

2022 Winter Closed

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Packet E

Tossups

1. **This number of musicians played at a 1953 jazz concert, often considered to be the greatest ever, at Toronto’s Massey Hall. Johnny Guarnieri played harpsichord in a group of this many musicians that was led by clarinetist Artie Shaw and named for Gramercy (“GRAM-er-see”). Before adding two more people, a band with this number of members included Kid Ory on trombone and Lil Hardin on piano. Stéphane Grappelli and (*) Django Reinhardt founded a group of this many musicians named for the Hot Club of France. In a song with this number in the title, the bandleader plays the uneven two-chord piano vamp “E-flat-minor-7, B-flat-minor-7” during Joe Morello’s extended drum solo. An unconventional time signature inspired the title of that Paul Desmond song with this number in the title that was first recorded on the album *Time Out*. For 10 points, what number follows “Take” in the title of a song initially recorded by Dave Brubeck?**

ANSWER: **five** [accept Artie Shaw and His Gramercy **Five**; accept Louis Armstrong and His Hot **Five**; accept “Take **Five**”; accept **quintet** or **Quintette** du Hot Club de France]

<Golden, Other Arts>

2. **G. R. Cowper derived a formula for these structures’ shear coefficient, which accounts for the fact that their shear stress and strain are not uniformly distributed. The mathematics governing these structures is extended by an additional dimension in plate theory. These structures are analyzed graphically with VM diagrams. The neutral axis of these structures passes through the centroid of their cross-section. For these structures, the flexural rigidity over the radius of curvature equals the (*) bending moment. These typically prismatic structures have a slope equal to the derivative of deflection with respect to position in Euler (“OY-lur”)–Bernoulli theory. Applied load is lateral to the axis of these structures. When these structures are made of steel, they often have an I-shape. For 10 points, name these horizontal weight-bearing support structures.**

ANSWER: **beams**

<Settle, Physics>

3. **In a Philippine myth, after performing this action, the Danag gave up on planting taro. The winged Mandurugo is another aswang (“oss-WAHNG”) that performs this action on its new husbands. The Xhosa (“KOH-sah”) lightning bird, or *impundulu*, afflicts victims with illness and also performs this action upon them. That creature inspired a child-kidnapping antagonist who performs this action in Marlon James’s *Black Leopard, Red Wolf*. Because her sons ate human flesh, Polyphonte was changed into a (*) Strix, infamous for performing this action. Philostratus claimed that insults drove away a being with one brass and one donkey’s leg who performed this action. Beings that perform this action are delayed with spilled grains, which they stop to count. The Chupacabra performs this action on goats. For 10 points, what action is performed by vampires for sustenance?**

ANSWER: **bloodsucking** [or **blood drinking**; or **vampirism** until read; prompt on **eating** people until read by asking “what part of the body is being consumed?”; prompt on answers involving **removing a splinter** or **killing** people by asking “how?”; prompt on **biting** by asking “for what purpose?”; reject “cannibalism”]

<Yang, Mythology>

4. In this city, over 400 civilians were killed when an air-raid shelter in the Amiriyah neighborhood was hit by smart bombs. Retreating soldiers headed towards this city were attacked at the Battle of Rumaila, two days after a ceasefire had been declared. Mercenaries working for a military contractor killed 17 people in a massacre at this city's Nisour Square. A deceased cleric unofficially names a public housing project in this city that was home to a (*) Mahdi Army that attacked the Green Zone under the command of Muqtada Al-Sadr. A government based in this city agreed with the UN to begin an Oil For Food Program to overcome shortages caused by sanctions placed after the Gulf War. For 10 points, name this city where US Marines tore down a statue of Saddam Hussein.

ANSWER: **Baghdad** (The housing project is Sadr City.)

<Raje, World History>

5. In one scene, several of these characters sit around a low-quality, 1940s-era radio, prompting a discussion of vacuum tubes and diodes. One of these characters claims that “before Life on Earth becomes finally merely impossible, it will for a long time before have become completely unbearable” while urging a man to “STOP MOVING!” One of these characters, who often repeats the word “I” four times, is played by the same actress who plays the (*) nurse Emily. During a dream, one of these characters induces an orgasm in the conservative Mormon woman Hannah Pitt. One of these characters exclaims “the Great Work begins!” at the end of the section *Millennium Approaches* upon first appearing to Prior Walter. For 10 points, name these title beings of a play set during the AIDS crisis by Tony Kushner.

ANSWER: **angels** [accept *Angels in America*]

<Morrison, Drama>

6. Dimitrie Cantemir convinced this ruler to bankroll a Moldavian revolt against the Ottomans, and following its failure, he became this ruler's court musician. To relieve a blockade begun by Admiral Gustaf Wattrang, this ruler ordered 70 galleys to run the blockade near the Åland (“OH-land”) Islands. Franz Zimmerman helped this ruler stage military exercises at a wooden fortress named “Presburg.” After adopting the African prince (*) Abram Hannibal, this ruler appointed him as an army engineer. This ruler built a fortress at Taganrog after his successful campaigns in Azov, during which Alexander Menshikov led his “toy army.” Ships built at the newly-constructed base of Kronstadt were used in this ruler's victory at the Battle of Gangut, and during the same conflict, he defeated Charles XII (“the twelfth”) at the Battle of Poltava. For 10 points, name this czar who won the Great Northern War.

