

Spring TJ Academic Scholastic Housewrite (STASH)

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Packet 13

Tossups

1. **One of these typically man-made objects is controlled by Aruna on behalf of his master, who is sometimes called Ravi. Another of these objects is used by a god for a task which takes him to the land of the Hesperides, where he gets in a golden cup to cross the ocean. The goddess Ushas uses one of these objects to reveal the hidden forms of the earth and prepare the way for another of these objects. That one of these objects is used every day to (*) circle Mount Meru by the Hindu god Surya. Zeus threw a thunderbolt at a youth, causing him to fall into the Eridanus river, after the youth lost control of one of these objects and scorched the Earth. Phaethon was unwisely allowed by Helios to drive, for 10 points, what sort of vehicle often used by sun gods and pulled by horses?**

ANSWER: Sun chariots [or ratha, or armata, or harmata; prompt on Sun] <Kaashyap, Belief - Mythology>

2. **This president pardoned a raccoon sent to be eaten and kept it as a pet in the White House. This president repeatedly vetoed the McNary-Haugen Farm Relief Act against the wishes of his Agriculture Secretary Henry Wallace. He sparked controversy when he refused to visit the victims of the Great Mississippi Flood, instead sending his Secretary of the Interior (*) Herbert Hoover. As governor of Massachusetts, this president declared that there was "no right to strike against the public safety" during the 1919 Boston Police Strike. For ten points, name this "silent" president who succeeded Warren G. Harding.**

ANSWER: John Calvin Coolidge, Jr. <Lee, History - American>

3. **A character in this novel wakes up next to an ox heart after sleeping with a young girl. In this novel, a man helps Remigio find a lost horse and deduces that the horse's name is Brunellus. A cryptic note in this novel about "the hand over the idol" leads to the discovery of a room hidden behind a mirror called the *finis Africae*. In this novel, a vat of pig's blood holds the corpse of (*) Venantius, whose blackened fingers are traced to a copy of Aristotle's *Poetics* that was poisoned by the blind librarian Jorge of Burgos. For 10 points, name this novel in which William of Baskerville investigates the murders of several monks, written by Umberto Eco.**

ANSWER: *The Name of the Rose* [or *Il nome della rosa*] <Kevin Zhang, Literature - European>

4. **Dominic Loricatus engaged in this practice repeatedly while repeating the 150 psalms. Elijah taunted a group of false prophets atop Mt. Carmel for engaging in this practice while dancing to unsuccessfully summon Baal. On October 20, 1349, Pope Clement VI issued a bull condemning a group that repeatedly performed this action to placate God and ward off the Black Death. One form of this action called (*) *tatbir* is performed by Shia Muslims on the Day of Ashura to mourn Husayn's death. Martin Luther performed this action and fasting as part of the Mortification of the Flesh, and monks may use a leather cattail to perform this action. For 10 points, name this practice of penance in several religions where participants whip themselves.**

ANSWER: **self-flagellation** [accept **whipping themselves**, **mortification of the flesh**, and related word forms before they are respectively mentioned; prompt on **self-harm**, **self-mutilation**, **penance**, **penitence**, **atonement** and other less descriptive answers; prompt on **flagellation** or **whipping** by asking "on whom"] <Prasad, Beliefs - Religion>

5. **A technique that uses this phenomenon can make use of compounds like Rhodamine B to improve resolution "stochastically" in PALM and STORM. This phenomenon can be seen as a straight line down in a Jablonski diagram which is used to describe Förster resonance energy transfer. The Stern–Volmer equation describes the quenching of this phenomenon which decreases the (*) quantum yield. This process occurs in a common reporter protein with a beta-barrel motif that was discovered in the jellyfish *Aequorea victoria*, GFP. This phenomenon underlies lamps that use mercury vapor to emit light. For 10 points, name this phenomenon in which light is absorbed at one wavelength and emitted at another, which contrasts with phosphorescence.**

ANSWER: **fluorescence** [accept **fluorescence** microscopy] <Calin, Science - Chemistry>

