

2020 ACF Winter

Packet C by Nebraska A, Princeton A, Purdue B

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Tossups

1. One thinker contrasted “genuine knowledge” of these entities with “bastard knowledge” stemming from sensation. In *The Dream of Reason*, Anthony Gottlieb argues that one property of these entities seems to nonsensically imply that freedom consists in unpredictability. That property of these entities is analogized to the Renaissance discovery of ancient texts in a Stephen Greenblatt book. According to Lucretius’s poem *De Rerum Natura*, these entities have the property of *clinamen*, or “the swerve.” The Pre-Socratic philosophers Leucippus and Democritus developed a theory in which these entities are contrasted with “the void.” For 10 points, name these indivisible and indestructible objects that lend their name to particles made of protons, neutrons, and electrons.  
ANSWER: **atoms** [accept **atomism**; prompt on matter; prompt on clinamen or “the swerve” by asking “what entities does that term refer to?”]

<Philosophy>

2. These events can be predicted by monitoring a polarity inversion line in the kappa-scheme introduced by Kusano et al. The “sweeping skirt” hypothesis states that a wave caused by one of these events produces Moreton waves. These events are sorted by intensity into classes A, B, C, M, and X. Richard Hodgson observed one of these radiation-emitting events at the same time as Richard Carrington. The likelihood of these events changes periodically in a roughly 11-year cycle, like the coronal mass ejections they often occur alongside. These events are powered by fast magnetic reconnection and often occur near clusters of sunspots. For 10 points, name these explosions on the sun that have major impacts on radio communications.

ANSWER: **solar flares** [or **stellar flares**; prompt on magnetic reconnection; prompt on the appearance of sunspots or coronal mass ejections or CMEs by asking “what type of radiation-emitting event does that correlate with?”]

<Other Science>

3. A man in this city says he’d “take the stick to [the] back” of his jobless 19-year-old son while smoking. In this city, Mary Jane performs a difficult piano piece before a speech where she and her aunts are compared to the Three Graces. In this city, Henchy uses a candlestick to light a staircase for a “black sheep” priest and suspects Hynes of being “a man from the other camp.” In a story set in this city, the pawnbroker’s widow Mrs. Mercer visits a dead priest’s house, which is the residence of the narrator who promises to buy a gift for Mangan’s sister. After a party in this city, Greta cries while she remembers her childhood love Michael Furey and Gabriel Conroy watches snow fall. “Araby” and “The Dead” are set in, for 10 points, what city that names a collection of short stories by James Joyce?

ANSWER: **Dublin** [accept **Dubliners**]

<British Literature>

4. During the reign of this dynasty, court dietitian Hū Sīhuì (“suh-hway”) published the first book to describe the relationship between malnutrition and disease. This dynasty published the ’Phags-Pa (“POGS-pah”) as a universal script for the Chinese and Tibetan languages. This dynasty’s theatergoers enjoyed *zájù* performances of works such as Guān Hàmqīng’s *The Injustice to Dòu Ē* (“doh uh”). The bark of mulberry trees was used to create this dynasty’s chāo currency. This dynasty consolidated its power after the Battle of Yámén, and it was overthrown by the Hóngwǔ Emperor in the Red Turban Rebellion. This dynasty hosted explorers such as Ibn Battuta and Marco Polo. For 10 points, name this Chinese dynasty that preceded the Míng and was once ruled by Kublai Khan.

ANSWER: **Yuán** Dynasty [or Great **Yuán** or the Great **Yuán** State; or Dai **Yuán** or Dai **Ön** Ulus; prompt on the Empire of the Great Khan or the Mongol Dynasty]

<World History>

5. Pizzicato (“pit-sick-KAH-toh”) strings accompany a D minor solo for this instrument in the slow movement of Bruckner’s Fifth Symphony. A short *tutti* A major chord accompanies the first note of a brief solo for this instrument in the slow introduction to Beethoven’s Seventh Symphony. This instrument repeats a dotted melody first stated by the violins in the funeral march of the *Eroica* Symphony. A short cadenza for this instrument interrupts the first movement recapitulation of Beethoven’s Fifth Symphony. Baroque variants of this non-violin instrument include the *da caccia* (“da KA-cha”) and *d’amore* (“da-MOR-ay”). This instrument introduces the “swan theme” in Tchaikovsky’s *Swan Lake* and represents the duck in Prokofiev’s *Peter and the Wolf*. The English horn is the lower cousin of, for 10 points, what double-reed woodwind instrument used to tune the orchestra?

ANSWER: **oboe** [accept **oboe** da caccia or **hautboy**]

<Classical Music>

6. *Note to moderator: Read the answerline carefully.* An “Anti-” version of this concept describing empty Moscow storefronts was proposed in a Michael Heller paper on the transition “from Marx to markets.” An 1833 pamphlet by William Forster Lloyd introduced this concept, which is illustrated by the CC–PP game. This “influential model” inspired principles of CPR self-governance formulated by Elinor Ostrom. Goods that are rival and non-excludable may cause this negative externality, which was popularized from an essay about overpopulation by the racist ecologist Garrett Hardin. British grazing lands name this market failure, which occurs from exceeding the carrying capacity in logging and overfishing. For 10 points, what four-word phrase describes self-interested actors depleting a shared resource through overuse?