ANSWER: **Peter the Great** [or **Peter I**; or **Pyotr I**; prompt on **Peter** or **Pyotr**]

<Parameswaran, European History>

7. *Note to moderator: Read the answer carefully.* Edward H. Faulkner’s book on the “folly” of performing this process promoted an agricultural movement centered on not doing this process. This process is performed deeply in limited areas by machines equipped with cutting coulters, deep shanks, hilling coulters, and rolling baskets. A form of this process called **disking** is usually done on a second pass. Approaches using the “reduced” or “conservation” form of this process leave 15 to 30 percent of residue on the surface. This process can cause (*) compaction that results in the formation of hardpans and poor infiltration. This process mixes the O and A horizons. Not performing this process lessens surface runoff, slows down erosion, and avoids killing off fauna by leaving soil structure intact. For 10 points, name this process that overturns the first several inches of soil. ANSWER: **plowing** [or **tillage** or **tilling**; accept disc **harrowing** or rotary **tilling** or **rototilling** or **subsoiling** or **picking** or **shoveling** or **hoeing** or **raking** or **digging** or **overturning**; accept zone **tilling** or strip **tilling**; accept no-**till** farming; accept **disking** until read; prompt on **cultivating**] (The first sentence refers to the no-till movement and Faulkner’s book *Plowman’s Folly*.)

<Settle, Other Science>

8. In a novel, a soldier in this war sees a red flower in the mud, reminding him of a woman who wore a camellia in her hair when they met in a bookstore. A soldier in this war is crucified for stealing chickens for some prisoners, one of whom starts a shoe factory in a town that she models on his hometown. The narrator claims “I am haunted by humans” at the end of a novel set during this war, the partial setting of (*) Richard Flanagan’s *The Narrow Road to the Deep North*. A girl survives a bombing during this war while writing a memoir in the basement of her foster parents’ home in a novel narrated by Death. A real-life businessman who ran an enamel factory during this war is fictionalized in a novel that also depicts the war criminal Amon Göth. For 10 points, name this war, the setting of Markus Zusak’s *The Book Thief* and Thomas Keneally’s (“kuh-NEEL-ee’s”) *Schindler’s Ark*. ANSWER: **World War II** [or **WW2**; or the **Second World War**] (The novel in the second sentence is Nevil Shute’s *A Town Like Alice*.)

<Morrison, Long Fiction>

9. A weighted combination of people with this status is used to match two time series up to a cutoff point in a method that calls the resulting sum a “synthetic” point with this status. This status comes [emphasize] *second* in the name of a retrospective method used for estimating an odds ratio but [emphasize] *not* a relative risk. The probability of having this status is “one minus e^{-x} ,” where e^{-x} is the most common covariate balancing score. Data with this status is ignored in the definition of ATT, while the average outcome for this status is (*) [emphasize] *subtracted* to compute an estimand called the ATE. The existence of a group with this status is referenced in the name of the “gold standard” method of randomization, the RCT. In clinical trials, this group is normally given the preexisting standard of care. For 10 points, name this group in an experiment that does [emphasize] *not* receive the treatment of interest.

ANSWER: **control** group [accept **non-treated** group or equivalents until “treatment” is read; accept synthetic **control**; accept case-**control** study; accept randomized **controlled** trial; prompt on **placebo** group] (The ATE is the average treatment effect, and the ATT is the average treatment effect on the treated.)

<Morrison, Social Science>

10. This was the most famous commercial product to make use of the “anti-flash white” pigment. Dietrich Kùchemann created a unique combination of ogival (“oh-JIVE-al”) and “slender-delta” designs for this product. This product unusually lacks an APU, necessitating the use of a start cart before its operation. Tests such as Operation Bongo II in Oklahoma City led this product to be banned in many parts of the United States, limiting its financial viability. The Soviet counterpart to this product, the Tupolev Tu-144, (*) crashed in Paris in 1973. The British and French firms BAC and Aérospatiale collaborated on the design of this vehicle. This commercial airplane, which halted service in 2003, was able to fly between New York and London in around three hours. For 10 points, name this only Western commercial supersonic jet.

ANSWER: **Concorde** [prompt on airplanes or planes or aircraft or supersonic jets; prompt on supersonic transport or SST]

<Smith, Other Academic>

11. This structure provides the alternative name to p107 and p130, a pair of “pocket proteins” that form a repressor complex. A protein partly named for this structure binds to and inhibits E2F dimers, preventing the transition from the G₁ (“G-one”) to S phase, and is itself inhibited by HPV’s E7 protein. Alfred Knudson’s studies of a gene named for this structure determined that it required two inactivating mutations, or “hits,” to lose its (*) anti-oncogenic function. A mutation in a tumor suppressor named for this structure causes a common pediatric blastoma. Cells located in this structure synapse with the M and P cells of the lateral geniculate nucleus. This structure relays signals from amacrine to ganglion cells, which form part of cranial nerve II. For 10 points, identify this structure whose cone-rich macula enables color vision.

