

# Saturnalia: Packet 13

Edited by Justine French, Avinash Iyer, Laurence Li, Robert Condon, Connor Mayers, Eric Yin, Karan Gurazada, Nick Dai, Ethan Ashbrook, Dylan Bowman, Jeffrey Ma, Daniel Ma, Benjamin McAvoy-Bickford, and Lalit Maharjan. Written by the editors and Vikshar Athreya, Maxwell Ye, Felix Wang, Danny Kim, William Orr, Jason Lewis, Tiffany Zhou, Gabe Forrest, Ariel Faeder, Josh Rollin, Louis Li, Advait Modali, Raymond Wang, Auden Young, Aadi Karthik, Ned Tagtmeier, Rohan Venkateswaran, Victor Li, and Richard Lin

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. Like red algae, some of these organisms such as *Trichodesmium erythraeum* derive their red color from the pigment phycoerythrin (“fye-koh-ih-RITH-rin”). Many of these organisms possess specialized nitrogen-fixing cells known as heterocysts (“HEH-ter-oh-sists”). Biofilms of these organisms can agglutinate sediment to create layered structures called stromatolites (“stroh-MAT-oh-lytes”). The propagation of these organisms about (\*) 2.4 billion years ago led to the Great Oxygenation Event. According to the endosymbiotic theory, these organisms are the ancestors of chloroplasts. For 10 points, name this phylum of photosynthetic bacteria commonly known as “blue-green algae.”

ANSWER: **Cyanobacteria** [or **Cyanophyta**; accept **blue-green algae** until it is read; prompt on **bacteria** or **algae** until they are read; prompt on **photosynthetic** organisms until “photosynthetic” is read]  
<Biology — Yin> [Edited]

1. For 10 points each, answer the following about geology... in *Minecraft*:

[H] This plagioclase-rich, intrusive igneous rock has a phaneritic texture and typically forms due to partial melting above subduction zones. In *Minecraft*, two blocks of this rock can be crafted from two cobblestone and two Nether quartz.

ANSWER: **diorite**

[M] This rock names a type of magma rich in iron and magnesium that is extruded by mid-ocean ridges and shield volcanoes. In the *Minecraft* Nether, soul sand valley biomes contain large pillars made of this rock.

ANSWER: **basalt** [accept **basaltic** magma or **basalt** pillars]

[E] This black-colored volcanic glass forms when rhyolitic (“RYE-uh-litt-ick”) lava cools too rapidly for crystals to form. In *Minecraft*, ten blocks of this rock are needed to build a Nether portal.

ANSWER: **obsidian** [prompt on **obby**]

<Other — Yin> [Edited]

---

2. One book argues that adherents of this ideology exemplify scientific principles that create “Superfluous People.” Karl Popper argued that this ideology arises from the misuse of historicism by thinkers such as Plato and Marx in *The Open Society and Its Enemies*. Friedrich Hayek claimed that the United States would fall into this ideology if it continued to pursue centralized economic planning. Anti-Semitism and imperialism (\*) precede this ideology according to a Hannah Arendt book about its “Origins.” For 10 points, Nazi Germany and Stalin’s Soviet Union exemplify what government ideology that entails complete control of its citizens?

ANSWER: **totalitarianism** [accept word forms like **totalitarian**; prompt on **autocracy** or **authoritarianism** or **dictatorship** or **fascism** or **Nazism** or **Stalinism**]

<Philosophy — Dai> [Ed. Ashbrook]

2. During the New Fire ceremony, a priest dressed as Xuihtehcutli (“shih-TEH-kwuht-lee”) would remove one of these objects and then light a fire in its place. For 10 points each:

[H] Name these objects, which were placed in stone vessels called *cuauhxicalli* (“kwah-shee-KAH-lee”). The Aztecs believed that removing these objects would liberate *istli* (“EES-t’lee”) and reunite it with the Sun.

ANSWER: human **hearts** [or **tona**]

[M] Aztec priests extracted human hearts in honor of their gods, including this sun and war god whose name translates as “left-handed hummingbird.” This god was born after his mother, Coatlicue (“koh-ah-T’LEE-kway”), was impregnated by a ball of feathers.

ANSWER: **Huitzilopochtli** (“weet-see-loh-POACH-t’lee”)

[E] Archaeologists have uncovered much evidence of human sacrifice at the Templo Mayor in this Aztec capital. Legendarily, the Aztecs founded this city after seeing an eagle holding a snake on top of a cactus.

ANSWER: **Tenochtitlan** (“teh-noach-TEET-lawn”) [accept **Mexico City** or **Ciudad de México** or **CDMX**]

<Mythology — McAvoy-Bickford> [Ed. French]

---

3. This leader asked, “Why not sell the air, the great sea, as well as the earth?” during a meeting at Grouseland. The campaign slogan of future vice president Richard Johnson claimed that he killed this leader, who died at a battle that followed a retreat from Fort Maldon. Henry Proctor led a siege of Fort Meigs (“meegs”) along with this leader, who besieged (\*) Detroit alongside British general Isaac Brock. This leader was killed at the Battle of the Thames with his ally Roundhead. With his brother Tenskwatawa (“tehn-skawah-tah-way”), this leader founded Prophetstown. For 10 points, name this Shawnee chief whose confederacy lost the Battle of Tippecanoe (“tip-ee-kuh-NOO”) to William Henry Harrison.