ANSWER: **tragedy of the commons** [prompt on common goods or common-pool resources; prompt on free-rider problem; prompt on overexploitation or overuse or similar; prompt on market failure or negative externality until read; prompt on collective action problems or social dilemmas; prompt on Commonize Costs–Privatize Profits Game; accept “The **Tragedy of the Anticommons**”; prompt on *Governing the Commons*]

<Social Science>

7. *Note to moderator: Read the answerline carefully.* Jerusalem's Al-Budeiri and Khalidi contain medieval examples of these objects, which were often collected in Chinguetti ("shing-geh-tee"), Mauritania. Zayd ibn Thabit produced these objects for Muhammad. When these objects got old, Egyptian Jews stored them in the Cairo Genizah ("guh-NEE-zah"). Sanaa and Birmingham name two of these objects from the early 7th century, before they were standardized by Caliph Uthman. The Zabūr, 'Injīl, and Tawrat are holy examples of these objects, which were made in the Thuluth, Naskh, and Kufic styles. Before handling holy types of these objects, Muslims perform wudu ablution. The Quran lists Sabians, Jews, and Christians as "people of" one of these objects, which include the six canonical hadith collections. For 10 points, what objects record the oral revelations of the Quran?

ANSWER: **books** [or **kutub** or **kitab**; accept Quranic **manuscripts** or religious **texts** or **scriptures** or **anthologies**; prompt on **libraries**; prompt on **writing** systems or **scripts** or **calligraphy**; accept **scrolls** or **papers** or **palimpsests** or **folios** or **papyri** or **parchments** or **vellums** or similar; accept People of the **Book** or 'Ahl al-**Kitāb**; accept the **Kutub** al-Sittah; prompt on **Quran** or **hadith** or **verses** or **sura** by asking "in the form of what kind of object?"]  
<Religion>

8. *Note to moderator: Read the answerline carefully.* A ligand containing three of these interactions forms an *ansa* linkage, resulting in a small bite angle, in "constrained geometry catalysts." These interactions are responsible for the high ligand field strength of the strongest ligands in the spectrochemical series. In coordination complexes, ligands containing an empty LUMO named for these interactions can "accept" electrons from metal cation ("cat-ion") "donors" in a process called backbonding. These interactions have one horizontal nodal plane since they have two lobes formed from the overlap of parallel non-hybrid atomic orbitals shaped like dumbbells. "Stacking" systems of these interactions can dimerize ("DYE-mer-ize") aromatic rings. Triple bonds contain two of these interactions and one sigma bond. For 10 points, what covalent bonds form from p orbitals?

ANSWER: **pi** bonds [or **pi** interactions or **pi** orbitals or **pi** electrons or **pi**-**pi** stacking; prompt on chemical **bonds** or covalent **bonds** or metal-ligand **bonds**; prompt on **double** or **triple** bonds by asking "what specific component of that bond?"; prompt on **p** orbitals until read; prompt on atomic **orbitals** or molecular **orbitals**; accept pi **backbonding** or pi **backdonation** until "backbonding" is read; prompt on **aromaticity** until read by asking "what bond systems cause compounds to be aromatic?"]  
<Chemistry>

9. The newspaper *On Guard* was published by an organization founded in this country to oppose fascism and antisemitism called the 43 Group. During World War II, this country's army formed the Jewish Brigade, some of whose members later helped the Bericha Movement in violation of this country's White Paper of 1939. In response to Kristallnacht, this country took in 10,000 children during the "Kindertransport." Fascists in this country attempting to march through a Jewish neighborhood were met by counter-demonstrators in the Battle of Cable Street. That antisemitic group, this country's namesake Union of Fascists, was led by Oswald Mosley. For 10 points, name this country whose prime minister Arthur Balfour promised a homeland in Palestine for the Jewish people.

ANSWER: **United Kingdom** [or **UK**; or **United Kingdom** of Great Britain and Northern Ireland; accept **England** or Great **Britain**]  
<Other History>

10. A novel written in this language follows a man who feels no remorse for shooting a chauffeur who tried to molest him as a boy. Ann Goldstein translates novels from this language, which was used to write an article called “Teach Yourself” [this language] that describes the author’s “linguistic exile.” This language was used to write *The Conformist* and *In Other Words*, a memoir by Jhumpa Lahiri. A novel in this language follows Lila, who works in her family’s shoe shop while Lenù attends school. Another novel in this language includes the purchase of a Polish book that prompts a visit to the Cimmerian literature expert Uzzi-Tuzzi planned by Ludmilla and you, the reader. For 10 points, name this language used to write *If on a Winter’s Night a Traveler* by Italo Calvino.

ANSWER: **Italian** [or **italiano**]

<European Literature>

11. Rietveld refinement attempts to map the theoretical results of this behavior to a spectrum. LEED analyzes the patterns of this behavior in order to determine the surface structure of a single crystal. In a technique that analyzes this behavior in a powdered sample, its intensities are plotted with respect to two-theta. Diffraction techniques analyze forms of this behavior that conserve kinetic energy. Early evidence for the atomic nucleus was provided by the patterns formed by alpha particles from this interaction with gold nuclei as seen by Rutherford. For 10 points, name this behavior in which particles or waves deviate from their trajectories, typically due to the presence of other particles.