ANSWER: **retina** [accept **retinoblastoma** or **Rb** or **RB1**]

<Naveh-Benjamin, Biology>

12. A character created by this author realizes that “the Shadow was only a small and passing thing” after seeing a beautiful star in the night sky. This author cited the Resurrection as the greatest example of “the sudden happy turn in a story,” a concept that this author called “eucatastrophe” (“YOO-catastrophe”). In a book by this author, the Holy Ones sing in unison, but their music becomes dissonant when one strays from God’s theme. A book by this author begins with the creation of the world by the god (*) Eru Ilúvatar (“EH-roo ih-LOO-vah-tar”). In the appendix to one book, this author divided its setting into four progressively less magical ages, with the book set at the end of the Third Age. In that book by this author, a character described as “the Grey” resurrects as “the White” after falling down a chasm in Middle-earth. For 10 points, name this Catholic author of *The Silmarillion* and *The Lord of the Rings*.

ANSWER: J. R. R. **Tolkien** [or John Ronald Reuel **Tolkien**]

<French, Misc. Literature>

13. A Nancy Shoemaker article partially attributes the rise in usage of this adjective to the difference in the words *agigage* (“ah-GHEE-guh-gay”) and *wodige* (“WO-dee-gay”). Janet McCloud and Lorelei Means cofounded a feminist group with this adjective in its name that fought against the Family Planning Services Act of 1970. This adjective describes the “Earth” and “God” in two books by Vine Deloria Jr., who coined a broad concept and social movement described by it. The Treaty of Fort (*) Laramie ended a conflict named after a leader with this adjective in his name. The Occupation of Alcatraz galvanized a youth “power” movement described by this adjective, which later developed into the organization AIM. For 10 points, what color appears before “Cloud” in the name of an Oglala Sioux chief and has since been reclaimed from being a pejorative by many Native American groups?

ANSWER: **red** [accept **Red** Power; accept Women of All **Red** Nations; accept **Red** Cloud] (The Nancy Shoemaker article is titled “How Indians Got to Be Red.”)

<R. Koyal, American History>

14. An artist with this surname noted how “for the spectator, the reality that appears... is the powerful one of paint alone” in an essay titled for how one of her contemporaries “Paints a Picture.” An artist with this surname showed a cross-legged subject blending into a green and yellow background in a posthumous presidential portrait. That artist with this surname also convinced Sidney Janis to showcase her husband’s paintings, which included a series inspired by two Sumerian (*) statues at the Met. An artist with this surname used broad brushstrokes in her larger-than-life presidential portrait of JFK. A gilded frame surrounds an erased sketch drawn by an artist with this surname in a piece by Robert Rauschenberg. That artist with this surname painted various abstractions of the female figure as part of his *Woman* series. For 10 points, give this surname of the abstract expressionist artists Elaine and Willem.

ANSWER: **de Kooning** [accept Elaine **de Kooning** or Willem **de Kooning**; accept **Fried** until “gilded” is read] (The first clue refers to Elaine de Kooning’s essay “Hans Hoffman Paints a Picture.”)
<Parameswaran, Painting and Sculpture>

15. al-Bitruji explained one instance of this phenomenon with the concept of *shawq*, a desire to imitate it. Most medieval Christian philosophers viewed that instance of this phenomenon as being caused by intellects or angels, against the classical view that it was caused by souls. This phenomenon is “forced” or “violent” when it is contrary to an object’s nature, according to Aristotle, who described this phenomenon as the reduction of (*) potency to act. Heraclitus held that everything always undergoes this phenomenon, while Parmenides argued that this phenomenon is impossible. The existence of a pure actuality that causes this phenomenon without undergoing it is argued for in Aquinas’s First Way. Since time is composed of infinitesimal moments, an arrow can never undergo this phenomenon, according to one of Zeno’s paradoxes. For 10 points, name this phenomenon described by Newton’s three laws.

ANSWER: **motion** [or **movement** or **change** or *kinesis* or *mōtus*; accept natural **motion** or forced **motion** or violent **motion**] (The first two clues are about the motion of the celestial spheres.)
<Kulkarni, Philosophy>

16. The first poem in Mary Szybist’s (“SHEE-bist’s”) book *Incardine* says of these people “The spectacular was never behind them.” A notoriously difficult 1840 poem about one of these people from Mantua is referenced in a later epic poem before the speaker imagines “So-shu churned in the sea.” One of these people shouts “Damn it all!” and instructs his “whoreson dog Papiols” in a poem subtitled “Altaforte.” The dedication to Ezra Pound in “The Waste Land” quotes Dante’s description of one of these people as (*) “il miglior fabbro” (“eel meel-YORE FAHB-ro”). The sestina was invented by one of these people named Arnaut Daniel (“ar-NOWD da-nee-EL”). *Jongleurs* (“jong-LURRS”) worked with these people, such as one patronized by Eleanor of Aquitaine named Bernart de Ventadorn (“ben-tah-DOORN”) who often wrote of “courtly love.” For 10 points, Occitan (“OCK-sit-in”) poetry was recited by what medieval traveling musicians?

