Saturnalia: Packet 1

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THESE TOSSUPS ARE PAIRED WITH BONUSES. IF A TOSSUP IS NOT CONVERTED, SKIP THE PAIRED BONUS AND MOVE ON TO THE NEXT TOSSUP. DO **NOT** COME BACK TO THE SKIPPED BONUS.

1. **Cytochrome-b₅** ("B-five") **reductase reduces an inactive form of this protein prefixed "met." This protein's F form has a reduced affinity for the allosteric inhibitor 2,3-bisphosphoglycerate. BOLD-contrast** ("bold contrast") **imaging maps the relative distribution of two forms of this protein during fMRI** ("F-M-R-I"). **This protein's substrate affinity decreases with pH in the (*)** Bohr effect. A glutamate-to-valine mutation in this protein's beta subunit allows this protein to aggregate into fibers, causing cells carrying it to appear sickle-shaped. This protein binds to its substrate using four porphyrin ("POR-fer-in") groups that contain iron. For 10 points, name this oxygen-carrying protein found in red blood cells.
ANSWER: **hemoglobin** [or **haemoglobin** or **Hb** or **Hgb**; accept met**hemoglobin** or Met**Hb** or Met**Hgb** or fetal **hemoglobin** or **Hb**F or oxy**hemoglobin** or deoxy**hemoglobin**]
<Biology — Yin> [Edited]

1. While cleaning one of these objects, a man exclaims that it will more likely "the multitudinous seas incarnadine" than be cleaned by "great Neptune's ocean." For 10 points each:
[H] Name these objects. A woman laments that "all the perfumes of Arabia will not sweeten" one of these objects, which she repeatedly tries to wash.
ANSWER: a bloody **hand**
[E] The title thane and his wife imagine blood on their hands after conspiring to kill King Duncan in this Shakespeare tragedy, which is sometimes called "The Scottish Play."
ANSWER: *Macbeth* [or *The Tragedy of Macbeth*]
[M] Before murdering Duncan, Macbeth delivers a speech to one of these objects, which is covered in "dudgeon gouts of blood." That speech begins, "Is this" one of these objects "which I see before me?"
ANSWER: a **dagger** [accept **blade**; prompt on knife or other synonyms]
<Drama — French> [Edited]

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2. **This author wrote, "Winter has settled down over the Divide again," in a novel featuring Mrs. Lee's declaration that "Now we be yust-a like old times." In that novel by this author, Amédée** ("ah-mih-DEE") **dies of a ruptured appendix shortly after marrying Angelique. In that novel by this author, a "murderous 405 Winchester" is used to shoot Emil and Marie beneath a white (*)** mulberry tree by Frank Shabata. The protagonist of a novel by this author marries Anton Cuzak and is visited by Jim Burden in Black Hawk, Nebraska. For 10 points, name this author who described the life of Alexandra Bergson in *O Pioneers!* and who wrote *My Antonia*.
ANSWER: Willa Sibert **Cather**
<Long Fiction — McAvoy-Bickford> [Edited]

2. Act 1 of this opera features different musical forms for its scenes like a passacaglia ("pah-sah-CALL-yah") and rondo, while its second act takes the form of a five movement symphony. For 10 points each:
[H] Name this Alban Berg opera adapted from an incomplete play by Georg Büchner ("GAY-org B'YOOK-ner"). This opera's Act 3 Scene 4 is an invention on a hexachord depicting the title character's drowning after the reappearance of a blood red moon.
ANSWER: *Wozzeck* ("VOT-seck")
[M] The combinatoriality of hexachords forms the basis of this style of composition used by Berg and the Second Viennese School. This type of serialism abandons tonal centers in favor of using all chromatic notes equally.
ANSWER: **twelve-tone** technique [or **twelve-tone** serialism or **twelve-tone** technique; accept **dodecaphony**; prompt on atonal music or serialism]
[E] A hexachord ostinato forms the basis of this composer's early unfinished oratorio *Die Jakobsleiter* (dee YA-cups-LYE-ter"). This teacher of Berg led the Second Viennese School and invented the twelve-tone technique.
ANSWER: Arnold **Schoenberg**
<Classical Music — Jeffrey Ma> [Edited]

3. **The leader of the Glasgow Women's Housing Association, Mary Barbour, led one of these events in 1915. The Daily Mail's refusal to publish an editorial led to one of these events organized by the TUC ("T-U-C") in 1926. The headline "Crisis? What Crisis?" was used to criticize James Callaghan's handling of a wave of these events that became known as the (*)** "Winter of Discontent." The head of the NUM ("N-U-M"), Arthur Scargill, led some of these events in the coal industry that were ended by Margaret Thatcher. For 10 points, name these events organized by groups like the International Workers of the World and the Trades Union Congress in which workers refuse to work.

