected a marriage proposal, which is titled "What Happened Afterwards." Vivie is shocked to learn about her mother's brothels in a play by this author, who in another play wrote about a bet that Henry Higgins could teach Eliza Doolittle to speak like a duchess. For 10 points, name this author of *Mrs. Warren's Profession* and *Pygmalion.*
ANSWER: George Bernard **Shaw**
<Literature British - Julia Tong>

17. PCRs performed on samples of this substance often aim to detect the HF183 gene of Bacteroides dorei or the bacteriophage crAssphage. Bacteria from a sample of this substance are grown on agar containing bile acids and rosolic acid in the mFC method. In the membrane filtration method, this substance is subject to a heterotrophic plate count test to determine the standard plate count. Thermotolerant coliforms like E. coli are bacterial indicators of the quality of this substance. In the SODIS method, this substance is exposed to 6 hours of ultraviolet radiation to kill bacteria. Cholera is spread when this substance is contaminated by feces. For 10 points, name this substance termed potable if it is safe for humans to drink.
ANSWER: drinking **water** [or potable **water**; accept waste**water** or **sewage**; accept grey **water** or black **water**; prompt on feces with "feces in what substance?"]
<Science Biochemistry - Geoffrey Chen>

18. This type of person is perceived as a split between a "good object" and a "bad object" in the paranoid-schizoid stage of object relations theory. Donald Winnicott claimed that roles filled by this type of person are displaced onto a "transitional object." An abrupt separation from this type of people is the source of a permanent, lifelong trauma discussed in a 1924 book by Otto Rank. Longing for this type of person manifested as a phobia of horses in the case of "Little Hans." A boy's castration anxiety is a consequence of an unconscious sexual desire for this person in the Oedipus complex. For 10 points, name this type of person, studied in psychoanalysis, for the roles they play in breastfeeding and giving birth to their children.
ANSWER: **mother**s [or **mom**s; or **female parent**s; prompt on parents; prompt on women or female people]
<Social Science Psychology - Geoffrey Chen>

19. El Cid's corpse returned to life to prevent a Jew from damaging one of these objects according to Alfonso X's *First Chronicle of Spain*. English aristocrats owned "vow" examples of these objects in protest after Charles I abandoned the "pickedevant" **(PIK-uh-dev-unt)** style of these objects. These objects are declared to be a "superfluous burden" on kopek **(KO-pek)** permits that depict them. A Germanic tribe named for these objects was studied by Paul the Deacon and escaped to southern Italy under Alboin. A 1587 raid on the Spanish Armada in Cádiz harbor was jokingly named for one of these objects by Francis Drake. Boyars were forced to pay a 60 ruble tax on these objects under a 1698 Peter the Great tax. For 10 points, Frederick I was nicknamed for having a "red" example of what facial hair?
ANSWER: **beard**s [or Singeing the King of Spain's **Beard**; prompt on hair alone with "From what part of the body?"; prompt on Frederick Barbarossa or Lombards or Langobards with "What object does their name derive from?"]
<History European 1400-1914 - Ganon Evans>

20. This theologian used the folktale of a man hanging on a branch over a well containing a dragon to analyze four different approaches to life's suffering. Guy de Maupaussant's **(gee day muh-pah-sahnt)** writings of "vain wrath" appear in a book by this thinker in which he concludes that no Christian nation can go to war. Though he is not Thomas Jefferson, this Christian described removing all sections of the Gospels except the Sermon on the Mount in his essay *What I Believe*. This theologian donated the profits from one of this books to the Doukhobors **(doo-koh-boors)**, and was excommunicated from the Orthodox church by Konstantin Pobedonostsev **(poh-beh-duh-nohst-ev)**. Mahatma Gandhi named his agrarian farm after this thinker, who introduced nonviolence to Gandhi in *A Letter to a Hindu*. For 10 points, name the philosopher of Christian anarchism from Russia who wrote *The Kingdom of God Is Within You* as well as fiction such as *The Death of Ivan Ilyich*.
ANSWER: Leo **Tolstoy** [or Count Lev Nikolayevich **Tolstoy**]
<RMP Christian/Bible Religion - Ganon Evans>