6. **The largest tidal whirlpool in the Western Hemisphere, Old Sow, is located off the coast of this state. The International Seaplane Fly-In is hosted every September at this state's Moosehead Lake. An early 20th-century artist colony thrived on this state's Appledore Island, which is part of an archipelago that it splits with its southern neighbor, the Isles of Shoals. Twelve-year-old Donn Fendler survived nine days separated from his family in this state's (*) Baxter State Park while hiking its highest peak, Mount Katahdin. This state is also home to a national park that contains parts of the Schoodic Peninsula and Mount Desert Island. Acadia National Park is located in, for 10 points, what easternmost state in the contiguous U.S. whose capital is Augusta?**

ANSWER: **Maine** <Lian, Modern World - Geo>

7. **British officer David Vivian was arrested for supplying the weapons used in the assassination of this leader's father in the Secretariat Building, which also claimed the lives of ministers Abdul Razak and Ba Cho. This leader survived a 1996 assassination attempt by the Union Solidarity and Development Association, a party supported by the SLORC. This leader allegedly called two Reuters journalists "traitors" after they were arrested while investigating the (*) Inn Din Massacre. This leader was elected in 2015 after spending fifteen years under house arrest. For 10 points, name this Nobel Prize laureate who has been criticized for her failure to quell the Rohingya crisis as State Counsellor of Myanmar.**

ANSWER: Aung San **Suu** Kyi [accept **Daw** Suu; prompt on **Kyi**] <Lee, History - World>

8. **At the beginning of an Act II aria from this opera, a nearly offstage singer tells a woman to "open your window to me [who is] close at hand, calling and sighing for you." Villagers in this opera sing an Act I "bell chorus" that precedes a "ballatella" inspired by the sight of screeching birds, "Stridono lassu." A man dressed as the servant Taddeo asks the question "Si può?" at the beginning of this opera, in which (*) Arlecchino sings "O Colombina." In this opera, Nedda is stabbed by Canio, who sings the aria "Vesti la giubba" while putting on his costume. For 10 points, name this Ruggiero Leoncavallo opera typically paired with *Cavalleria Rusticana* and titled for a group of clowns.**

ANSWER: **I Pagliacci** [accept **The Clowns** before "clowns"] <Yue, Fine Arts - Other>

9. Controversies over the movement of this language family, outlined in papers from the archaeology journal *Azania*, center on “early split” versus “late split” hypotheses, as well as whether ironworking was developed independently by different groups of its speakers. Languages in this family feature up to 22 noun classes which are distinguished by affixes such as “M-” and “W-”. Speakers of the southernmost languages in this family introduced long-horned cattle, advanced pottery, and (*) agriculture into regions largely inhabited by the nomadic Khoikhoi and San peoples, from whom they adopted click consonants. Swahili is the most widely spoken language in, for 10 points, what most widespread language family in Sub-Saharan Africa?

ANSWER: **Bantu**-speaking peoples [prompt on Niger-Congo peoples; prompt on specific Bantu subgroups such as Shona, Kongo, Bakongo, Urewe, or Herero by asking "what larger group were they a part of?"] <Rosenberg, Thought - Social Science>

10. James Neel proposed the “thrifty gene hypothesis” to explain susceptibility to a disease caused by a lack of this hormone. Maturation of cells that produce this hormone rely on PDX-1 activating MafA. IRS-1 is activated by this hormone binding to its receptor, which then activates PI-3-Kinase. The release of this hormone is promoted by incretins and (*) sulfonylureas. Those cells release this hormone after producing a C-peptide and increasing GLUT4 expression. Frederick Sanger won a Nobel Prize for sequencing this hormone. This hormone stimulates glycogenesis in the liver and it is opposed by glucagon. For 10 points, name this hormone released from the beta cells in the Islets of Langerhans that acts by decreasing blood sugar levels.