ANSWER: **strike**s [or general **strike**; accept work **stoppage**s; prompt on industrial actions; prompt on answers describing a group of workers refusing to work before "refuse"]

<European History — Laurence Li> [Edited]

3. The central location of this novel is shut down after the scientist James Morningdale creates a technology to clone superior human beings. For 10 points each:

[M] Name this Kazuo Ishiguro novel narrated by Kathy H. In this novel, clones such as Tommy and Ruth are used for organ donation.

ANSWER: ***Never Let Me Go***

[H] In *Never Let Me Go*, the students at Hailsham school use tokens to buy these things in a system of Exchanges. Ishiguro also wrote a novel in which Masuji Ono creates these things for the Japanese government during World War II.

ANSWER: **artworks** [or **art** or **paintings** or **drawings**; accept propaganda **posters** or other answers describing any **art** form used for propaganda; prompt on propaganda] (The second novel is *An Artist of the Floating World*)

[E] In Ishiguro's novel *The Buried Giant*, Wistan kills one of these creatures named Querig. Bilbo Baggins and a band of dwarves travel to the Lonely Mountain to kill one of these creatures named Smaug ("smowg") in *The Hobbit*.

ANSWER: **dragons**

<Long Fiction — Orr> [Ed. Condron]

4. **This person's attempts to train bullfinches to sing with a mechanical organ inspired *Eight Songs* for him by Peter Maxwell Davies. Nigel Hawthorne starred as this person in a 1994 film based on an Alan Bennett play titled for *The Madness of* [this person]. In a musical, this person sings three Britpop-inspired breakup ballads, all of which include the line (*)** "Oceans rise, empires fall." This person was played by Jonathan Groff in the 2015 premiere of a musical in which he sings, "I will kill your friends and family… to remind you of my love." For 10 points, name this ruler who sings "You'll Be Back" in *Hamilton*, a mad king of England.

ANSWER: **George III** ("the third") [prompt on King George; prompt on Mad King]

<Misc. Art — French> [Edited]

4. In three dimensions, this quantity can be represented as a symmetric 3 by 3 matrix whose eigenvectors correspond to the principal axes of rotation. For 10 points each:

[E] Name this rotational analog of mass. Torque equals this quantity times angular acceleration.

ANSWER: **moment of inertia** [or mass **moment of inertia** or **rotational inertia**; accept **moment of inertia** tensor]

[M] When the axis of rotation does not pass through the center of mass, the moment of inertia may be calculated using this formula. This formula is commonly stated as "I equals I-sub-CM plus m times d-squared."

ANSWER: **parallel axis** theorem [or Huygens-**Steiner** theorem]

[H] The parallel axis theorem applies when the rotating object is one of these ideal solids which cannot be deformed. Leonhard Euler ("OY-ler") names a set of equations describing the rotation of these solids.

ANSWER: **rigid bodies** [or **rigid body**]

<Physics — Ye> [Ed. French]

5. **This author created a man who is haunted by visions of raincoats and has his vision blocked by hallucinations of the title translucent objects. In a story by this author, a man falls into the Pool of Blood after he tells other sinners to get off the thread he is using to escape Hell. In another story by this author, an old woman, a woodcutter, and a Buddhist priest give conflicting testimonies about about a (*)** murder in the title location. This author of "Cogwheels" and "The Spider's Thread" wrote about a woman whose robe is stolen by a servant who witnessed her stealing hair from a corpse in a story named for a gate in Kyoto. For 10 points, name this author of "In a Grove" and "Rashomon."