21. This author describes one government saying, "The desert shook," and another replying, "The whole mountain turned white" in the opening of an essay decrying their government's nuclear testing. A fashion designer marries a guest of the Jannat Guest House named Saddam Hussein in a novel by this author featuring the *hijra* Anjum. A woman in a novel by this author hates a factory worker after she is forced to wave a flag by Communist protesters. A boy is molested by the Orangedrink Lemondrink Man during *The Sound of Music* in a novel by this author. After the drowning of Sophie Mol, police beat Velutha for crossing caste lines in a novel by this author. For 10 points, name this author who created the twins Rahel and Estha in their novel *The God of Small Things.*
ANSWER: (Suzanna) Arundhati **Roy** (The first two sentences describe "The End of Imagination" and *The Ministry of Utmost Happiness*)
<Literature World / Classical / Misc - Caroline Mao>

**2021 National All-Star Academic Tournament**

**Round 2 – Bonuses**

1. A 2001 edition of the comic strip *B.C.*, which was drawn by evangelical Christian Johnny Hart, sparked a nationwide debate in newspaper letter columns over this doctrine. For 10 points each:
[10] Name this belief among some Christians that the covenant of God with the Jews is no longer valid and that all Jews must become Christians.
ANSWER: **supersession**ism [or **supersessionist** theology; accept **replacement** theology; do not accept "covenant theology" due to mention in question]
[10] Though Pius XII fully endorsed supersessionism in the 1943 encyclical Mystici corporis Christi **(mis-teek-ee kor-por-ihs kris-tee)**, the Catholic Church moved away from the position during this liberalizing 1962-1965 council called by John XXIII **(the twenty-third)**.
ANSWER: **Second Vatican** Council [or **Vatican II** **(two)**]
[10] According to Islamic doctrine, though Christians, Jews, and Sabeans committed tahrif by corrupting divine revelation, they have a special status denoted by this term in reference to their adherence to certain texts.
ANSWER: **People of the Book** [or **People of the Scripture**s; or **ahl al-kitab**; accept **dhimmi**s]
<RMP Christian/Bible Religion - Matt Weiner>

2. This president was gifted a raccoon to cook for Thanksgiving, which he subsequently named Rebecca and kept. For 10 points each:
[10] Name this "Silent" President whose first words after being inaugurated President in 1923 after Warren G. Harding's death was "Better get that fixed" in response to broken steps at his house.
ANSWER: Calvin **Coolidge**
[10] Coolidge served as governor of Massachusetts during this 1919 event. This event occurred when a hot North End day caused a storage tank at Purity Distilling Company to burst, killing 21 people.
ANSWER: **Great Molasses** Flood [or **Boston Molasses** Flood; prompt on Molasses Flood with "where?"; prompt on flood]
[10] H.L. Mencken mocked Calvin Coolidge's hands-off nature by writing "Nero fiddled while Rome burned, but Coolidge" only performs this activity. William Howard Taft constructed a rooftop porch on the White House for this activity.
ANSWER: **sleep**ing [or **napping**; or taking a **nap**; or **dream**ing; or **snoring**]
<History American (1865-1945) - Ganon Evans>

3. In a novel, Cal Stephanides translates this work's phrase "ex ovo omnia" as "Everything comes out of an egg" during Miss Barrie's Latin class. For 10 points each:
[10] Name this book by Ovid which recounts the stories of many mythological transformations.
ANSWER: the ***Metamorphoses*** [or ***Metamorphoseon libri***; do not accept or prompt on "(The) Metamorphosis"]
[10] In reference to a story from Ovid's *Metamorphoses*, the intersex Cal markets himself as the god Hermaphroditus while working at a nightclub in this author's novel *Middlesex*. This author also wrote *The Virgin Suicides*.
ANSWER: Jeffrey (Kent) **Eugenides**[10] Ovid's myth of Iphis, who is transformed into a man, is reinterpreted in the story of the sisters Anthea and Imogen in this author's novel *Girl Meets Boy*. In a novel by this author, Elisabeth Demand recalls her friendship with her neighbor, the 101-year-old songwriter Daniel Gluck.
ANSWER: **Ali Smith** [prompt on Smith; do not accept or prompt on "Ali"] (the second novel is *Autumn*)
<Literature World / Classical / Misc - Caroline Mao>