ANSWER: **scattering** [accept **diffraction** until read; accept elastic **scattering**]

<Physics>

12. An opera set in this modern-day country contains the tenor aria “Ch’ella (“KEL-la”) mi creda,” which is sung by the bandit Ramerrez before he is about to be executed. It’s not France, but the title character dies in this country after her lover Chevalier Des Grieux (“shuh-vahl-YAY day gree-UH”) fails to find water in a Puccini opera. To appease censors, a plot about the assassination of Swedish king Gustav III was transplanted to this country for Verdi’s *Un ballo in maschera* (“MA-skeh-ra”). An operatic character places a miniature flag from this country in her infant son’s arms before her suicide. A character from this country leases a house for 999 years before marrying Cio-cio San (“CHO-cho sahn”). For 10 points, the melody that represents Pinkerton in *Madama Butterfly* is which country’s “Star-Spangled Banner”?

ANSWER: **United States** of America [or **USA**; or **America**] (The first two operas are *The Girl of the Golden West* and *Manon Lescaut*.)

<Other Arts>

13. A duke with this first name holds the tail of a defecating cow in a cartoon mocking that duke’s failed conquest of Antwerp, in which he attempted to fool the citizens into allowing him a Royal Entry. Margaret of Valois (“val-WAH”) supported that duke of this name’s claim to the throne along with a group of noblemen whom he led known as “malcontents.” A king of this name was targeted along with the Guise (“gheez”) family in the Conspiracy of Amboise (“om-BWAHZ”). Another king of this name beat Henry VIII in a wrestling match at the Field of the Cloth of Gold. That king of this name wrote letters to his mother Louisa of Savoy after being captured at the Battle of Pavia. For 10 points, give the name of the Valois French monarch who allied himself with Suleiman the Magnificent against his Habsburg rival Charles V.

ANSWER: **Francis** [accept **Francis**, Duc d’Anjou, **Francis** II, or **Francis** I; accept **Francois** in place of “Francis”]

<European History>

14. In this film, the murder of a former Santa impersonator on his boat is dismissed by police as an animal attack. The Iron and Wine song “Flightless Bird, American Mouth” plays during a prom scene in this movie, and Muse’s “Supermassive Black Hole” provides the soundtrack to a baseball game in which Alice pitches. While on a trip to La Push, this film’s protagonist hears a Quileute (“quill-ee-oot”) legend involving “Pale Faces” and “Cold Ones.” A love interest in this film leaves a biology class early in response to the protagonist’s strong scent, and later reveals that his skin sparkles under bright light, making him unable to go out in the sun. For 10 points, name this film in which Bella Swan meets Edward Cullen, the first installment in a series based on vampire romance novels by Stephenie Meyer.

ANSWER: ***Twilight*** [do not accept or prompt on “*New Moon*,” “*Eclipse*,” or “*Breaking Dawn*”]

<CE/Geo/Other/Pop Culture>

15. In a book by this author, a craftsman who is secretly afraid of dogs takes up boxing, and a man who receives three votes in every election crucifies himself after his dog is run over. The narrator of another novel by this author works with his friend Alec as a sign painter before writing a column as “the Scarlet Pimpernel.” Residents of the title slum in a book by this author include Man-man, Popo, and B. Wordsworth. This author created a journalist who tries to separate himself from the Tulsis, the family of his wife Shama. That character created by this author was born with an extra finger and is told to stay away from trees and water before going into debt to own the title structure. For 10 points, name this Trinidadian author of *Miguel Street* and *A House for Mr. Biswas*.

ANSWER: V. S. **Naipaul** [or Vidiadhar Surajprasad **Naipaul**]

<World/Other Literature>

16. The movement of these compounds can be inhibited by 1-naphthylphthalamic acid, or by the second messenger strigolactones. Asymmetric distribution of these compounds cause complex spiral patterns in phyllotaxis (“fill-oh-TAX-iss”). By moving protons from cells into the apoplast, these compounds can trigger expansins. The “polar transport” of these compounds is carried out in part by PIN proteins. Indole-3-acetic acid, or IAA, is the best known example of these hormones, which cause cell walls to expand according to the acid growth hypothesis. These compounds migrate to the dark side of plants to cause them to grow towards light. For 10 points, name these plant hormones that can induce phototropism and other growth-related behaviors, contrasted with gibberellins (“jib-er-EL-ins”).

ANSWER: **auxins** [accept **IAA** or **indole-3-acetic acid** until read; prompt on plant **hormones**] (Strigolactones act as a second messenger in apical dominance.)

<Biology>

17. The book *Shakespeare in a Divided America* highlights a politician from this family writing scandalous essays on Desdemona and Othello. That congressman from this family secured funding for the US Exploring Expedition and Smithsonian. A political theorist from this family studied Italian republics to write *A Defence of the Constitutions* and *Thoughts on Government* and served as ambassador to the Dutch Republic. That politician from this family wrote the first State Constitution and ran with Thomas Pinckney in the election that cemented the First Party System. A woman from this Braintree family advised “Remember the ladies” in one of over 1000 letters she exchanged with her Federalist husband. For 10 points, what family included the First Lady Abigail and President John Quincy?

ANSWER: **Adams** family [accept Abigail **Adams** or John **Adams** or John Quincy **Adams**] (John Quincy Adams repeatedly denounced “the character of Desdemona” for her elopement with Othello, highlighting his opposition to “amalgamation.”)

<American History>

18. On Tenos, Hercules kills two figures fathered by one of these beings after they cause him to be abandoned while he searches for Hylas. Poseidon gives two horses who are the children of the harpy Podarge (“po-DAR-jee”) and one of these beings as a wedding gift to Peleus. In Book I of the *Aeneid*, Juno angers Neptune by soliciting the help of these beings in exchange for the nymph Deiopea. One of these figures fathered the immortal horses Xanthus and Balius and the twins who save Phineas from the harpies, Zetes and Calais (“kuh-LAY-iss”). One of these children of Eos and Astraeus jealously causes Apollo to kill Hyacinth. Thinking it contains precious metals, Odysseus’s crewmates tear open an ox-hide bag given to Odysseus by the king of these beings, Aeolus. For 10 points, what four gods include Boreas and Zephyrus?