ANSWER: **insulin** <Calin, Science - Biology>

11. A character in this city recalls his hatred for Julian before being gunned down during a demonstration. The sound of a servant kneading dough serves as the “alarm clock” for a family living in this city where a grocery store owner is taunted about his affair by the singer Jalila and is seen playing the tambourine by his son. After a car accident in this city (*) breaks her collarbone, Amina is sent away by her angry husband Ahmad. The political upheaval of this city is depicted through three generations of the al-Jawad family in novels like *Palace Walk* and *Sugar Street*. For 10 points, name this city that is the setting of a trilogy by Naguib Mahfouz.

ANSWER: **Cairo** [or al-**Qahira**; accept **Cairo** trilogy] <Chen, Literature - World>

12. A woman artist with this married surname used swaths of green for the background of her portrait of John F. Kennedy. In 2015, Ken Griffin paid a record-breaking \$300 million for *Interchange*, a work by another artist with this surname who scraped down layers of paint to achieve the jagged figures in his painting *Excavation*. This is the surname of an artist whose drawing was erased by Robert Rauschenberg, who then put the blank sheet of paper on display. That artist with this surname drew on images of (*) Mesopotamian idols and fertility goddesses to create a series of dynamically painted abstract females with wide torsos and distorted grins. For 10 points, give the surname of the artist Willem, who painted the *Woman* series.

ANSWER: **de Kooning** [accept Elaine **de Kooning** or Willem **de Kooning**; do not accept or prompt on “Kooning”] <Li, Fine Arts - Visual>

13. A cultural period during this royal house's rule was characterized by the fashion of dandy Beau Brummell. A ruler from this house passed the Pains and Penalties Act in an attempt to divorce his wife Catherine of Brunswick and previously had a secret marriage to the Catholic Maria Fitzherbert. The illegitimate FitzClarence branch was fathered by a monarch from this house nicknamed the (*) "Sailor King". The Regency era began after one member of this house went insane from porphyria. That ruler from this house employed such ministers as Pitt the Younger and Lord North and was rejected in the American Revolution. For 10 points, name this British royal house which included William IV and George III and was named for its German origins.

ANSWER: House of **Hanover** [accept **Hanoverians**] <Kaashyap, History - European>

14. A model named after this law has an energy density function proportional to the first invariant of the right Cauchy–Green deformation tensor and was replaced by the more accurate Mooney–Rivlin solid. Voigt notation can be used to express this law in a six-by-six matrix. The Lamé parameters can be found in the three-dimensional expression of this law which can also be expressed using (*) Poisson’s ratio and Young’s modulus. This law predicts a straight line on a stress-strain diagram. This law breaks down at the elastic limit and it predicts a quadratic dependence of potential energy on distance. For 10 points, name this law describing a restoring force that models simple harmonic motion and the behavior of springs, written as “F equals negative k times x.”
ANSWER: Hooke’s law [accept Neo-Hookean solid] <Calin, Science - Physics>

15. This author vows to “hover, utter, still” in a poem that asks “moved you not, restless, waiting for him?” This author declares “the world no longer let me love” and bids “adieu, adieu, all’s vanity” in a poem written after being awakened by a “thund’ring noise / And piteous shrieks of dreadful voice.” This subject of a homage by John Berryman prizes a love worth “more than (*) whole mines of gold” and declares “if ever two were one, then surely we” in a poem addressed to her “dear and loving husband” Simon. For 10 points, name this early American poet of “Verses upon the Burning of our House” and the collection *The Tenth Muse Lately Sprung Up in America*.
ANSWER: Anne Bradstreet <Xu, Literature - American>

16. This philosopher wrote to the Goethe translator Charles Locke Eastlake explaining his views on retinal stimulation, and sent his *On Visions and Colors* for reference. This philosopher’s “individualism, honesty, and steadfastness” are praised in an essay about him “as educator” from Nietzsche’s *Untimely Meditations*. This philosopher built on Kant’s *Groundwork* and chided societal treatment of animals as “mere means” in his book (*) *On the Basis of Morality*. In his most famous work, this philosopher drew from Buddhism and the Vedas to advance his view that aesthetic pleasure can alleviate suffering via a negation of the “will to life.” For ten points, name this German philosopher who authored *The World as Will and Representation*.
ANSWER: Arthur Schopenhauer <Lee, Thought - Philosophy>