4. Given conditions of incoherence and sparsity, the technique of compressed signalling breaks the usual lower bound on the number of times this process must be done. For 10 points each:
[10] Name this process, which can also be done by multiplying with the Shah function. The usual lower bound on the number of times this process must be done is a consequence of the properties of sinc **(sink)** interpolation.
ANSWER: **sampling** [or **sampling** a signal; or **undersampling**; accept **discretization** of a signal or answers indicating conversion from continuous to **discrete**; accept answers indicating conversion from **analog** to **digital** but not the other way around; prompt on reconstructing a signal or similar by asking "the results of what process are used to reconstruct a signal?"; prompt on convolutions by asking "the results of what process are being convoluted?"]
[10] The Shah function consists of this function repeated periodically. A system outputs its impulse response when this function, representing a unit impulse, is input.
ANSWER: Dirac **delta** function
[10] The sinc function is defined as sin x over x everywhere except at this x-value, where it is set to 1. The Dirac delta function can be thought of as having an infinitely tall spike at this x-value.
ANSWER: **0**
<Science Physics - Steven Liu>

5. Answer some questions about a boar and a lion in Greek mythology, for 10 points each:
[10] After an Argive king saw the figures of a lion and a boar on the shields of two members of this group, he marries his daughters to those members. After this group dies, that king flees on his horse Arion **(ar-ee-awn)**.
ANSWER: **Seven Against Thebes** (The king is Adrastus)
[10] This god helps King Admetus **(ad-mee-toos)** to yoke a boar and a lion to a chariot so that he can marry Alcestis **(al-kess-tiss)**. This god served under Admetus as punishment for killing Deiphyle **(day-puh-leh)**, and later gets the Fates drunk to get a favor on his behalf.
ANSWER: **Apollo**
[10] This hero has to kill the Erymanthian **(ehr-y-man-thee-an)** Boar and the Nemean **(neh-mee-an)** Lion as 2 of the 12 labors he is forced to undergo by Eurystheus **(yur-is-thee-us)**.
ANSWER: **Heracles** [or **Hercules**]
<RMP Greek/Roman Myth - Vishwa Shanmugam>

6. One ballet by this choreographer features a "mistake waltz" that depicts daydreaming audience members at a recital. For 10 points each:
[10] Name this American choreographer of *The Concert* as well as *On the Town* and *Fiddler on the Roof*.
ANSWER: Jerome **Robbins**
[10] Several of the ballets that Robbins choreographed, including *On the Town* and *Fancy Free*, were collaborations with this American composer of the Kaddish Symphony.
ANSWER: Leonard **Bernstein**
[10] Another Bernstein and Robbins collaboration was this adaptation of *Romeo and Juliet* set in a Puerto Rican neighborhood of the Upper West Side. This musical juxtaposes the romance between Tony and Maria with the gang rivalry of the Jets and Sharks.
ANSWER: ***West Side Story***
<Arts Ballet/Dance/Musicals - William Grossman>

7. A play set primarily in one of these locations ends with the protagonist shedding her clothing, "naked and beautiful, reaching for the light." For 10 points each:
[10] Name this type of place where the ghost of a woman condemned to the death penalty appears to a man who talks with the drag queen Belize about what Heaven looks like.
ANSWER: **hospital**s
[10] Belize describes Heaven as a city overgrown with flowering weeds in this Tony Kushner play where Roy Cohn is hospitalized for AIDS that he pretends is cancer.
ANSWER: ***Angels in America***
[10] In this play, the hospital patient Dr. Vivian Bearing frequently muses on John Donne's "Death, be not proud" before she dies of ovarian cancer and walks toward the light.
ANSWER: ***Wit*** [or ***W;t***] (by Margaret Edson)
<Literature American - Caroline Mao>

8. Frederick Lindemann's research on reactions of this type established that activation energy could be transferred via collisions, explaining how they can be second order. For 10 points each:
[10] Name these reactions governed the RRKM model, which assumes that key vibrational modes must become active before they can occur.
ANSWER: **unimolecular** reactions [anti-prompt on decomposition, isomerization, dissociation]
[10] Marcus improved on the work of Rice, Ramsperger, and Kassel by incorporating this framework. When considering unimolecular reactions using this framework, the activated molecule is found at the top of a PES **(P-E-S)** and denoted with a double dagger.
ANSWER: **transition-state** theory [or **TST**; or **activated complex** theory]
[10] Transition state theory allowed for the development of the Eyring equation, a theoretically-justified modification of this empirical equation for the rate constant written using a pre-exponential factor.
ANSWER: **Arrhenius** equation
<Science Chemistry - Vishwa Shanmugam>