ANSWER: the four **Winds** [or the **Anemoi** or the **Venti**; or **wind** gods; accept **Boreas, Zephyrus, Notus and Eurus** in any order]

<Mythology>

19. In this novel, a Japanese ensign tells a story about a woman who became convinced she was part Jewish, leading her to visit the spa town of Bad Karma. The epigraph to this novel’s last section quotes Nixon saying “What?” A group of characters in this novel use the former insane asylum The White Visitation as a headquarters to investigate the protagonist, who saves a woman from an octopus that was conditioned to attack her. The protagonist of this novel flees the Hermann Goering Casino and travels to “The Zone.” This novel prominently features an object with the serial number “00000.” Roger Mexico connects the sexual encounters of this novel’s protagonist to V-2 rocket strikes. For 10 points, Tyrone Slothrop is the protagonist of what Thomas Pynchon novel?

ANSWER: ***Gravity’s Rainbow***

<American Literature>

20. A portrait by this artist depicts his partner Emilie Flöge (“eh-MEEL-yuh FLUR-guh”) in an ornamented blue dress against a blue and brown background. Only half of Holofernes’s head is visible in the bottom-right corner of this artist’s depiction of a bare-breasted Judith. The giant Typhoeus (“tye-FEE-us”) occupies the majority of the middle wall of a work by this artist that is housed in a white building designed by Joseph Maria Olbrich. Nazis stole five paintings by this artist that were successfully reclaimed by Maria Altmann, including this artist’s two portraits of Adele Bloch-Bauer. This artist’s best-known painting depicts a couple dressed in yellow robes embracing, and features his characteristic use of gold leaf. For 10 points, name this founding member of the Vienna Secession and painter of the *Beethoven Frieze* and *The Kiss*.

ANSWER: Gustav **Klimt** (Altmann is a descendant of Adele Bloch-Bauer.)

<Painting/Sculpture>

21. Pierre Rigoulot translated a 2000 book titled for this city’s “Aquariums,” which is actually about its prison system. This city is found north of a massive statue of two women in traditional dresses hoisting a bronze map called the Arch of Reunification. A tower in this city is a replica of the Washington Monument, and is made of 25,550 blocks, one for each day of its dedicatee’s life. The tallest unoccupied building in the world is this city’s 105 Building. A blossoming magnolia inspired a stadium in this city that has the largest capacity in the world. This city is home to the torch-like Juche (“JOO-cheh”) Monument as well as the Kumsusan Palace of the Sun, which houses the mausoleum of Kim Il-Sung. For 10 points, name this capital of North Korea.

ANSWER: **Pyongyang** [accept *The Aquariums of Pyongyang: Ten Years in the North Korean Gulag*]

<CE/Geo/Other/Pop Culture>

## Bonuses

1. A photographer in one of these locations built his own camera and captured a photo of three boys staring through a barbed wire fence. For 10 points each:

[10] Name these locations that include the site photographed for the collection *Born Free and Equal*. An American flag rises above rows of dusty cabins in a photo from one of these locations taken by Dorothea Lange.

ANSWER: Japanese **internment** camps [accept **relocation** centers; accept answers mentioning where **Japanese** people were sent during World War II; prompt on **Manzanar** by asking “what type of location was it?”]

[10] *Born Free and Equal* is a collection by this American photographer who co-founded the group f/64 (“f-stop-64”) and devised the Zone System. A moon rises over the Half Dome rock formation in one of many photos this artist took at Yosemite.

ANSWER: Ansel **Adams**

[10] Inspired by Adams’s photos of people performing this activity at Manzanar, Mike Mandel invited Adams and 133 other famous photographers to pose like this activity’s participants. Matt Miller Kandle and Harold Warp captured two different angles of a man allegedly pointing to his left before performing this activity.

ANSWER: playing **baseball** [prompt on **sports** by asking “what sport?”; prompt on **batting** or **catching** by asking “what game are those activities a part of?”]

<Other Arts>

2. In 2015, a court ruled that the trial and execution of the leader of this group were politically motivated after his grandson Vojislav (“VOY-slav”), the former mayor of Belgrade, submitted a rehabilitation request. For 10 points each:

[10] Name these guerrilla fighters led by Draža Mihailović (“DRA-zha mee-HIGH-lo-veech”) and based in Ravna Gora. The Allies shifted their support from this force to another guerrilla army in the same country.

ANSWER: **Chetniks** [or **Četniks**]

[10] Some Chetniks crossed the Yugoslav border to fight the Ustaše (“OO-stah-shay”) in this neighboring country. Ante Pavelić (“ON-tay PAH-veh-leech”) killed thousands of Serbs in this country’s Jasenovac (“yah-seh-NO-vots”) concentration camp.

ANSWER: **Croatia** [or Independent State of **Croatia**; or Nezavisna Država **Hrvatska** or **NDH**]

[10] The Chetniks collaborated with this Axis power against Tito’s Partisans. Until 1943, this country controlled Montenegro and Albania under Mussolini.