17. An unusual movement of this type begins with eighth notes chromatically oscillating outward from the starting note of E, giving the overall work it appears the nickname “Wedge.” The final movement of a work nicknamed “St. Anne” is one of these pieces, as are two G-minor non-symphonic pieces nicknamed “Great” and “Little.” An unfinished work titled for these pieces features counter-, double, and triple examples of them in its (*) *Contrapunctus* movements. The last movement of a D-minor work orchestrated by Leopold Stokowski is this kind of piece, written by the composer of a large work titled *The Art of them*. For 10 points, Johann Sebastian Bach paired a *Toccat*a with what kind of piece in a D-minor organ composition?
ANSWER: fugues [accept fugues by Johann Sebastian Bach] <Graf, Fine Arts - Auditory>

18. This civilization appears to have shared most of its material culture with the neighboring Ochre Colored Pottery people, which seems to have intermingled with it during the Posturban Phase. Archaeological evidence of extensive fires marks the transition to this civilization from the earlier Kot Diji culture. This civilization traded carnelian beads through its port city of (*) Lothal. It produced a bronze statue of a young woman which is commonly called “Dancing Girl” as well as a structure called the “Great Bath”. An “Aryan Invasion” is often thought to have ended this civilization and replaced it with early Vedic societies. For 10 points, name this civilization, which built cities like Mohenjo-Daro and Harappa around a river in Pakistan.
ANSWER: Indus River Valley Civilization [accept Harappan Civilization before “Harappa”] <Lee, History - Ancient>

19. This author is met “in an evil hour” by a flower “crush'd beneath the furrow's weight” in a poem addressed “To a Mountain Daisy”. In a narrative poem by this man, the title character laughs with his friend Souter Johnnie and rides his mare Meg through a “doubling storm”. That character in a poem by this author is moved by “how Nannie lap and flang” during a dance of “warlocks and witches” at (*) Alloway Kirk and shouts “Weel done, Cutty-sark!” This poet of “Tam O’Shanter” notes “the best-laid schemes o' mice an' men” often go awry in a work dedicated to a “tim’rous beastie”. For 10 points, name this Scottish poet of “To a Mouse” and “Auld Lang Syne”.

ANSWER: Robert Burns <Zhang, Literature - British>

20. This man once encountered a painter who claimed he could mix red and white paint to get yellow. In one lecture, this man quipped that all one needs to understand elementary material is “to have an infinite amount of intelligence.” Tom Newman was the first to answer the question “Why can’t we write all 24 volumes of the *Encyclopedia Britannica* on the head of a pin?” asked by this man in his talk (*) “There's Plenty of Room at the Bottom.” This man said that renormalization was “mathematical hocus pocus” after using it in a field theory he invented. This scientist compiled *Six Not So Easy Pieces* as a subset of his three-volume lectures on physics. His autobiography’s title begins with the phrase “Surely You’re Joking!” For 10 points, name this Caltech physicist.

ANSWER: Richard Phillips Feynman [accept Dick in place of Richard] (the lecture is Feynman’s Lost Lecture) <Calin, Science - History>

Bonuses

1. The variation in kinetic energy among the molecules in atmospheric Jeans escape can be modeled with this distribution. For 10 points each:

[10] Name this probability distribution that describes molecular speeds in a canonical ensemble.

ANSWER: Maxwell-Boltzmann speed distribution [accept either underlined portion]

[10] The Maxwell-Boltzmann distribution can be used to find the U_{rms} or root mean square velocity of particles in a gas, which is given by this formula. Express your answer in terms of R , T and M .

ANSWER: square root of $3RT$ over M [accept mathematical equivalents]

[10] The Maxwell-Boltzmann distribution makes the assumption that the particles behave like these substances. These substances are described by a namesake law that equates PV to nRT .