9. While holding this office, Andrey Bogolyubsky built the Assumption Cathedral, one of eight limestone-clad "white monuments" it oversaw. For 10 points each:
[10] Name this royal office from which Vsevolod the Big Nest and Yaroslav II created the leading power in Russia at the turn of the 13th century following Andrei's move of a throne away from Suzdal.
ANSWER: **Grand Duke of Vladimir** [or **Grand Prince of Vladimir**; or **Velikiy Kniaz Vladimir**; prompt on Grand Prince; prompt on Prince of Vladimir]
[10] This man was Grand Duke of Vladimir from 1220 to 1263. In 1242 he led the Russian coalition that defeated the Teutonic Knights in the "Massacre on Ice" at Lake Peipus.
ANSWER: Alexander **Nevsky** [Alexander Yaroslavich **Nevsky**; or **Saint Alexander** I; prompt on Alexander; prompt on Alexander I]
[10] Nevsky also had three non-consecutive reigns as grand prince of a city of this name on the north tip of Lake Ilmen, where Ivan the Terrible ordered a massacre in 1570. A different city of this name prefaces it with the word "Nizhny," or "lower."
ANSWER: Veliky **Novgorod** [Accept Nizhny **Novgorod**]
<History European to 1400 - Matt Weiner>

10. This location is depicted in a piece whose third movement uses a pair of woodblocks to represent the slow prancing of hooves along a pathway. For 10 points each:
[10] Name this location that titles a five-movement orchestral suite with movements including "On the Trail" and "Cloudburst." The first public performance of that piece depicting this location was conducted by Paul Whiteman.
ANSWER: **Grand Canyon** [accept ***Grand Canyon*** *Suite*]
[10] The *Grand Canyon Suite* was written by this American composer, who took inspiration from Huckleberry Finn for his 1926 *Mississippi Suite*. He also orchestrated *Rhapsody in Blue*.
ANSWER: Ferde **Grofé** [or Ferdie **Grofé**; or Ferdy **Grofé**; or Ferdinand Rudolph von **Grofé**]
[10] Grofé also composed a number of works of this type like *Early to Bed* and *Diamond Jim*. Ennio Morricone and Bernard Herrmann were known for works of this type, including one for *Psycho*.
ANSWER: **film score**s [accept **movie score**s or obvious equivalents; do NOT accept or prompt on "films" alone]
<Arts Music - Noah Sheidlower>

11. This dynasty commissioned a version of *The Prescribed Ritual Text of the Past and Present* that became the first book printed in moveable type. For 10 points each:
[10] Name this dynasty whose founder constructed ten Buddhist monasteries and popularized the Jogye Order which had been founded during an earlier dynasty.
ANSWER: **Goryeo** dynasty [accept **Koryo**; do not accept or prompt on Goguryeo or Korea alone]
[10] Choe Yun-ui's printing helped the Goryeo complete a copy of this work on over 80,000 woodblocks. In 730, Zhìshēng **(jhi-shung)** provided the basic structure for this largest canon of Buddhist beliefs.
ANSWER: **Tripitaka** [accept **Tipitaka** or **Pali Canon** or **Daejanggyeong** or **Samsang**; accept **sanzang**; accept **Three Baskets**]
[10] This leader's son Ögedei destroyed the original copies of the Tripitaka during the first of seven Mongol invasions of the Goryeo. This Mongol's "secret" yassa law code allowed for free practice of Buddhism.
ANSWER: **Genghis** Khan [accept **Temüjin** or **Chingis** Khan; prompt on Khan alone]
<History World - Ganon Evans>

12. This quantity can be estimated with Sturner's equation after measuring vitreous **(VI-tree-uhs)** potassium content. For 10 points each:
[10] Name or describe this quantity that the Glaister equation calculates by assuming certain objects lose 1.5 Fahrenheit degrees per hour. In a common application of entomology **(en-tuh-MOL-uh-jee)**, this quantity can be estimated by observing the life cycle stage of blowflies.
ANSWER: **post-mortem interval** [or **PMI**; accept descriptive answers about the **time of death** or elapsed **time since death**]
[10] The Glaister equation models temperature loss in these objects, which are studied at a "farm" established by William Bass at the University of Tennessee. These objects are studied by a coroner to determine cause of death.
ANSWER: human **corpse**s [or **cadavers**; or dead **bodies**; accept **body** farms]
[10] PMI cannot be determined accurately using the onset of this phenomenon, which occurs because ATP depletion prevents the separation of actin-myosin cross bridges.
ANSWER: **rigor mortis** [prompt on descriptive answers, such as muscle stiffening]
<Science Biology - Geoffrey Chen>