ANSWER: Ryūnosuke **Akutagawa** [or **Akutagawa** Ryūnosuke]

<Short Fiction — Lewis> [Ed. Condron]

5. A proof for this substance being the first principle argues that, since islands can float, this substance can become earth. For 10 points each:
[E] Name this liquid substance that can also exist as a gaseous vapor and as the solid ice, which led some Greek philosophers to say it was the root of all other substances.
ANSWER: **water** [or *__hydor__*]
[H] This Greek philosopher from Miletus claimed that water was the first principle from which everything else, such as earth, originated.
ANSWER: **Thales** ("THAY-leez") of Miletus
[M] This philosopher challenged Thales' assertion that the Earth floats on water in his cosmological treatise *De Caelo*. This philosopher asserted that all beings have material, formal, efficient, and final causes governing their existence.
ANSWER: **Aristotle**
<Philosophy — McAvoy-Bickford> [Ed. Ashbrook]

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6. **Paul's Epistle to the Romans claims that "neither death, nor life… nor anything else in all creation, shall be able to separate us from [this concept]." According to the First Epistle of John, "anyone who does not know [this concept] does not know God, for God is [this concept]." God so expressed this concept toward the world that he (*)** "gave his one and only son" according to John 3:16. In the First Epistle to the Corinthians, Paul grouped this virtue alongside "faith" and "hope" and claimed this virtue "is patient" and "is kind," "does not envy" and "does not boast." For 10 points, name this emotion which Jesus told his followers to express to "your neighbour as yourself."
ANSWER: **love** [accept *__agape__*]
<Religion — Dai> [Edited]

6. According to legend, a ruler of this empire slew his uncle after climbing onto his elephant. For 10 points each:
[M] Name this empire once ruled by Suryavarman II ("SOOR-ya-var-mun the second") that succeeded the Chenla empire. Suryavarman modeled this empire's Angkor Wat temple complex off of Mount Meru.
ANSWER: **Khmer** Empire ("KHUH-mare")
[E] The Khmer people who lived in the Khmer empire make up much of this modern-day country. This country's much later Khmer Rouge regime was led by Pol Pot.
ANSWER: **Cambodia** [accept Democratic **Kampuchea** or Kingdom of **Cambodia**]
[H] The Khmer Empire's ruler, Jayavarman II ("the second"), lived for a time on this island when it was ruled by the Sailendra dynasty. This island later served as the base of the Majapahit empire.
ANSWER: **Java**
<World History — Athreya> [Ed. Iyer]

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7. **Erwin Panofsky's *The Life and Art of [this artist]* describes this artist's invention of double cross-hatching. This artist's fascination with nature inspired his watercolors like *The Wing of a Blue Roller* and *A Young Hare*. This artist wears a fur-trimmed coat in a Christ-like *Self-Portrait* painted at age 28. This artist depicted a (*)** lion sleeping in front of St. Jerome in an engraving and depicted a knight on his horse trotting past a figure with a goat's head in one of his "master prints." For 10 points, name this German artist and engraver who created *Melencolia I* ("one") and *Knight, Death, and the Devil*.
ANSWER: Albrecht **Dürer**
<Painting and Sculpture — Athreya> [Ed. Bowman]

7. After travelling to the underworld, a character in this epic uses milk, honey, wine, water, and barley meal to summon the spirits of the dead. For 10 points each:
[E] Name this epic poem by Homer that follows the title character's ten-year-long return to his home on Ithaca after the Trojan War.
ANSWER: The *__Odyssey__* [or *__Odýsseia__*]
[H] This poet advised Odysseus, "Laistrygonians, Cyclops, angry Poseidon—don't be afraid of them," in his poem "Ithaka." He also wrote a poem that calls the title people "a kind of solution" after they fail to invade.
ANSWER: Constantine Peter **Cavafy** [or Konstantinos Petrou **Kavafis**] (The unnamed poem is "Waiting for the Barbarians.")
[M] Odysseus tells a Buddha-like figure named Prince Motherth that "Death is the salt that gives to life its tasty sting" in this author's *The Odyssey: A Modern Sequel.* This author also wrote *Zorba the Greek*.
ANSWER: Nikos **Kazantzakis**
<Other Literature — Tagtmeier> [Edited]

8. **This organization put together the United Front against Fascism conference in the aftermath of the People's Park protests. In response to a protest by this organization, Governor Ronald Reagan signed the Mulford Act to prohibit open carry of firearms. The FBI ordered the assassination of a leader of this organization who founded the Rainbow Coalition, (*)** Fred Hampton. This organization, which released a Ten Point Program in 1966, implemented the Free Breakfast for Children program in Oakland while under the leadership of Huey Newton. For 10 points, name this radical African American political organization that formed during the Black Power movement.
ANSWER: **Black Panther** Party [or **Black Panther**s]
<U.S. History — Athreya> [Ed. Laurence Li]