ANSWER: **troubadours** [prompt on musicians or composers or performers or poets] (The first poem is “The Troubadours, Etc.” The 1840 poem is *Sordello* by Robert Browning.)
<R. Keyal, Poetry>

17. Under this president, the US supported a coup against Syrian president Shukri al-Quwatli that enabled the construction of an oil pipeline. This president gave a foreign tax credit called the Golden Gimmick to Saudi Arabia, which split oil revenues 50/50 with American companies. This president ended an Iran Crisis by pressuring the Soviets to withdraw their support from a separatist Azerbaijani government. This president repudiated his predecessor's promise of support to the (*) Saudi king by citing his relative lack of Arab constituents. This president's longtime friend Eddie Jacobson influenced an action he took against the advice of Dean Acheson ("ATCH-uh-son") and Secretary of State George Marshall. This president's eponymous "Doctrine" expressed support for anticommunist forces across the world and led to the foundation of NATO. For 10 points, name this US president who recognized the state of Israel in 1948.

ANSWER: Harry **Truman**

<Raje, Other History>

18. Superatom electronic theory explains why complexes of this metal exist at magic sizes such as "144 comma 60." This metal is transferred from water to toluene by TOAB, and then this metal is reduced by sodium borohydride in one method of synthesizing clusters of it. Interactions between atoms of this metal form intermolecular bonds with energies of 21 to 42 kilojoules ("kilo-jools") per mole. An acid containing this metal and four chlorine atoms is treated with sodium citrate in the Turkevich method. The best studied (*) self-assembled monolayers are created by placing alkanethiols ("alkane-thiols") on this metal. For small particle sizes, suspensions of this metal's nanoparticles are red. Relativistic effects of electrons in this metal's 5d and 6s ("six-S") orbitals give this metal its color. For 10 points, name this very malleable noble metal with the symbol Au.

ANSWER: **gold** [or **Au** until read]

<Settle, Chemistry>

19. The Moabite king Mesha's sacrifice of his own son on one of these things caused a "great wrath" against Israel. The effort to create some of these things was unsuccessfully opposed by Sanballat the Horonite, Tobiah the Ammonite, and Geshem the Arab. The deaths of Abiram and Segub fulfilled a prophecy about the creation of some of these things. In Ezekiel 22 verse 30, God does not find anyone who will stand between these things, thus predicting the destruction of Jerusalem. Artaxerxes ("AR-ta-ZERK-sees") sent Nehemiah to (*) rebuild some of these structures. After destroying some of these structures, a man prophesied ("PROFF-uh-sighed") that anyone rebuilding them would lose his firstborn and youngest son. Rahab's house was built into one of these structures that was destroyed after a besieging army circled it for seven days and blew trumpets. For 10 points, Joshua toppled what structures surrounding Jericho?

ANSWER: **walls** [accept **ramparts**; accept **gates**; accept **walls** of Jerusalem or **walls** of Jericho; prompt on **fortifications**; prompt on **city** by asking "what specific parts of the city?"]

<Suh, Religion>

20. In her book-length study of this piece, Elaine Sisman describes how a subsection of this piece “makes vivid the mathematical sublime.” A woodwind cadence unusually opens the trio of this piece’s minuet, which begins with a chromatic melody descending from G. The structure of this piece’s final movement may have been inspired by Michael Haydn’s Symphony No. 39, which was written in the same year. This piece opens with a unison C, followed by two quick flourishes up from G to C, and that opening movement later quotes its composer’s aria (*) “Un bacio (“bah-choh”) di mano.” The whole notes “C, D, F, E” are the first of five melodies that are combined in the fugal coda of this symphony’s finale. This symphony in C major was written during the summer of 1788 along with its predecessor, the Great G minor Symphony. For 10 points, name this final symphony by Mozart.

ANSWER: “**Jupiter**” Symphony [or **Symphony** No. **41** in C major, K. 551 by Wolfgang Amadeus **Mozart**; or **Mozart 41**; prompt on **Symphony** No. **41** until “Mozart” is read but accept after]
<Strombeck, Classical Music>

Bonuses

1. William Blake said that this faculty was “not a state” but “human existence itself” and later wrote to Reverend John Trusler that “nature is [this faculty] itself.” For 10 points each:

[M] Name this faculty that Blake and other Romantic poets contrasted with “fancy.” Marianne Moore’s poem “Poetry” paraphrases a W. B. Yeats quote about Blake in its description of “literalists” of this faculty.

ANSWER: **imagination** [accept word forms like **imagining**] (Yeats called Blake a “too literal realist of the imagination.”)

[E] In his *Biographia Literaria*, this contemporary of Blake defined imagination as “esemplastic power.” The Swedenborgian patron C. A. Tulk introduced Blake to this poet of “Kubla Khan.”