ANSWER: ideal gases [accept ideal gas law] <Calin, Science - Chemistry>

2. This bandleader's recording of "Chattanooga Choo Choo" starts with trumpets imitating train whistles before a dialogue begins between a passenger and a "boy." For 10 points each:

[10] Name this bandleader of the best-selling swing instrumental of all time, "In the Mood." He tragically disappeared while traveling to entertain American troops in France in 1944.

ANSWER: Glenn Miller

[10] Glenn Miller played this instrument, which can perform a true *glissando* by moving its slide without the player articulating.

ANSWER: trombone

[10] A trombone's timbre can be changed by using the "straight" or "cup" one of these devices usually inserted into the bell of a brass instrument. Joe "King" Oliver held a kazoo in his cornet's bell to produce the effect of one of these devices.

ANSWER: mute [accept different varieties, such as straight, cup, wah-wah, or Harmon mutes] <Prasad, Fine Arts - Other>

3. In his *Theodicy*, this thinker attempted to justify the existence of evil stated that God as a perfect being created an imperfect world because it was the "best among all possible worlds." For ten points each:

[10] Name this thinker who wrote *Monadology*, a metaphysics text of 90 paragraphs that states the universe is composed of indivisible elementary particles.

ANSWER: Gottfried Leibniz

[10] Leibniz ascribed to this epistemological view that holds intuition to be the principal source of knowledge about the world. This philosophical view has historically been contrasted with empiricism.

ANSWER: rationalism

[10] Leibniz, along with thinkers such as Baruch Spinoza, were said to have ascribed to a form of rationalism denoted by this term, which contrasts with the Analytic tradition of the Anglosphere.

ANSWER: continental rationalism <Nathan, Thought - Philosophy>

4. Answer some questions about commodities introduced to New Zealand by Europeans, For ten points each:

[10] These weapons were brought to New Zealand by arriving merchants for trade, but unfortunately became used in intertribal conflict amongst the native Maori people. These items were first used for battle in Moremonui.

ANSWER: muskets [accept Musket Wars; prompt on guns]

[10] This commodity was apparently introduced by James Cook to New Zealand for the first time. In 1982, the amount of this good in New Zealand peaked at 70 million, but soon died down due to the growing dairy industry.

ANSWER: sheep [accept lambs]

[10] This other commodity that arrived replaced the *kumara* and was easily cultivated by slaves. This commodity was so prevalent that historian James Belich actually suggested naming the Musket Wars after it instead.

ANSWER: potato [accept Potato Wars] <Lee, History - World>

5. Following a long vacation, the main character of this novel dynamites the Cortlandt construction after the second-hander Keating made changes to his design. For 10 points each:

[10] Name this novel about Howard Roark, an individualistic young architect who designs modernist buildings.

ANSWER: The Fountainhead

[10] This author used Roark to illustrate her belief that individualism is superior to collectivism. This author of *The Fountainhead* also wrote *Atlas Shrugged*.

ANSWER: Ayn Rand [or Alissa Zinovievna Rosenbaum]

[10] Rand also wrote this other dystopian novella in which Equality 7-2521 breaks the rules and conducts scientific research in a collectivist society where the word "I" is branded the "unspeakable word."

ANSWER: Anthem <Calin, Literature - American>

6. This piano sonata's first movement, marked *allegro assai* and in 12/8 time, features sharply contrasting dynamics and marks its composer's first use of a triple-*p* marking. For 10 points each:

[10] Name this F-minor piano sonata, which like its famous peers *Waldstein* and *Les Adieux*, was written during Beethoven's middle period. Its nickname indicates the emotional way it is supposed to be performed.

ANSWER: the Appassionata Sonata [or Beethoven's Piano Sonata No. 23; or his Opus 53]

[10] Earlier piano sonatas by Beethoven include the "Pathétique, and this C-sharp-minor sonata subtitled "quasi una Fantasia." It is nicknamed for a nocturnal phenomenon shining over Lake Lucerne.