8. Count Basie's signature piece "One O'Clock Jump" is based on vamps taken from this style of music. For 10 points each:
[H] Name this style of piano music, in which the performer plays a driving eighth-note rhythm in the left hand. It was pioneered by pianists like Jimmy Yancey, Meade Lux Lewis, and Pinetop Smith.
ANSWER: **boogie woogie**
[M] Boogie woogie arose out of this broad style of music, which was sung by Mamie Smith and Bessie Smith. This style makes use of namesake "worried" notes that typically occur on the third, fifth, or seventh.
ANSWER: **blues** [accept city **blues**]
[E] Boogie woogie and blues are both precursors of this popular genre, which is exemplified by Elvis Presley's "Blue Suede Shoes" and "Jailhouse [this genre]."
ANSWER: **rock** and roll [accept "Jailhouse **Rock**"]
<Jazz — French> [Edited]

9. **A venue for this sport in Alamance** ("AL-uh-manse") **County called Ace was shut down by North Carolina after it defied coronavirus restrictions. Kyle Weatherman put "Blue Lives Matter" symbols on his equipment for this sport after an African-American participant put "Black Lives Matter" on his equipment for it. That participant in this sport, (*)** Bubba Wallace, later saw what an FBI investigation said was a garage "pull rope" from before the event but was thought to be a noose. In June 2020, one organization for this sport banned fan displays of Confederate flags after recent protests. For 10 points, name this activity, exemplified by the Daytona 500, in which certain vehicles go around a track.
ANSWER: **car racing** [accept **NASCAR** or **race car** driving or **automobile racing**; prompt on driving or cars or automobiles or vehicles; do NOT accept or prompt on "Formula One"]
<Current Events — McAvoy-Bickford> [Edited]

9. An essay by Matt Labash titled "Fly Fishing with Darth Vader" describes a trip to the South Fork of the Snake River with this politician. For 10 points each:
[H] Name this politician who, after having a heart defibrillator implanted, told his fishing guide that he could think of "no better place to die" than in his fishing boat. His love for fishing also gave him the Secret Service code name Angler.
ANSWER: Dick **Cheney** [or Richard Bruce **Cheney**]
[E] As part of "decommunization," a statue of this leader was converted into a statue of Darth Vader. This first leader of the Soviet Union helped lead the October Revolution.
ANSWER: Vladimir **Lenin** [or Vladimir Ilyich **Ulyanov**]
[M] That statue of Lenin was in this Ukrainian city, where a mayoral candidate ran for election under the name Darth Mykolaiovich Vader. A famous sequence from *Battleship Potemkin* takes place on this city's steps.
ANSWER: **Odessa**
<Other — Condron> [Ed. McAvoy-Bickford]

10. **A character in this play says he "took a seat in the grandstand of philosophical detachment to fall asleep observing the cannibals do their death dance." In this play, the possibility of returning to their home countries is discussed by the Boer War veterans Piet Wetjoen** ("vet-yoon") **and Cecil Lewis. A character in this play is arrested after admitting that he murdered his wife (*)** Evelyn. Commentary in this play is delivered by the ex-anarchist Larry Slade, who convinces Don Parritt to jump to his death from a fire escape. For 10 points, name this play in which Hickey tries to convince the patrons of Harry Hope's bar to give up their pipe dreams, written by Eugene O'Neill.
ANSWER: The *__Iceman Cometh__*
<Drama — Felix Wang> [Ed. Condron]

10. For 10 points each, name some 20th century artists who painted the crucifixion:
[M] During his Nuclear Mysticist period, this artist created a painting depicting Jesus crucified on a hypercube. This artist's obsession with rhinoceri is reflected by the swirl of horns in his painting of the Assumption.
ANSWER: Salvador **Dalí**
[E] This artist included a Lithuanian flag in the top right and a burning synagogue on the left side of his *White Crucifixion*. His painting *I and the Village* is set in his hometown of Vitebsk.
ANSWER: Marc **Chagall** [or Moishe **Shagall**]
[H] This artist arranged silkscreens in the shape of a crucifix in his *Wounds of Christ*. In the 1990s, much of this artist's work featured vitrines filled with formaldehyde.
ANSWER: Damien **Hirst**
<Painting and Sculpture — Jeffrey Ma> [Ed. Bowman]