13. Anthony Wallace created a four-part typology of these systems. For 10 points each:
[10] Name these systems which Wallace categorized into monotheistic, Olympian, communal, and shamanic types. Examples of these belief systems include Baha'i and Sikhism.
ANSWER: **religion**s [accept **faith**s and other obvious equivalents]
[10] Wallace wrote the paper "Revitalization Movements" after fieldwork studying this people group and their religion. These people name the "bifurcate merging" kinship system in a typology by Lewis Henry Morgan, who wrote an ethnography of them.
ANSWER: **Iroquois** [or **Haudenosaunee**; accept **Seneca** specifically; prompt on Native Americans or American Indians]
[10] This anthropologist's work on religion includes the unfinished doctoral thesis *On Prayer*. He studied the *hau* **("how")** system of the Maori in a book on a "total social fact" regarding reciprocity.
ANSWER: Marcel **Mauss**
<Social Science Anthropology - Clark Smith>

14. María Antonia Garcés wrote a "Captive's tale" detailing Cervantes' time imprisoned in this city after being kidnapped by pirates. For 10 points each:
[10] Name this city. While imprisoned here, Cervantes wrote plays titled *El Trato de* this city and *Los baños de* this city and befriended fellow captive Antonio de Sosa, who penned a "Topography" of it.
ANSWER: **Algiers** [or **Argel**]
[10] Garcés argued that Cervantes' time in Algiers led to the groundbreaking inclusion of non-European characters in this novel, like Sancho Panza's *morisco* friend Ricote.
ANSWER: ***Don Quixote*** [or *The* ***Ingenious Gentleman Don Quixote of La Mancha*** or *El* ***ingenioso hidalgo Don Quixote de la Mancha***]
[10] Garcés argued that Don Quixote was a type of madman called a "figurative incarceration" that Cervantes wrote about after being imprisoned in Algiers. Another such character is a man with this profession, Tomás Rodaja, who appears in a Cervantes story titled for this job "of Glass."
ANSWER: **lawyer** [or **licenciado**; accept *The* ***Lawyer of Glass*** or *El* ***licenciado Vidriera***]
<Literature European - Vishwa Shanmugam>

15. During a December 2019 expedition to install an emergency radio system on this mountain, a Unimog broke the record for the highest altitude at which a motor vehicle has been driven. For 10 points each:
[10] Name this tallest active volcano in the world. Its eastern side is home to a crater lake which is probably the highest-altitude lake in the world.
ANSWER: Nevado **Ojos del Salado** [accept **Salty Eyes** or **Eyes of the Salty One**]
[10] Ojos del Salado straddles the border between these two countries. In 1972, an Uruguayan rugby team resorted to cannibalism when they crashed on the border of these two countries, whose most frequent crossing is near Mendoza.
ANSWER: **Chile** and **Argentina** [both answers required; accept answers in either order; accept answers using the Republic of **Chile** or the **Argentine** Republic]
[10] The Chilean-Argentinian border naturally runs along this South American mountain range whose peaks include Mount Aconcagua.
ANSWER: **Andes** Mountains
<Geography - Joseph Krol>

16. During a hearing about these *two* companies, Treasury Secretary Henry Paulson claimed that "If you've got a bazooka, and people know you've got it, you may not have to take it out." For 10 points each:
[10] Name these two government-sponsored enterprises which are now prohibited from owning Alt-A loans as a result of findings at that hearing.
ANSWER: **Fannie** Mae and **Freddie** Mac [or **Federal National Mortgage Association** and **Federal Home Loan Mortgage Corporation**; do not prompt on partial answers]
[10] Part of the reason for Fannie's and Freddie's failure was their purchase of these high-risk loans to homeowners with lower credit scores. In 2012, Wells Fargo was fined $175 million for forcing Hispanics and African-Americans to take these loans.
ANSWER: **subprime** mortgage loans [prompt on mortgages]
[10] Fannie and Freddie were finally acquired by the government in September of this year. The ongoing crisis helped Barack Obama defeat John McCain in this year's presidential election.
ANSWER: **2008**
<History American (1945-present) - Hari Parameswaran>