ANSWER: **Italy** [or Kingdom of **Italy**; or Regno d’**Italia**]

<European History>

3. In a 2011 book, sociologist Ashley Mears chronicled the racial gap in this profession originating from the recruitment of German and Italian people in Brazil’s state of Rio Grande do Sul. For 10 points each:

[10] Name this profession whose members are recruited by agencies like Elite and IMF.

ANSWER: super**models** [or fashion **models**] (The 2011 book is *Pricing Beauty: The Making of a Fashion Model*.)

[10] Dilson Stein discovered this Brazilian supermodel, who popularized the horse walk and marked the end of the heroin chic style of modeling. She is married to Tom Brady.

ANSWER: Gisele **Bündchen** [or **Gisele** Caroline Bündchen Brady]

[10] At the 2016 Rio Olympics, Gisele performed a lengthy catwalk embodying this unnamed person. Helô Pinheiro (“ay-lo peen-YAY-roo”) inspired a song about this “tall and tan and young and lovely” woman as she walked past Antônio Carlos Jobim’s (“zho-BEEM’s”) table on the Copacabana Beach.

ANSWER: The **Girl** from **Ipanema** [or **Garota de Ipanema**]

<CE/Geo/Other/Pop Culture>

4. This polymer consists of chains of alternating N-acetylglucosamine and N-acetylmuramic acid linked via short peptide chains. For 10 points each:

[10] Name this compound whose biosynthesis is inhibited by beta-lactam antibiotics. In one technique, high concentrations of this protein effectively retain crystal violet dye, while low concentrations show the pink safranin counterstain.

ANSWER: **peptidoglycan** [accept **muricin**] (The procedure is Gram staining.)

[10] In Gram-positive bacteria, the peptidoglycan layer of this structure is substantially thicker than in Gram-negative bacteria. This rigid organelle lies outside the bacterial plasma membrane, and is also found in plant cells.

ANSWER: bacterial **cell wall**

[10] Gram-positive bacteria may be further classified by this type of stain, which uses carbol fuchsin dye and a decolorizer. Bacteria with this stain's namesake property, like *Mycobacterium*, have waxy cell walls and high amounts of mycolic acid and thus resist the decolorizer.

ANSWER: **acid-fast** staining [accept **Ziehl-Neelsen** staining or **Kinyoun** staining]

<Biology>

5. A writer from this country wrote "prepare the earthly sheets for me" in the poem "I Am Going to Sleep" before committing suicide by walking into the sea. For 10 points each:

[10] Name this home country of the author of "Little Man" and "You Want Me White," Alfonsina Storni. This country was also the home of the ultramodernist poet Norah Lange and the feminist writer Victoria Ocampo.

ANSWER: **Argentina** [or **Argentine** Republic; or República **Argentina**]

[10] Norah Lange contributed to publications of this type named *Proa* and *Martín Fierro*, and Victoria Ocampo founded one of these publications named *Sur*. Examples of these publications include *The New Yorker* and *The Atlantic*.

ANSWER: literary **magazines** [prompt on **periodicals** or **journals**]

[10] In 2019, Argentine writer María Gainza ("gah-EEN-zah") won a prize named for this woman that recognizes Spanish language books by female authors. This Mexican nun authored a reply to Sister Filotea and wrote the poem "First Dream."

ANSWER: Sor **Juana** Inés de la Cruz [or Sor Juana **Inés de la Cruz**; accept Juana Inés de **Asbaje** y Ramírez de Santillana]

<World/Other Literature>

6. This complex includes a young artist's depiction of the *Rape of Proserpina*, which was commissioned by the cardinal who names it. For 10 points each:

[10] Name this art gallery and garden complex within a large public park in Rome. Another marble sculpture housed in this complex depicts a beautiful woman transforming into a tree while being pursued by a man afflicted by Cupid's arrow.

ANSWER: **Villa Borghese** ("bor-GAY-zay") [or **Galleria Borghese**; or **Borghese Gallery**; or **Borghese Villa**; accept any answers mentioning the **Borghese** family and **art gallery**/museum/etc.]

[10] Scipione Borghese was an early patron of this Baroque sculptor of *Apollo and Daphne*. Another sculptural work by him depicts the Nile, Danube, Ganges, and Rio de la Plata.

ANSWER: Gian Lorenzo **Bernini** [or Giovanni **Lorenzo**]

[10] Bernini temporarily stopped work on *Apollo and Daphne* to create a sculpture of this biblical figure for the Villa Borghese. That sculpture depicts this man with his sling pulled back.

ANSWER: **David**

<Painting/Sculpture>



7. This movement's leader William Still inspired the musical *Stand by the River* and helped Passmore Williamson rescue Jane Johnson from the Nicaraguan minister John H. Wheeler. For 10 points each:

[10] Name this cause promoted by the orators Maria W. Stewart and Henry Highland Garnet. *Bury My Heart in a Free Land* highlights women who led this movement, which created the African Free School and published *The Liberator*.

ANSWER: **abolitionism** [or the **abolition** of slavery; or **ending slavery** or **freeing the enslaved** or equivalents; accept **manumission** or the New York **Manumission** Society; prompt on the **Underground Railroad**]

[10] The book *Black Political Thought* begins with *An Appeal to the Coloured Citizens of the World*, written by an abolitionist with this surname. A philanthropist with this surname named Madam C. J. earned millions from hair care and cosmetics.