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11. **This poet included the line "As from each roof a tower of smoke ascends—So does Thy Realm, my God, around me rise" in the collection *The Book of Hours*. This poet described an object whose "curved breast could… dazzle" because it is "suffused with brilliance." In another poem, this poet tells his heart, "Not that you could endure the voice of God," after asking, "Have you remembered (*)** Gaspara Stampa sufficiently yet?" The first verse in a collection by this poet states, "Beauty is nothing but the beginning of terror." For 10 points, name this poet of "The Archaic Torso of Apollo" who asked, "Who, if I cried, would hear me among the angelic Orders?" in his *Duino Elegies*.
ANSWER: Rainer Maria **Rilke** ("RIL-kuh")
<Poetry — Tagtmeier> [Ed. Condron]

11. Two of these weather systems merge to form a larger one in the Fujiwhara effect. For 10 points each:
[H] Name this general class of weather systems exemplified by polar vortices and nor'easters. These large-scale weather systems circulate counterclockwise in the Northern Hemisphere.
ANSWER: **cyclone**s [or **cyclonic** storms; accept extratropical **cyclone**s or tropical **cyclone**s or bomb **cyclone**s; prompt on hurricanes or typhoons or tropical storms; do NOT accept or prompt on "anticyclones"]
[E] Cyclones form in areas where this quantity is low, while anticyclones form where this quantity is high. This quantity can be measured using a barometer and is commonly expressed in millimeters of mercury.
ANSWER: atmospheric **pressure** [or barometric **pressure** or air **pressure**]
[M] The formation process of an extratropical cyclone can create an "occluded" one of these features by forcing cold air to overtake warm air. "Stationary" examples of these features occur when two slow-moving air masses collide.
ANSWER: weather **front**s [accept occluded **front**s or stationary **front**s]
<Earth, Atmospheric, and Ocean Science — Yin> [Edited]

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12. **One of these devices is used to smooth the output of a full wave rectifier in an AC to DC power supply. A type of these devices uses a sheet of paper soaked in electrolytes to separate an anode and cathode made of aluminum or tantalum. In a tank circuit, one of these devices is paired with an (*)** inductor, causing current to oscillate harmonically. The energy stored in one of these devices is equal to one half charge times voltage, since the voltage across one is proportional to its charge. The strength of one type of these devices equals "epsilon times A over d." For 10 points, name these circuit components which can be constructed by inserting a dielectric between two parallel plates.
ANSWER: **capacitor**s
<Physics — Bowman> [Ed. French]

12. Douglas Streusand ("STROO-sand") objected to Hodgson and McNeill's assertion that this substance was the main driver behind the Ottoman Empire's conquests. For 10 points each:

[M] Name this substance that was used by Safavid *tofangchi* ("too-FUNG-chee") and *zamburak* ("ZAM-boo-rahk") forces. The Ottoman, Safavid, and Mughal empires are sometimes known as empires defined by this substance.

ANSWER: **gunpowder** [accept **gunpowder** empires]

[E] This denomination was the official religion of the Safavid Empire. Shah Abbas the Great enforced the Twelver sect of this denomination throughout the majority of modern Iran, where it remains the majority today above Sunni Islam.

ANSWER: **Shi'a** Islam [or **Shi'ite** or **Shi'ism** or **Shi'atu Ali**; prompt on Islam alone]

[H] This Shah presided over the establishment and rise of the Safavid Empire at the head of an army of Qizilbash ("kih-ZIL-bash") tribesmen. This ruler's son Tahmasp I ("the first") succeeded him after he lost the battle of Chaldiran.

ANSWER: Shah **Ismail I** ("IS-muh-il the first") Safavi [prompt on Ismail]

<World History — Rollin> [Ed. Iyer]

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13. **At the end of this war, Admiral Hipper's order to prepare the High Seas Fleet for a last-ditch naval battle led to the Kiel Mutiny. Low-cost substitute goods known as *ersatz* ("er-SATS") were first used during this war. In a revolt following this war, the Freikorps ("FRAI-core") defeated Rosa Luxemburg and the Spartacist league. The Chief of the General Staff, (*)** Moltke ("MOLT-kuh") the Younger, resigned and was replaced by Erich von Falkenhayn after losing this war's Battle of the Marne. This war's onset featured an invasion of Belgium as part of the Schlieffen ("SHLEE-fen") Plan. For 10 points, Wilhelm II ("the second") resigned after what war ended by the Treaty of Versailles?