ANSWER: Samuel Taylor **Coleridge**

[H] Blake’s poem “London” reflects on how society self-imposes restrictions on imagination, most notably when its speaker says that, “In every cry of every Man,” he hears “manacles” described by this compound adjective.

ANSWER: **mind-forg’d** [or **mind-forged**]

<R. Keyal, Poetry>

2. A social reformer with this surname produced maps of London that classified citizens into one of eight socioeconomic classes. For 10 points each:

[M] Give this surname of a positivist social reformer who wrote *Life and Labour of the People of London*. A different reformer with this surname took the title of “General” after founding the Salvation Army.

ANSWER: **Booth** [accept Charles **Booth** or General William **Booth**]

[E] In addition to the poor, Charles Booth crusaded for the rights of these people, and his work helped the UK pass a law for them in 1908. In the US, the 1935 Social Security Act expanded benefits for these people.

ANSWER: the **elderly** [accept answers indicating **old** people; accept **seniors** or **senior** citizens; accept **retired** people or **retirees**]

[H] Booth’s *Life and Labour of the People of London* focuses particularly on the tenants of this district’s Blackwall Buildings. John Tenniel’s cartoon “Nemesis of Neglect” responds to events that occurred in this district.

ANSWER: **Whitechapel** [accept **Whitechapel** murders]

<Parameswaran, European History>

3. Thermo Fisher’s QuantStudio software visualizes results of this assay by mapping “sample” and “target” labels to specific wells. For 10 points each:

[M] Name this assay. In QuantStudio, one way to remove noise in data from this assay is to uncheck wells whose amplified products generate abnormal melt curves during temperature analysis because of “primer dimers.”

ANSWER: **qPCR** [or **quantitative PCR**, or **real-time PCR**, or **qRT-PCR**; prompt on **RT-PCR** or **reverse transcription PCR**; prompt on **PCR** or **polymerase chain reaction**]

[H] Another indicator of qPCR data noise is large deviations in this value between replicates of each sample. Schmittgen and Livak’s qPCR protocol quantifies results as 2 to the negative delta-delta of this value, which marks the relative amount of an amplified qPCR target.

ANSWER: **CT** value [or **cycle threshold** value]

[E] A major cause of qPCR data noise is not doing this action to cDNA, since concentrated cDNA samples yield strong background signals. This action involves adding deionized water to reduce sample DNA concentrations.

ANSWER: **dilution** [or word forms]

<Egol, Biology>

4. This composer wrote intense love letters to an unidentified woman known as the “Immortal Beloved,” who biographer Anton Schindler suspected was Countess Giulietta Guicciardi (“gwee-CHAR-dee”). For 10 points each:
[E] Name this composer who dedicated his *Moonlight Sonata* to the countess.

ANSWER: Ludwig van **Beethoven**

[M] Beethoven’s “Immortal Beloved” may have been the addressee of his “An die ferne Geliebte” (“ahn dee FAIR-nuh guh-LEEB-tuh”), or “To the distant beloved,” which is commonly considered the first piece of this type. A 24-movement piece of this type by Schubert includes depictions of a linden tree and a hurdy-gurdy.

ANSWER: **song cycle** [or **liederkreis**; prompt on **songs** or **lieder**] (The Schubert piece is *Winterreise*.)

[H] Beethoven kept up a correspondence with, and briefly lived in the apartment of, a countess from this family named Anna Marie. A mentor of Beethoven composed an Opus 76 set of string quartets for this family, including ones nicknamed “Fifths” and “Sunrise.”

ANSWER: **Erdődy** (“AIR-der-dee”) family [accept Anna Marie **Erdődy** or Anna Maria **Erdődy**; accept Joseph Georg von **Erdődy**] (That mentor of Beethoven is Joseph Haydn.)

<Golden, Classical Music>

5. In his book *Happy Pills in America: From [this drug] to Prozac*, David Herzberg describes how this drug was advertised to suburban women as a way to deal with daily anxiety. For 10 points each:

[H] Name this tranquilizer that was widespread in the 1950s after it became popular in Hollywood. It was supplanted by benzodiazepines such as Valium in the 1960s.

ANSWER: **Miltown** [accept **meprobamate** or **Equanil**]

[E] Eli Lilly manufactured the drug Prozac, an SSRI that is most commonly used to treat this condition. Like Paxil and Zoloft, Prozac is often classified as “anti-” this condition.

ANSWER: **depression** [or major **depressive** disorder; accept **antidepressant**]

[M] In 2020, this company agreed to an 8-billion-dollar settlement for conspiring with doctors to overprescribe the painkiller OxyContin. This company will be turned into a public benefit corporation, though no members of its controlling Sackler family will face penalties.

ANSWER: **Purdue** Pharmaceuticals

<Raje, Other Academic>

6. Answer the following about South African theatre that addresses the post-apartheid Truth and Reconciliation Commission, or TRC, for 10 points each.

[M] Jane Taylor and William Kentridge collaborated on a play in which this character debates whether to testify in front of the TRC for his crimes. This absurdist antihero first appeared as a king in a play by Alfred Jarry (“zha-REE”).