ANSWER: the Moonlight Sonata [or Beethoven's Piano Sonata No. 14; or his Opus 27, No. 2]

[10] The first of this pianist's five 1960 Carnegie Hall performances concluded with an explosive performance of the "Appassionata" Sonata. Vladimir Horowitz once said that "of the Russian pianists, I like only [him]."

ANSWER: Sviatoslav Richter <Prasad, Fine Arts - Auditory>

7. Unlike Galilean transformations, these operations transform coordinates while imposing a constant speed of light. For 10 points each:

[10] Name these operations which maintain a constant spacetime interval between two events in Minkowski space.

ANSWER: Lorentzian transforms [or Lorentzian transformations]

[10] Lorentz transformations are key operations in this theory developed by Albert Einstein, which postulates that the laws of physics are constant in all reference frames.

ANSWER: special relativity [or SR; prompt on relativity]

[10] Lorentz transformation to a reference frame with constant velocity in the "positive x" direction can be thought of as performing one of these operations in Minkowski space. These operations, unlike circular rotations, preserve curves of the form "t squared minus x squared is constant."

ANSWER: hyperbolic rotations [or squeeze mappings] <Paul, Science - Physics>

8. In the Western astrological tradition originating from the Babylonians, the twelve signs comprising this set are the constellations of the ecliptic. For 10 points each:

[10] Name this set. Contemporary followers of astrology often attribute aspects of an individual's personality to their sign from this set.

ANSWER: the Zodiac

[10] The zodiac sign on the eastern horizon at any specific time is designated by this term. With the sun sign and moon sign, the sign of this name comprises an individual's birth chart.

ANSWER: rising sign [or ascending sign; accept lagnam]

[10] Zodiac signs are often grouped according to the four classical elements - fire, air, water, and earth. Aries is one of the three fire signs - name both of the other two, which are each four months apart from Aries.

ANSWER: Leo AND Sagittarius <Kaashyap, Belief - Religion>

9. A poem about this type of plant describes it as “hung with bloom along the bough” and “wearing white for Eastertide.” For 10 points each:

[10] Name this plant which titles a poem whose speaker laments “Now, of my three score years and ten/ Twenty will not come again”.

ANSWER: **cherry** tree [prompt on tree]

[10] “Loveliest of trees, the cherry now” is the second poem of this collection. Another poem from this collection describes a “king reigned in the East” with “strychnine in his cup” and concludes “Mithridates, he died old.”

ANSWER: A ***Shropshire Lad***

[10] This poet wrote *A Shropshire Lad*, which also contains a poem that describes a young man who “won [his] town the race,” “To an Athlete Dying Young.”

ANSWER: Alfred Edward **Housman** <Xu, Literature - British>

10. When asked why this nominee was a good choice, the party that nominated this being announced, “If we can’t have him in the White House, we can have him for breakfast.” For ten points each:

[10] Name this nominee. He was reportedly transported to a campaign rally in a station wagon, and was confiscated by Chicago police for unruly conduct during a political convention.

ANSWER: **Pigasus** the Immortal

[10] This group nominated Pigasus. This party, which notably featured a black flag with a red star and a cannabis leaf on it, commonly organized “smoke-ins” across the United States.

ANSWER: **Youth International Party** [accept **Yippies**]

[10] Unfortunately, two leaders of the Yippies movement were later subpoenaed by this committee of the House of Representatives, but they simply popped bubble gum in chamber. This committee was notorious for its intense investigation of suspected Communists.

ANSWER: **H**ouse **U**n-American **A**ctivities **C**ommittee [accept **HUAC**] <Lee, History - American>

11. This god is said to generate and distribute *ashe* (“ah-shay”), the power which sustains life within the universe. For 10 points each:

[10] Name this omnipotent creator god from West African tradition. He largely distances himself from affairs on earth, communicating only through the peacock messenger deity Oshun.