ANSWER: **World War I** [or the **First World War** or **WWI** or The **Great War**]

<European History — Laurence Li> [Edited]

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13. For 10 points each, answer the following about laboratory methods used to purify mixtures:

[E] This class of techniques separates the solid and liquid portions of a mixture, often by passing the mixture through a layer of semipermeable paper.

ANSWER: **filtration** [accept word forms such as **filtering**]

[M] This type of filtration can be used to quickly separate cool mixtures whose solvents do not have low boiling points. In this type of filtration, filter paper is placed in a funnel, which must be secured using a rubber funnel adaptor before reducing the pressure beneath the mixture.

ANSWER: **vacuum** filtration

[H] During a vacuum filtration, filter paper is often placed on top of the porous plate of this type of funnel. This type of funnel can be differentiated from the similar Hirsch funnel by its vertical walls and larger capacity.

ANSWER: **Büchner** ("B'YOOK-ner") funnel

<Chemistry — Condron> [Edited]

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14. **Theoretical calculation of this quantity can be simplified by assuming the frozen orbital approximation. This quantity can be calculated from a system's HOMO ("homo") using Koopmans' theorem. Repulsion of paired p^4 ("p-four") electrons causes this quantity to be lower for oxygen than for nitrogen. Elements are determined by their values for this quantity in (*)** photoelectron spectroscopy. Hydrogen has a value of 13.6 electron volts for this quantity. Since Group 1 elements have one electron in their outer *s* subshell, their "second" value for this quantity is much greater than their "first" value. For 10 points, name this energy needed to remove an electron from an isolated atom.

ANSWER: **ionization energy** [or **ionization potential**; accept **vertical ionization energy** or **first ionization energy** or **second ionization energy**; accept any of the preceding answers with "potential" in place of "energy"; prompt on energy or binding energy]

<Condron> [Ed. French]

14. A poem in this form repeats the line "Rage, rage, against the dying of the light." For 10 points each:
[M] Name this poetic form which starts with a three-line section, of which the first and third lines alternate at the end of every subsequent section, with both lines closing the last section.
ANSWER: **villanelle**
[E] This Welsh poet wrote "Old age should burn and rave at close of day" and repeated "Rage, rage, against the dying of the light" in his villanelle "Do Not Go Gentle Into That Good Night."
ANSWER: Dylan **Thomas**
[H] This poet used "The art of losing isn't hard to master" as one of the repeated lines in her villanelle "One Art." She also wrote "Arrival at Santos" and "In The Waiting Room."
ANSWER: Elizabeth **Bishop**
<Poetry — McAvoy-Bickford> [Ed. Condron]

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15. **A type of sensitivity specific to these people is improved by practicing mind-mindedness and synchrony based on another's actions. These people entered and exited a room with a stranger as part of the initial Strange Situation Classification experiment. John Bowlby posited a "deprivation hypothesis" named after these people. Bruno Bettelheim pushed the theory that the (*)** "refrigerator" type of these people are the main cause of autism. Excess stress can lead to some of these people developing postpartum depression. For 10 points, Sigmund Freud's theory of the Oedipus ("EH-dih-puhs") complex states that what people are desired by their sons?
ANSWER: **mother**s [or **maternal** parents or synonyms like **mom**s; prompt on parents or caregivers or women]
<Psychology — Ashbrook> [Edited]

15. Retrotransposons ("retro trans-POH-zons") use these enzymes to "copy" and "paste" themselves throughout the eukaryotic ("yoo-care-ee-OT-ik") genome. For 10 points each:
[M] Name this class of enzymes which create a double-stranded DNA molecule from a single-stranded RNA template. Telomerase ("tel-OM-er-ase") is classified as one of these enzymes.
ANSWER: **reverse transcriptase**s
[E] The "retro-" variety of these disease-causing agents also replicates using reverse transcriptases and may have evolved from retrotransposons. These disease-causing agents are responsible for influenza.
ANSWER: **virus**es [accept retro**virus**es or influenza **virus**es]
[H] This class of retrotransposon consists of a short, 280 nucleotide-long sequence. These transposons comprise about 11% of the human genome and require the ORF2 ("O-R-F two") protein of LINE-1 ("line one") transposons in order to replicate.
ANSWER: _**Alu**_ ("AL-oo") elements [or _**Alu**_ sequences or _**Alu**_ repeats; prompt on SINEs or short interspersed elements or short interspersed nuclear elements]
<Biology — Yin> [Edited]