ANSWER: **Ubu** [accept King **Ubu** or **Ubu** the King; accept **Ubu** Roi; accept Pa **Ubu** or Père **Ubu**; accept **Ubu** and the Truth Commission]

[E] This author called his play *The Train Driver*, in which a white man faces his guilt after running over a black woman and her baby, “my truth and reconciliation.” His anti-apartheid plays include *Master Harold ...and the Boys*.

ANSWER: Athol **Fugard**

[H] Sipho seeks vengeance for his brother’s murder, while his daughter urges him to testify as a way of mourning, in this playwright’s *Nothing But the Truth*. This member of The Serpent Players co-wrote *Sizwe Bansi Is Dead* and *The Island* with Fugard and Winston Ntshona.

ANSWER: John **Kani** [or Bonisile John **Kani**]

<Morrison, Drama>

7. A painting of Victorine Meurent (“murr-AWN”) dressed as one of these people graces the cover of a book by Gary Tinterow and Geneviève Lacambre tracing Diego Velázquez’s influence on its artist. For 10 points each:
[H] Name this profession. The painting *A Dead Soldier*, possibly by Velázquez, inspired a foreshortened depiction of one of these people, which its artist cut in two after it was critiqued as “wooden” at Paris’s Salon of 1864.

ANSWER: **bullfighter** [or **matador**; or **torador**; accept **torero** or **espada**] (The book is *Manet/Velázquez*, and the paintings are *Mademoiselle V... in the Costume of an Espada* and *The Dead Toreador*.)

[E] The backdrop of Édouard Manet’s portrait of Meurent quotes one of this artist’s *Tauromaquia* (“taur-oh-MAH-kee-ah”) prints. Manet also cut up his painting of Emperor Maximilian’s execution based on this artist’s *The Third of May 1808*.

ANSWER: Francisco **Goya** [or Francisco José de **Goya** y Lucientes]

[M] Manet’s *The Balcony* drew on Goya’s painting of two of these women “on a balcony.” Goya’s scandalous painting of a naked one of these women, likely Manuel Godoy’s mistress, may have influenced Manet’s *Olympia*.

ANSWER: **majas** (“MAH-hahs”) [accept *Majas on a Balcony*; accept *The Naked Maja* or *The Nude Maja* or *La Maja Desnuda*]

<R. Keyal, Painting and Sculpture>

8. Answer the following about the philosophy of Hans-Georg Gadamer (“hans GAY-org GAH-duh-mer”), for 10 points each.

[M] Gadamer was a major thinker in this field, along with Wilhelm Dilthey (“DIL-tye”) and Paul Ricœur (“ree-KURR”). This field makes use of a “circle” in which an interpretation is understood in the light of context, which is in turn re-evaluated in light of that new understanding.

ANSWER: **hermeneutics** (“her-men-YOO-ticks”) [accept **hermeneutic** circle]

[H] Gadamer’s magnum opus *Truth and Method* defends this thing, arguing that interpretation is impossible without it. The same book criticizes Enlightenment thinkers for saying that this thing always obscures the truth.

ANSWER: **prejudice** [or **pre-judgment**; or **Vorurteil**]

[E] *Truth and Method* analogizes hermeneutical interpretation to this kind of interaction. Socrates interacts in this way with other Athenians in many texts by Plato that exemplify a genre named for it.

ANSWER: **dialogue** [or synonyms like **conversation** or **interlocution**]

<French, Philosophy>

9. This Quaker established the first racially integrated school in America in Westport, Massachusetts. For 10 points each:

[H] Name this Afro-Pequot businessman who made a fortune in the whaling industry in the late 18th century. Historian Donald Wright claims this man was the first person to promote African-Americans moving back to Africa.

ANSWER: Paul **Cuffe** (“CUFF-ee”) [or Paul **Cuffee**]

[E] Cuffe worked with British abolitionists to found and support a colony in Sierra Leone, which, like this other African country, was founded as a haven for freed slaves. This country’s capital was named after James Monroe.

ANSWER: **Liberia**

[M] This former slave and author of an “Interesting Narrative” about his life was also involved in resettling London’s poor black residents in Sierra Leone. He was known most of his life by the name of a European monarch.

ANSWER: Olaudah **Equiano** [or Gustavus **Vassa**]

<Raje, American History>

10. Answer the following about QM/MM models, which combine computationally costly quantum mechanical models with faster molecular mechanics models, for 10 points each.

[M] Often, this computational method based on the Hohenberg–Kohn theorems is used for the QM model. Various forms of this method are distinguished by how they approximate the exchange-correlation energy.

ANSWER: **density functional** theory [or **DFT**]

[E] Link atoms are used when one of these bonds is split across the QM and MM regions. These bonds are formed from the sharing of electrons.

ANSWER: **covalent** bonds

[H] An embedding approach that includes this phenomenon in the MM subsystem goes beyond the usual electrostatic formulation of QM-MM coupling. Functions accounting for this phenomenon in heavy atoms are included in Pople basis sets denoted with one asterisk.