ANSWER: **Olodumare** [or **Olorun**, or **Oluwa**, or **Eledumare**]

[10] Olodumare created the Yoruba deities known by this term, who also include the trickster god Eshu. They are venerated in Santería and many other Afro-Caribbean religions.

ANSWER: **orishas** [or **orichás**]

[10] Prominent among the *orishas* is Shango, an ancient Yoruba king who was later deified as a god of this phenomenon. The Vedic god Indra and Slavic god Perun both wield this phenomenon as a weapon.

ANSWER: **lightning** [or **thunder**, or **thunderbolts**; prompt on storms] <Nathan, Belief - Myth>

12. This operation is used in physics to transform between position-space and momentum space-representations. For 10 points each:

[10] Give this operation, which takes the input function and integrates the product of it with the exponential of negative two π times it s. This operation maps between time and frequency domains.

ANSWER: **Fourier** transform

[10] Fourier transformations are useful in image processing because multiplication in the frequency domain corresponds to this operation in the time domain. Applying this operation to the PDFs of two random variables gives the PDF of the sum of the variables.

ANSWER: **convolution**

[10] *Two answers required.* For a periodic function, a Fourier transform is a series summation of these two functions. These two trigonometric functions are the real and imaginary parts of a complex exponential.

ANSWER: **sine** AND **cosine** [accept in either order] <Paul, Science - Math>

13. The servants Solange and Clair fantasize about killing Madame in one of this man's plays. For 10 points each:
[10] Name this dramatist who wrote a play in which Irma runs a brothel in which clients role-play as such figures as the Judge and the Bishop while a revolution takes place outside.

ANSWER: Jean **Genet**

[10] Jean Genet is associated with this dramatic style that seeks to convey the meaninglessness of human existence. Martin Esslin coined this term to describe plays that explore existentialist themes through odd features.

ANSWER: Theatre of the **Absurd** [accept **absurdism**]

[10] In Jean Genet's play *Deathwatch*, the prisoner Green-Eyes awaits execution in this manner. In *A Tale of Two Cities*, Sydney Carton is executed in this manner during the French Revolution.

ANSWER: **guillotine** [or **guillotining**; prompt on **beheading**] <Zhang, Literature - European>

14. This city's football club has a long-running rivalry with Real Madrid. For 10 points each:

[10] Name this capital of Catalonia, the second-largest city in Spain after Madrid.

ANSWER: **Barcelona**

[10] Barcelona is home to this church, whose Gothic and Art Nouveau architecture was designed by Antoni Gaudi. When completed, its spires would make it the tallest church in the world

ANSWER: Basílica i Temple Expiatori de la **Sagrada Família** [or **Basilica and Expiatory Church of the Holy Family**]

[10] Barcelona is particularly famous for this urban planning strategy to reduce noise and air pollution from cars. It involves repurposing its streets from roadways into walkable spaces for pedestrians.

ANSWER: **superblocks** [accept **superilles**] <Nathan, Modern World - Geography>

15. A young girl headed to one of these places walks past a tomato-stained wall while flanked by four men in one painting. For 10 points each:

[10] Name these institutions. Ruby Bridges is depicted being escorted to a newly desegregated one of these facilities in Norman Rockwell's *The Problem We All Live With*.

ANSWER: **school** [or elementary **school**; prompt on classroom]

[10] Three black schoolgirls are seen writing on a chalkboard in a painting from this sixty-panel series by Jacob Lawrence that portrays African-Americans as they move north.

ANSWER: The **Migration** series

[10] This New York artist captured the effects of segregation in works like *Jim Crow*. Many of this man's works were painted on wood and contain his SAMO signature.

ANSWER: Jean-Michel **Basquiat** <Li, Fine Arts - Visual>

16. Answer the following about historical figures' last words. For 10 points each:

[10] This person's last words were "Pardon me, sir. I did not do it on purpose" after she stepped on her executioner's foot. This woman was executed for treason after being captured in Varennes.