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16. **In one part of this conflict, prisoners of war were forced to lick blood off the floor after the Bibighar ("bee-bee-GUHR") massacre. In this conflict, William Hodson shot three princes near the "bloody gate." Sir Hugh Rose laid siege to the city of Jhansi during this conflict after its ruler refused to abide by the (*)** Doctrine of Lapse. Soldiers from Meerut marched to declare emperor Bahadur Shah Zafar their leader during this conflict. This conflict was triggered in part by rumors of cartridges greased with cow and pig fat. For 10 points, name this rebellion of namesake Indian soldiers against the rule of the British East India Company.
ANSWER: **Sepoy Mutiny** [or **Indian Rebellion of 1857** or **First Indian War of Independence**; accept "Revolt" in place of "Rebellion"; prompt on Indian Rebellion or Indian Revolt with "in what year?"; prompt on Indian War of Independence]
<World History — Athreya> [Edited]

16. Because of the limited naval capability of the U.S., Great Britain was the enforcer of this policy for much of the 19th century. For 10 points each:
[E] Name this 1823 doctrine which opposed European intervention in North or South America. Although its namesake was a president who oversaw the "Era of Good Feelings," it was actually written by his Secretary of State, John Quincy Adams.
ANSWER: **Monroe** Doctrine
[M] This president's namesake extension of the Monroe Doctrine stated that the United States will intervene on behalf of its interests in Latin America. He used the Great White Fleet to display the United States's naval power.
ANSWER: **T**heodore **Roosevelt** Jr. [or **T**eddy **Roosevelt**; prompt on Roosevelt]
[H] As part of the Roosevelt corollary, Theodore Roosevelt sent a fleet to break up a British, German, and Italian blockade of this South American country, whose president Cipriano Castro had refused to pay debts.
ANSWER: **Venezuela** [or Bolivarian Republic of **Venezuela** or *República Bolivariana de* **Venezuela**]
<U.S. History — Athreya> [Ed. Laurence Li]

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17. **Unlike `malloc`, the function `alloca` returns a pointer to this data structure. Calculators that use postfix or reverse polish notation usually process commands with this data structure. Nodes are stored in this data structure when using depth-first search. It's not a buffer, but deep recursion can cause a program to exceed the bound of the (*)** "call" example of this data structure. The last element pushed into this data structure is the first element popped out, unlike in a queue. For 10 points, name this data structure whose "overflow" names a popular programming forum.
ANSWER: **stack** [accept call **stack** or **Stack**Overflow]
<Computer Science — Maharjan> [Ed. Gurazada]

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17. The Frenet–Serret ("fruh-NAY seh-RAY") formulas use three of these objects to describe the motion of a particle along a differentiable curve in terms of the curve's torsion and curvature. For 10 points each:
[E] Name these mathematical objects that possess both magnitude and direction. These objects are often contrasted with scalars.
ANSWER: **vector**s
[H] For a curve parameterized by the function "r of t," this vector equals "r-prime of t" over the magnitude of "r-prime of t." The binormal vector is defined as the cross product of this vector with the unit normal vector.
ANSWER: **unit tangent** vector [prompt on tangent vector or T]
[M] The derivative of the unit tangent vector with respect to this quantity gives the definition of curvature. This quantity, defined as the distance between two points along a curve, equals "r times theta" for two points on a circle.
ANSWER: **arc length** [prompt on length or s]
<Math — Yin> [Edited]

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18. **Musicians in this country often learn the *shvi* before learning a double reed instrument named for its apricot wood, the *duduk*. Stone steles from this country marked with crosses are called *khachkars*, the largest collection of which lies along Lake Sevan. This country's namesake highlands surround a neighboring country's Lake Van. The earliest culture of this country, Urartu, survives in the name of its national symbol, Mount (*)** Ararat. The breakaway Artsakh government of Nagorno-Karabakh seeks to join this country. For 10 points, name this Caucasian country whose family names often have the suffix "-ian" and that has a capital of Yerevan.
ANSWER: **Armenia** [or Republic of **Armenia** or **Hayastan**i Hanrapetut'yun]
<Geography — McAvoy-Bickford> [Edited]