ANSWER: **polarization** [or orbital **polarization**]

<A. Keyal, Chemistry>

11. Ifemelu calls this thing “the perfect metaphor for race in America” in a post from her blog *Raceteenth* titled “A Michelle Obama Shout-Out Plus [this thing] as Race Metaphor.” For 10 points each:

[H] The novel *Americanah* begins with Ifemelu traveling from Princeton to Trenton so that a Senegalese woman can help her with what thing?

ANSWER: **hair** [accept **braids** or **afros** or **weaves** or **cornrows** or **dreadlocks** or **hairdo** or **hairstyle**]

[M] This man says that his “first big step towards self-degradation” was when Shorty straightened his hair with lye in the chapter “Homeboy.” A so-called “autobiography” of this man is based on interviews that a novelist conducted with him shortly before this man’s death.

ANSWER: **Malcolm X** [or El-Hajj Malik **El-Shabazz** or Malcolm **Little**; accept *The Autobiography of **Malcolm X*** (by Alex Haley)]

[E] Chaos ensues after Lester Jefferson straightens his hair in *The Wig*, a novel by an author with this surname. An author with this surname created Bigger Thomas, who has green hair in the 2019 film based on his novel *Native Son*.

ANSWER: **Wright** [accept Charles Stevenson **Wright**; accept Richard **Wright**]

<R. Keyal, Long Fiction>

12. Given a ring A and an extension B , A is said to “lie under” B if any one of these objects in A is the contraction of one of them in B . For 10 points each:

[H] Name these proper subgroups of a ring that satisfy two properties: they are closed under multiplication with any other element of the ring, and if x times y is an element of one of them, then at least one of x or y must be.

ANSWER: **prime ideals** [prompt on **ideals**]

[E] Hilbert’s Nullstellensatz (“NOOL-shtell-in-zotts”) implies a correspondence between prime ideals and certain sets of these points called irreducible varieties. For degree two polynomials, these points can be found via the quadratic equation.

ANSWER: **zeroes** [or **roots**; or **x-intercepts**; prompt on **solutions** or **intercepts**]

[M] In algebraic geometry, one typically places the Zariski topology on the set of prime ideals, which is given this name. This term also refers to the set of eigenvalues of a matrix or operator.

ANSWER: **spectrum** [accept prime **spectrum**]

<Morrison, Other Science>

13. The last valley in Farid ud-Din Attar's *Conference of the Birds* is named for poverty and this state. For 10 points each:

[H] Name this state. Al-Ghazali claimed that the vision facilitated by this state is the ultimate goal of Sufis, and Attar illustrated this state with a moth whose "dizzy flight / Turned to an ardent wooing of the light." You may give the original-language term or a description.

ANSWER: **annihilation** of the **self** [or *fana*]; accept **obliteration** of the **self** or equivalents; accept **passing away**; reject "death" or any other synonyms]

[M] *Description acceptable*. Sufis who have "passed away" to reach *fana* obtain an intrinsic understanding of this property of Allah. The only sin that Allah does not forgive is *shirk*, or the rejection of this belief.

ANSWER: **oneness** of God [or *tawhid*; accept **monotheism**; accept "There is **no God but God**" or equivalent translations; accept "*lā 'ilāha 'illā Llāh*"]

[E] The imagery of the moth engulfed in flame also represents this all-consuming emotion, whose "real" kind enables Sufis to return to the unity of Allah. First Corinthians describes this emotion as "patient" and "kind."

ANSWER: **love** [or *ishq-e-haqīqī*]

<Karim, Religion>

14. Marcus Terentius Varro has been attributed as the first to use the phrase "ab urbe condita" to refer to the founding date of Rome. For 10 points each:

[M] *Ab Urbe Condita* titles a history of Rome by this writer of the early first century who used Polybius as a source for his writing on the Second Punic War.

ANSWER: **Livy** [or Titus **Livius**]

[H] According to Livy, this figure was the first to divide the Roman calendar into twelve lunar months. This figure had copies of the legendary Ancile made so that thieves could not distinguish the real one from fakes.

ANSWER: **Numa** Pompilius

[E] An inscription at Priene uses this emperor's birthday to date Roman history. This first Roman emperor and friend of Livy now names a month of the Gregorian calendar.

ANSWER: **Augustus** Caesar [or **Octavian**; or **Octavius**; prompt on **August**]

<Parameswaran, Other History>

15. Because Louis Daguerre's studio burned to the ground, he could not corroborate the claim that he was the first person to photograph this object. For 10 points each:

[E] Name this object, which was later captured in daguerreotypes by John William Draper. Astronaut William Anders took his iconic *Earthrise* photograph while orbiting this object on the Apollo 8 mission.

ANSWER: the **moon** [or Earth's **moon**]

[H] Henry Draper imaged the *Great Orion* nebula using gelatino-bromide plates, which replaced this material as a favorite of photographers. Early photographers used a "wet" process named after this nitrocellulose-based material.

ANSWER: **collodion** ("kuh-LO-dee-un") [accept wet **collodion** process]

[M] The crew of Apollo 17 used a 70-millimeter Hasselblad camera to take this high-resolution photograph of the Earth. This photograph shares its name with one taken by the Suomi NPP satellite in 2012.