ANSWER: **Walker** [accept David **Walker**; accept Madam C. J. **Walker**; accept Sarah **Breedlove**]

[10] Shomari Wills's book *Black Fortunes* highlights Madam C. J. Walker along with O. W. Gurley, who founded this city's Greenwood District during the 1899 "land run." A 1921 "race massacre" burned this city's "Black Wall Street."

ANSWER: **Tulsa**, Oklahoma [accept **Tulsa** race massacre or **Tulsa** "race riot"]

<American History>

8. *Description acceptable*. This essay explains that one of the author's characters rejected a marriage proposal because she would always be second to his mother and "Milton and the Universal Alphabet." For 10 points each:

[10] Name this essay that discusses how a character was forced to choose between a lifetime of fetching slippers or having her slippers fetched for her. This essay reveals that that character opened a flower shop with her husband to support herself.

ANSWER: "**What Happened Afterwards**" [accept, but DO NOT REVEAL, descriptive answers alluding to the **postscript essay to Pygmalion** or a **sequel to Pygmalion**]

[10] "What Happened Afterwards" was written to explain the author's irritation at depictions of romance between this character and the phonetics professor Henry Higgins. In a 1913 play, this flower girl learns to act like a duchess as part of a bet.

ANSWER: **Eliza Doolittle** [accept either name]

[10] Henry Higgins and Eliza Doolittle appear in *Pygmalion* by this Irish playwright of *Major Barbara*.

ANSWER: George Bernard **Shaw**

<British Literature>

9. The Liénard–Wiechert ("lyay-NARR VEE-cut") potentials describe a moving example of these particles. For 10 points each:

[10] Name these idealized particles with no volume. A pair of them may be used to create an electric dipole.

ANSWER: **point charges** [prompt on **charges** by asking "what is the shape of the charge?"]

[10] An accelerating point charge may experience this recoil according to a formula obtained by integrating the Larmor formula.

ANSWER: **Abraham–Lorentz** force [accept **radiation reaction** force or **radiation damping** force or **self force**; do not accept or prompt on "Lorentz force"]

[10] According to Earnshaw's theorem, a collection of point charges cannot maintain this situation through just electrostatic interaction.

ANSWER: stable static **equilibrium**

<Physics>

10. A mysterious symbol thought to have originated with Chinese Buddhists shows three of these animals with only three ears between them. For 10 points each:

[10] Name these animals, which include one who is helped in a race by the breath of a dragon after nearly drowning in a river. Another of these animals is often interpreted as holding a mortar and pestle.

ANSWER: **rabbits** [or **hares** or other equivalents; or **tù**; accept the **Jade rabbit** or the **moon rabbit**]

[10] In Chinese folklore, the Jade Rabbit is said to use its mortar and pestle to create a substance with this property for Cháng'è ("chong-UH"). Lǎozǐ ("LAO-tsu") attempts to lock Sūn Wūkōng in a crucible to distill a substance with this property out of him after he eats pills with this property, also shared by some heavenly peaches.

ANSWER: giving **immortality** [or equivalents like making you **live forever**; accept elixir of **immortality** or wine of **immortality** or peaches of **immortality**; accept **longevity** or **pills of longevity**]

[10] Since the rabbit finished just before the dragon in the aforementioned race called by the Jade Emperor, the year of the rabbit comes before the year of the dragon in this cyclical system that repeats every twelve years.

ANSWER: Chinese **zodiac** [or Asian **zodiac** or **shēngxiào** or **shǔxiàng**; prompt on lunar **calendar**]

<Mythology>

11. The composer Ed Newton-Rex recently conjectured that a theme in this work is actually a counter-melody to the opening of Pergolesi's *Stabat Mater*. For 10 points each:

[10] Name this set of orchestral variations whose sections are denoted by initials like "C.A.E." and "G.R.S." that represent the composer's close friends.

ANSWER: **Enigma Variations** [or *Variations on an **Original Theme***]

[10] The *Enigma Variations* were written by this English composer who may be better-known to high school graduates as the composer of the *Pomp and Circumstance* marches.

ANSWER: Sir Edward **Elgar**

[10] The *Enigma Variations* were premiered by Hans, a conductor with this surname. A Russian pianist named Sviatoslav who also had this surname premiered Prokofiev's seventh piano sonata.

ANSWER: **Richter** [accept Hans **Richter** or Sviatoslav **Richter**]

<Classical Music>

12. In ancient Rome, female members of this profession were known as *mimae* ("MEE-my"). For 10 points each:

[10] Name this profession held in low regard in Rome. Nero's desire to engage in this profession at the newly-created Neronia festival finally turned the Senate against him.

ANSWER: **acting** [accept **actors**, **theater performers**, **pantomime**, or similar; accept **poetry** technically, since Nero did that too; do not accept or prompt on "gladiators"]

[10] Gnaeus Plancius's rape of a *mima* was defended by this Roman orator, who also exposed the Catiline Conspiracy.

ANSWER: **Cicero** [or Marcus Tullius **Cicero**]

[10] After defending Plancius, Cicero then attacked the character of Verres, a former governor of this region, by bringing up his affair with the actress Tertina. Athens embarked on a disastrous expedition to this region during the Peloponnesian War.

ANSWER: **Sicily** [or **Sicilia**]

<Other History>

13. Papoieto helped found a cultural movement named for this island by depicting 1960s-era teen drug users in *The Junkies Stole the Clock*. For 10 points each:

[10] Identify this island that, along with New York, names a “Poets’ Café” where artists like Ntozake Shange (“EN-toh-zah-kee SHAHN-gay”), Cheryl B, and Carl Hancock Rux performed. This island inspired Giannina Braschi’s (“BRA-skee’s”) multi-genre work *Yo-Yo Boing!*.