ANSWER: **Marie Antoinette** [or **Maria Antonia** Josepha Johanna; prompt on **Marie**; prompt on **Antoinette**]

[10] This man reportedly said "Shoot, coward! You are only going to kill a man" before being executed on the orders of Rene Barrientos. This Argentinian revolutionary had previously served as Fidel Castro's second in command during the Cuban Revolution.

ANSWER: Ernesto "Che" **Guevara**

[10] This bank robber said "you got me" before being shot to death by police outside the Biograph Theater after he escaped from prison using a wooden gun.

ANSWER: John Herbert **Dillinger** <Lee, History - Misc>

17. A novel titled for this profession follows Hans Schnier as he searches for Marie while travelling through the fractured society of postwar Germany. For 10 points each:

[10] Name this profession. In a 2005 novel, a character known for his skill on the tightrope is nicknamed after this profession and hunts down Max Ophuls for stealing his childhood love Boonyi.

ANSWER: a **clown** [accept *Shalimar the Clown*]

[10] *Shalimar the Clown* was written by this Indian author, who also wrote *Midnight's Children*.

ANSWER: Salman **Rushdie**

[10] Hans Schnier appears in this man's novel *The Clown*. This author also wrote about three generations of architects from the Faehmel family in his book *Billiards at Half-Past Nine*.

ANSWER: Heinrich **Böll** <Chen, Literature - World>

18. The REDD program can mitigate climate change through the restoration of these ecosystems because they act as a sink for blue carbon. For ten points each:

[10] Name these ecosystems whose namesake red crabs make their home on the stilt roots of halophytes in genus *Avicennia* and *Rhizophora*.

ANSWER: **mangroves** [or **mangrove** forests or **mangrove** swamps; prompt on **swamps** or **forests**]

[10] In one experiment that tested the biogeography of these locations Daniel Simberloff studied the effects of removing fauna from mangrove forests on insect communities. That theory of the biogeography of these locations was introduced in an influential book by Robert H. MacArthur and E. O. Wilson.

ANSWER: **islands** [accept *The Theory of Island Biogeography*]

[10] Human activities such as deforestation of mangrove swamps can greatly impact this quantity according to the theory of island biogeography. This quantity is the variety of life found in an ecosystem.

ANSWER: species **diversity** [or **biodiversity**] <Calin, Science - Biology>

19. A more generalized form of this condition was developed by Nicholas Kaldor and John Hicks. For 10 points each:

[10] Name this condition in which no individual can benefit without making another worse off.

ANSWER: **Pareto efficiency** [accept **Pareto optimality**; prompt on partial answer]

[10] This theorem says that there will be Pareto efficiency at competitive equilibrium, though this may not necessarily be socially optimal. It is one of two fundamental theorems of a branch of economics.

ANSWER: **first** theorem of **welfare** economics [accept **invisible hand** theorem]

[10] Pareto efficiency is an important concept in the study of these situations, whose study was pioneered by John von Neumann. A simple example of one of these situations is the prisoner's dilemma.

ANSWER: **games** [or **game theory**] <Xu, Thought - Social Science>

20. The *Secret History* of Procopius makes the unlikely claim that one trillion people died during this emperor's reign. For 10 points each:

[10] Name this Byzantine emperor whose war efforts against the Sassanids were hindered by his namesake plague.

ANSWER: **Justinian I** [or **Justinian** the **Great**; or **Ioustinianós I**; or **Ioustinianós ho Megas**; or **Iustinianus I**; prompt on **Justinian** or **Ioustinianós** or **Iustinianus**]

[10] Justinian the Great signed this treaty with the Sassanid Empire under Khosrau I. Despite its name, it only lasted 8 years.

ANSWER: The Treaty of **Eternal Peace** [or **Perpetual Peace**]

[10] This emperor briefly recaptured the Levant from the Sassanids before losing it for good to the Rashidun Caliphate after the Battle of Yarmouk.

ANSWER: **Heraclius** [or **Iraklios**] <Kaashyap, History - European>