18. According to Plutarch, this man believed that recent Roman defeats were caused by ignored omens from the gods. For 10 points each:
[H] Name this Roman general who was appointed dictator in 217 BC. His military strategy against an opponent who besieged Trebia earned him the agnomen "the delayer."
ANSWER: Quintus **Fabius** Maximus Verrucosus [or **Cunctator**; accept **Fabian** strategy]
[E] Fabius was appointed dictator in 217 BC to counter this Carthaginian general after his victory at Lake Trasimene ("TRAZ-ih-meen"). He had earlier performed a crossing of the Alps to threaten Rome and later won a victory at Cannae ("CAN-ay").
ANSWER: **Hannibal** Barca [prompt on Barca; do NOT accept or prompt on "Hamilcar Barca"]
[M] Fabius opposed this commander's plans to invade Africa because he perceived that invasion to be too risky. This victor at Zama had earlier defeated Carthaginian forces at the Battle of Ilipa ("IH-lih-puh").
ANSWER: Publius Cornelius **Scipio Africanus** [or **Scipio Africanus** the Elder or **Scipio Africanus** Major or **Scipio the Great**; prompt on Scipio; do NOT accept or prompt on"Scipio Africanus the Younger" or "Scipio Aemilianus"]
<European History — Lin> [Edited]

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19. **This composer's Opus 14 consists of two piano sonatas, the first of which in E major this composer rearranged as a string quartet in F major. Edward Elgar referred to the beginning of "Nimrod" as "only a hint, not a quotation" of an A-flat major *adagio cantabile* ("can-TAH-bee-lay") movement by this composer. That piece is in C minor, a key some musicologists regard as this composer's most dramatic or emotional key. A (*) C-sharp minor piece by this composer is titled *quasi una fantasia* but is nicknamed for the appearance of Lake** Lucerne at night. For 10 points, name this German composer whose early piano sonatas include ones nicknamed *Pathétique* and *Moonlight*.
ANSWER: Ludwig van **Beethoven**
<Classical Music — Raymond Wang> [Ed. Jeffrey Ma]

19. The Eyre ("air") Highway crosses this region, including the town of Eucla ("YOO-cluh") on its edge. For 10 points each:
[H] Name this arid, mostly treeless plain on the south coast of Australia. It lies south of the Great Victoria Desert and includes the longest stretch of straight road in the country.
ANSWER: **Nullarbor** Plain
[M] Travelling from the east coast, one would likely cross the Nullarbor to get to Perth, the capital and most populous city of this Australian state.
ANSWER: **Western Australia**
[E] The Nullarbor Plain is the largest single outcropping of this rock in the world. This sedimentary rock, chemically calcium carbonate, forms karst landscapes with caves containing stalagmites and stalactites.
ANSWER: **limestone**
<Geography — McAvoy-Bickford> [Ed. Daniel Ma]

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20. **Manetho's ("MAN-ith-oh's")** *History of Egypt* **claims that this deity was the first ruler of Egypt. Theseus killed a son of this deity named Periphetes ("pair-ih-FEE-teez") who murdered travellers with a club. The François ("fran-SWAH") Vase depicts a common scene in which this deity drunkenly rides a mule as he returns to his birthplace. After being nursed to health by the Sintians ("SIN-tee-uhns"), this god builds a golden (*)** throne for his mother, who sits in it but cannot get out. This god lands on Lemnos after Hera throws him out of Olympus on account of his lameness. His workshop is said to be beneath Mount Etna. For 10 points, name this Greek god of blacksmithing and the forge.
ANSWER: **Hephaestus** [or **Hephaistos**; accept **Vulcan**]
<Mythology — McAvoy-Bickford> [Ed. French]

20. In General American English, this feature is present in the word "pool" but not in "spool." For 10 points each:
[M] Name this linguistic feature where a puff of breath accompanies the articulation of a consonant. Consonants with this feature usually have a superscript "h" attached to them in phonetic transcriptions.
ANSWER: **aspiration** [or **aspirated**]
[H] Aspirated stops in Hindi and other languages are different from regular stops due to the existence of these sets of words that differ by one sound. These sets are used to separate sounds into different phonemes.
ANSWER: **minimal pair**s [accept **minimal** sets; do NOT accept or prompt on "pairs"]
[E] A common aspirated sound in multiple languages is the voiceless bilabial stop, symbolized "p," which is articulated using these body parts.
ANSWER: **lip**s
<Other Social Science — Iyer> [Edited]