ANSWER: **Puerto Rico** [or **Boriquen**; or Commonwealth of **Puerto Rico**; or Estado Libre Asociado de **Puerto Rico**; accept **Nuyorican** Poets Café or **Nuyorican** Playwrights Units] (Papoieto is Jesús Papoieto Meléndez.)

[10] Robert De Niro played a drug dealer named for this other Caribbean island in a play by Puerto Rican author Reinaldo Povod. Immigrants from this island work in a cigar factory in Tampa, Florida, in Nilo Cruz’s play *Anna in the Tropics*.

ANSWER: **Cuba** [accept **Cuba and His Teddy Bear**]

[10] Theater critic Kenneth Tynan brought this author to Cuba to meet Ernest Hemingway. An alcoholic former priest stays at a hotel in Puerto Vallarta (“va-YAR-ta”) in this author’s play *The Night of the Iguana*.

ANSWER: Tennessee **Williams** [or Thomas Lanier **Williams** III]

<American Literature>

14. An acid-catalyzed rearrangement may follow one of these reactions that forms pinacol from magnesium and two ketyl (“KEE-till”) radicals. For 10 points each:

[10] Name this general class of reaction whose catalytic cycles usually include oxidative addition, transmetalation (“trans-metal-ay-shun”), and reductive elimination. A zerovalent (“zero-valent”) metal often catalyzes these reactions, including one using base-activated boronic acids.

ANSWER: **coupling** reactions [accept cross-**coupling** or homo-**coupling** or hetero-**coupling**; accept pinacol **coupling**; prompt on **organometallic** reactions; accept named coupling reactions such as Suzuki **coupling**]

[10] This metal catalyzes numerous cross-coupling reactions, such as the typical Sonogashira, Stille, Negishi, Heck, and Suzuki reactions. Both platinum and this transition metal on carbon can catalyze the hydrogenation of alkenes.

ANSWER: **palladium** [or **Pd**; accept “**palladium** on carbon” or **Pd/C**]

[10] Palladium is a key component of the catalytic converters that reduce emissions from these machines’ internal combustion engines. Nitrogen oxide emissions standards for these machines were circumvented by Volkswagen.

ANSWER: **cars** [or **autos**; or **vehicles**; or **automobiles**; or equivalents; accept specific car models]

<Chemistry>

15. The case *KSR Int’l Co. v. Teleflex Inc.* over one of these things evaluated the standard of a “person having ordinary skill in art” and challenged the “teaching-suggestion-motivation” test for non-obviousness. For 10 points each:

[10] Name these things governed by Title 35 of the US Code. “Design” and “utility” are the main varieties of these things, which name a branch of law that evaluates prospective ones for novelty and eligible subject matter.

ANSWER: **patents** [accept **patent** law; accept **patentability**; prompt on **inventions** or intellectual **property**]

[10] This type of intellectual property is not usually considered prior art that invalidates a patent. Non-compete clauses protect this type of information, subject to a 1979 uniform act that outlines remedies for its misappropriation by “improper means.”

ANSWER: **trade secrets** [prompt on **secrets** or **confidential** information; accept Uniform **Trade Secrets** Act or **UTSA**]

[10] The 2016 Defend Trade Secrets Act allows owners to sue for misappropriation in federal court, but offers immunity for these people. This term refers to employees who expose unethical behavior, like Chelsea Manning and Edward Snowden.

ANSWER: **whistleblowers** [prompt on **leakers** or similar; prompt on **activists**]

<Social Science>

16. After losing Dara to this empire's forces, Justin II went insane and bit his attendants while being dragged around on a wheeled throne. For 10 points each:

[10] Name this empire whose ruler Khosrau I signed a "Perpetual Peace" treaty that lasted only eight years. A massive rock-cut at Naqsh-e Rostam depicts Valerian begging for peace from this empire's leader Shapur I.

ANSWER: **Sassanid** Empire [or **Sassanids**; or **Sasanians**; or the **Neo-Persian** Empire; prompt on the **Iranian** Empire or **Persian** Empire]

[10] Khosrau negotiated the Perpetual Peace with this Byzantine emperor. This emperor's general Belisarius reconquered North Africa while this emperor built the Hagia Sophia and passed a namesake Byzantine law code.

ANSWER: **Justinian I** [or **Justinian** the Great; or Flavius Petrus Sabbatius **Iustinianus**; do not accept or prompt on "Justinian II"; accept the Code of **Justinian** or Codex **Justinianus**]

[10] The last Sassanian king, Yazdegird III, was murdered by a brigand after his forces were defeated by this caliph's force at Qadisiyya. His creation of the *qadi* judgeship and *divan* pension system is considered the beginning of Islamic jurisprudence.

ANSWER: **Umar I** [accept **Omar I**; accept **Umar** ibn al-Khaṭṭāb or **Umar** Al-Farooq]

<World History>

17. In early modern India, popular spiritual movements were often led by mystic poets. For 10 points each:

[10] The poet-saints Rāmānanda, Ravidass, and Kabīr led South India's Bhakti movement, which inspired a devotional form of this practice. Karma and Jñāna ("GYAH-nuh") are paths of this practice, which often ends with the shavāsana.