17. A poem poking fun at the frequent memorization of this poem's first lines opens "Love's the boy stood on the burning deck / trying to recite `The boy stood on the burning deck.'" For 10 points each:
[10] Name this poem by Felicia Hemans about a boy who bravely dies with a burning ship.
ANSWER: "**Casabianca**"
[10] That later update to "Casabianca" is by this poet. "Victory filled up / the little rented boat" until "everything was rainbow, rainbow, rainbow!" in this poet's poem "The Fish."
ANSWER: Elizabeth **Bishop**
[10] The title "Gentleman of Shalott" quotes "Half is enough" in a Bishop poem, referencing the line "I am half sick of shadows" from this poet's "The Lady of Shalott." This poet wrote about a cavalry "Plunged in the battery-smoke" in "The Charge of the Light Brigade."
ANSWER: Alfred, Lord **Tennyson**
<Literature British - Vishwa Shanmugam>

18. A 2014 painting of one of these places was inspired by the artist's visit to Charles White in one of them. For 10 points each:
[10] Name this type of place depicted in that untitled Kerry James Marshall painting. Another artist depicted one of these places in 5 different paintings, one of which is subtitled *Foot Medication*.
ANSWER: artist's **studio** [accept ***Untitled*** *(****Studio****)*]
[10] Another of Roy Lichtenstein's depictions of his studio prominently features this older artwork, which depicts a scene similar to a detail found in *The Joy of Life*. Five figures link arms in this painting.
ANSWER: *The* ***Dance*** [or *La* ***Danse***]
[10] Lichtenstein's paintings of his studio drew inspiration from this artist's paintings *The Red Studio*, *The Pink Studio*, and *La Danse*.
ANSWER: Henri **Matisse**
<Arts Painting - Vishwa Shanmugam>

19. These phenomena are driven by changes in atmospheric opacity in the Kappa mechanism. For 10 points each:
[10] Name these phenomena that stars can undergo in either radial or non-radial modes. RR Lyrae **(LIE-ray)** and Delta Cepheid **(SEE-fee-id)** stars are intrinsic variable stars whose changes in luminosity are driven by these phenomena.
ANSWER: stellar **pulsation**s [or stellar **oscillation**s; accept **pulsating** variable stars; prompt on variability or variation in luminosity; prompt on expansions or contractions or changing size or similar descriptive answers]
[10] In non-variable stars, oscillations are divided into two primary modes, gravity wave-driven g-modes, and these acoustically-driven modes. The frequency of oscillations in this mode is the Lamb frequency.
ANSWER: **p**-modes [or **pressure** modes]
[10] Solar-like oscillations in stars are driven primarily by a turbulent form of this process in the star's outer layers. In this mode of heat transfer, hot plasma rises and colder plasma descends.
ANSWER: **convection** [accept **convective** zones]
<Science Astronomy - Geoffrey Chen>

20. This book's dedication bemoans how the teaching of "the good life," as related by "the melancholy science," has "fallen prey to intellectual disrespect." For 10 points each:
[10] Name this book of 153 aphorisms, which opens by quoting "life does not live" and was inspired by its author's exile to America.
ANSWER: ***Minima Moralia***
[10] This Frankfurt School philosopher penned *Minima Moralia* for the 50th birthday of Max Horkheimer with whom he had written a book describing the "culture industry."
ANSWER: Theodor **Adorno**
[10] That book by Adorno and Horkheimer is titled for *The Dialectic of* this process, which names an 18th-century period of cultural development and freedom that Kant defined as "man's emergence from his self-imposed immaturity."
ANSWER: **Enlightenment** [or ***Aufklarung***]
<RMP Philosophy/Thought - Joseph Krol>

21. For 10 points each, answer these questions about chikungunya **(chick-uhn-goon-yuh)**:
[10] The chikungunya virus is spread by two species in this genus of mosquitos; *aegypti*, and the invasive *albopictus*, which spread by hitchhiking on used car tires.
ANSWER: **Aedes**
[10] The symptoms of chikungunya **(chick-uhn-goon-yuh)** can be confused with those of this other mosquito-spread disease, which had a 2015-16 outbreak. Some governments advised women to avoid pregnancy during the outbreak due to the possiblility of a birth defect called microencephaly.
ANSWER: **Zika** virus
[10] An attempt at vaccination against chikungunya **(chick-uhn-goon-yuh)** was a vaccine of this type, where the virus is kept alive but made less pathogenic. This type of vaccine also describes the MMR vaccine.
ANSWER: live-**attenuated** vaccines
<Science Biology - Fredrick Morlan>