ANSWER: *The **Blue Marble***

<Parameswaran, Other Arts>

16. A postwar left-leaning satirical magazine named for this character was co-founded by Herbert Sandberg and Günther Weisenborn. For 10 points each:

[M] Name this subject of a 16th-century picaresque chapbook who lives through the Thirty Years' War in a 2017 Daniel Kehlmann novel. The "merry pranks" of this German folk hero also inspired a tone poem by Richard Strauss.

ANSWER: Till **Eulenspiegel** ("OY-len-SHPPEE-gull") [accept Thyl **Ulenspiegel** or Dyl **Ulenspiegel**; accept *Till Eulenspiegel's Merry Pranks* or *Till Eulenspiegels lustige Streiche*; prompt on **Till** or **Tyll**]

[H] The *Ulenspiegel* drew on Albert Langen's satirical magazine named for this character, which featured Thomas Heine's Art Nouveau covers. This repetitively-named character travels through wartime Europe in a 1668 picaresque novel by Hans von Grimmelshausen.

ANSWER: **Simplicius** Simplicissimus [or Simplicius **Simplicissimus**; accept **Simplicissimus**]

[E] This German playwright likewise addressed World War II via the backdrop of the Thirty Years War in his play *Mother Courage and Her Children*.

ANSWER: Bertolt **Brecht** [or Eugen Berthold Friedrich **Brecht**]

<R. Keyal, Misc. Literature>

17. An extension of the Thomas theorem called the "definition of the situation" is used to frame social situations in this sociological theory. For 10 points each:

[M] Name this theory, which posits that repeated encounters with other people create meanings that shape individual behavior. This theory's name was coined by Herbert Blumer, building on the work of George Herbert Mead.

ANSWER: **symbolic interactionism**

[H] This proponent of symbolic interactionism proposed that people adjust their behaviors based on how they think others view them in his book *Human Nature and the Social Order*, which introduced the looking-glass self.

ANSWER: Charles Horton **Cooley**

[E] A subset of symbolic interactionism, labeling theory, states that negative labels are applied to people who engage in this kind of behavior. This type of behavior involves violating social norms or laws.

ANSWER: **deviance** [or word forms; accept **crime** or word forms; accept **delinquency** or word forms]

<Kulkarni, Social Science>

18. Answer the following related to islands formed by 20th-century volcanic eruptions, for 10 points each.

[M] Valuable research on ecological succession has been performed on this Icelandic island since its formation in 1963 in a type of explosive volcanic eruption now named for it.

ANSWER: **Surtsey** [prompt on **Surtsevan** eruptions]

[H] In 1969, three fishers were swallowed by a volcanic tsunami near Didicas Volcano, which broke the ocean surface to the north of this island in 1952. Home to "Northern" and "Southern" species of giant cloud rats, this island used to contain the second-largest third-order island, before a volcanic crater lake within Lake Taal ("TAH-all") vanished.

ANSWER: **Luzon**

[E] One of the deadliest eruptions of the 21st-century occurred on a volcano in this country that formed in 1927 in Krakatoa's caldera. This country's Sunda Islands are home to the active stratovolcano Mount Tambora.

ANSWER: **Indonesia** [or Republic of **Indonesia**; or Republik **Indonesia**]

<Settle, Geography>

19. This quantity is classified as direct if the crystal momentum doesn't change, and is classified as indirect otherwise. For 10 points each:

[M] Name this quantity that is the energy separating valence and conduction electrons.

ANSWER: **band gap**

[E] Due to gallium nitride's high band gap, it is used to build the 405-nanometer diode lasers used to read and write this storage format. DVDs were replaced by this disc format that is used to store HD video.

ANSWER: **Blu-ray** discs

[H] Herbert Kroemer developed the first designs for these transistors that use different semiconductors for the emitter, base, and collector. These transistors can have cutoff frequencies of hundreds of gigahertz.

ANSWER: **heterojunction bipolar** transistors [or **HBT**s; prompt on bipolar junction transistors or BJTs]

<Parameswaran, Physics>

20. These figures exercised great power during the Sultanate of Women. For 10 points each:

[H] Give this title, which was given to the "queen mother" of the Ottoman sultan and first used by Hafsa, the wife of Selim I. This title also appears in the name of a mosque constructed for Nurbanu by Mimar Sinan.

ANSWER: **valide** ("VAH-lee-day") sultan [accept Atik **Valide** Mosque]

[M] The Atik Valide Mosque complex also housed one of these learning institutions of the Islamic world.

ANSWER: **madrasas** ("ma-DRAH-sahs") [prompt on school or college or university]

[E] The last *valide* of the Sultanate of Women, Turhan Hatice ("ha-TEE-jeh"), was the regent to an Ottoman sultan with this name. The second Ottoman sultan with this name, known as the "Conqueror," captured Constantinople in 1453.

ANSWER: **Mehmet** [or **Mehmed**; accept **Mehmet II**, **Mehmet** the Conqueror, or **Mehmet IV**]

<Parameswaran, World History>