ANSWER: bhakti **yoga** [prompt on **exercise** or **meditation**]

[10] The Bhakti poet-saint Mirabai composed bhajan hymns in this Hindu tradition, whose sacred sites include Vrindavan ("v'reen-duh-vun") and Muktinath. This denomination's devotion to a certain god grew from the Pāñcharātra ("pah-n-chuh-rah-truh") movement honoring Nārāyaṇa ("NAH-rah-yahn").

ANSWER: **Vaishnavism** [or **Vaishnava** or variants; accept **Krishnaism** or **Bal Gopal**; accept worship of **Vishnu** or **Krishna**; accept Gaudiya **Vaishnavism** or Hare **Krishna** or **ISKCON** or International Society for **Krishna** Consciousness]

[10] The Telugu poet Muddupalani ("moo-doo-puh-lah-nee") was one of the devadasi who often performed Bharatanatyam ("BA-rut-uh-nut-yum") dances after symbolically performing this ceremony with a god. Ancient kings of Uruk enacted a sacred form of this ceremony by exchanging vows with a priestess of Inanna.

ANSWER: sacred **marriage** [accept **hierogamy** or **hieros gamos** or spirit **spouses**; or being **married** or **dedicated** to a deity or similar; prompt on **sacred prostitution** or **fertility** rituals by asking "involving what public ceremony?"]  
<Religion>

18. "Hollow" examples of these data structures exploit lazy deletion and representation using a directed acyclic graph to achieve constant time implementations of non-delete functions. For 10 points each:

[10] Name these data structures. An efficient sorting algorithm begins by constructing the "max" type of this data structure, in which the value of every node is bigger than that of its children.

ANSWER: **heaps** [accept max **heaps** or **heapsort**; accept hollow **heaps**]

[10] Hollow heaps improve upon a type of heap-based data structure named for this mathematician. Dynamic programming is much more efficient than naive recursion when calculating the *n*th term of his namesake sequence, which begins 1, 1, 2, 3, 5.

ANSWER: **Fibonacci** [or **Leonardo** da Pisa; accept **Fibonacci** heaps or **Fibonacci** sequence]

[10] When implementing a heap with a 0-based array, the two child nodes of the node at index *n* are located at these two indices relative to *n*. Note that the root node is at index 0. Give both values in terms of *n*.

ANSWER: **2n + 1** AND **2n + 2** [prompt on **1 and 2** by asking "what is the general formula in terms of *n*?"]

<Other Science>

19. In a departure from its usual usage, one work uses this field to name a “method” that emphasizes how epistemes and discursive formations are governed by subconscious rules. For 10 points each:

[10] Name this non-linguistics-related field of study, which is the first noun in the title of a book that discusses how syntax and semantics alone cannot specify the meaning of a statement in discourse.

ANSWER: **archaeology** [accept *The Archaeology of Knowledge* or *L'archéologie du savoir*]

[10] This French philosopher explicitly used the archaeological method in books exploring the role of power in society such as *The History of Sexuality* and *Discipline and Punish*.

ANSWER: Michel **Foucault**

[10] *Discipline and Punish* frequently discusses this hypothetical construct whose guiding principle he applies to various modern institutions. The original conception of this construct made prominent use of a rotunda.

ANSWER: **panopticon** [prompt on prison or jail]

<Philosophy>

20. At the end of this short story, its central lovers realize that “the most complicated and difficult part” of their lives is “only just beginning.” For 10 points each:

[10] Name this short story in which the unhappily married banker Dmitri Gurov begins an affair with Anna Sergeyevna while visiting Yalta.

ANSWER: “The **Lady with the Dog**” [or “The **Lady with a Dog**” or “The **Lady with the Lapdog**” or “**Lady with Lapdog**” or “The **Lady with a Lapdog**” or “The **Lady with the Little Dog**” or “**Dama s sobachkoy**”]

[10] “The Lady with the Dog” was written by this Russian author of *The Cherry Orchard*.

ANSWER: Anton **Chekhov**

[10] In this Chekhov short story, Ivan Ivanich finds it impossible to live in town after visiting his brother Nikolai, who leaves a government job to fulfill his dream of owning a farm with the title fruits.

ANSWER: “**Gooseberries**” [or “**Kryzhovnik**”]

<European Literature>

21. John Middleton found that the Lugbara deeply fear these figures, but Godfrey Lienhardt’s *Divinity and Experience* notes that nearby Dinka do not worry about them. For 10 points each:

[10] Identify these figures who name the healing Nakayima tree shrine in Uganda. Rungano Nyoni’s film *I Am Not one of these supernatural figures* critiques Zambian movements to cleanse them led by namesake “doctors.”

ANSWER: **witches** [accept **witch** doctors or **witchcraft**; accept **witch** tree; prompt on magicians or sorcerors or similar answers; accept *I Am Not a Witch*]

[10] Thousands of “child witches” have become homeless in this city, where African-initiated churches like the Kimbanguists perform exorcisms outlined in *Tales of the Invisible City*. This city’s Archbishop Joseph Malula led Africa’s largest Catholic congregation, which has a unique liturgical “use.”

ANSWER: **Kinshasa** [prompt on Zaire use; prompt on Léopoldville]

[10] Kinshasa’s Zaire use incorporates these ritual objects, which represented sacred royal power in the Ankole and Buganda kingdoms. Several Bantu rituals feature the ngoma type of these objects, whose “talking” form is used by griots (“GREE-ohs”).

ANSWER: **drums** [accept talking **drums**; prompt on musical instruments; accept **tama** or **dondo** or similar answers]

<Religion>