ANSWER: **Tecumseh**

<U.S. History — McAvoy-Bickford> [Edited]

3. The naturalistic, round hips of one of these sculptures from Anavysos contrasts with the narrow, rigid hips of the one held by the Met. For 10 points each:

[H] Name these free-standing statues of male youths from the Archaic period. Unlike their female counterparts, these statues are typically nude.

ANSWER: **kouroi** [or **kouros**]

[E] Like most Archaic sculpture, *kouroi* display this facial expression in every context. The *Mona Lisa* displays this facial expression enigmatically.

ANSWER: **smile** [accept similar expressions like a **smirk** or a **half-smile**]

[M] The *kouroi* of the Archaic period were replaced in the Classical period by nudes who held this pose. This pose, found in works like Polykleitos’s *Spear-Bearer*, places most of the sculpture’s weight on one foot.

ANSWER: **contrapposto**

<Painting and Sculpture — French> [Ed. Bowman]

---

4. The acceleration of one of these substances generates thrust in Ad Astra’s experimental VASIMR (“VAZ-uh-meer”) thruster. A criterion for these substances requires that the frequency of electron-neutral collisions be less than a namesake frequency. Electric fields are screened in these substances on the order of the (\*) Debye (“duh-BYE”) length. These substances can be confined in a toroidal device called a tokamak, which is the leading candidate for a fusion reactor. The corona continuously emits one of these substances called the solar wind. For 10 points, name these ionized gases called the “fourth state of matter.”

ANSWER: **plasmas** [accept **plasma** frequency or **plasma** propulsion]

<Physics — Ye> [Ed. French]

4. The shortest track on this album is titled after its guitarist John McLaughlin (“mick-LOF-lin”). For 10 points each:

[M] Name this 1970 album by Miles Davis, which featured future bandleaders including McLaughlin, Chick Corea, and Herbie Hancock. Along with Davis’ earlier *In a Silent Way*, this album marked the beginning of jazz fusion.

ANSWER: **Bitches Brew**

[H] After working on *Bitches Brew*, McLaughlin recorded *The Inner Mounting Flame* and *Birds of Fire* with this band, which he founded. This jazz fusion band is named after a Hindu deity.

ANSWER: **Mahavishnu Orchestra**

[E] Both *Bitches Brew* and the Mahavishnu Orchestra feature many instruments with this quality, alongside traditional acoustic instruments. Fender manufactures string instruments with this quality, especially guitars.

ANSWER: **electric** [accept **electronic**]

<Jazz — French> [Edited]

---

5. An author from this country wrote a poem that ends with the ambiguous phrase “sun slit throat” and is titled “Zone.” Another author from this country wrote a poem in which the title creature’s “great wings hang like heavy, useless oars at his side.” An author from this country assigned colors to different vowels in a prose poem that includes two *Delirium* sections. That author from this country wrote the poem (\*) *A Season in Hell* in the Symbolist style. A collection from this country contains a section called “Spleen and Ideal” and is called *The Flowers of Evil*. For 10 points, name this home country of the poets Guillaume Apollinaire (“ghee-YOHM ah-pol-ee-NAIR”), Arthur Rimbaud (“ram-BOH”), and Charles Baudelaire (“boh-duh-LAIR”).

ANSWER: **France** [or **French** Republic or *République française*]

<Poetry — Orr> [Ed. Mayers]

5. These figures can possess priests in a process known as the “mounting of a horse.” For 10 points each:  
[H] Name these emissaries of Olodumare (“oh-loh-doo-MAH-ray”) that are worshipped in Yoruban religions such as Candomblé (“cah-dohm-BLAY”).

ANSWER: **Orishas** (“oh-REE-shah”) [or **Orixas** or **Orichas**]

[M] Orishas are also venerated in this Afro-Cuban religion that syncretizes Catholic and Yoruban beliefs and is translated as “Way of the Saints.”

ANSWER: **Santería** [or **Regla de Ocha** or **Regla de Lukumi**; accept Order of **Lucumi**; prompt on **Order of Orisha**]

[E] A 1993 controversy occurred when the Supreme Court ruled in favor of upholding Santería’s right to perform this general practice of ritual animal slaughter.

ANSWER: **sacrifice**

<Religion — McAvoy-Bickford, Dai> [Ed. Dai]

---

6. **This leader ordered the construction of the Líng Qú (“ling choo”) canal during a campaign against the Baiyue (“BYE yoo-EH”) tribes. After he died, the smell of this leader’s corpse was concealed by two carriages of rotten fish. According to legend, the 500 boys and 500 girls that this leader sent to find the elixir of life founded Japan. This man’s chief minister, (\*) Lǐ Sī (“lee sih”), ordered the burning of books and the burying of Confucian scholars. In an attempt to defend against the Xiongnu (“SHONG-nu”) people, this leader ordered the construction of the Great Wall of China. For 10 points, name this first emperor of the Qin Dynasty who was buried with the Terracotta Army.**

ANSWER: **Qín Shǐ Huáng** [or **Shǐ Huáng Dì** or **Qín Shǐ Huáng Dì**; accept **Yíng Zhèng** or **Zhào Zhèng** or **Qín Wáng Zhèng**; prompt on **Qín** before “Qin” is read; do NOT accept or prompt on “Huáng Dì”]

<World History — Louis Li> [Ed. Laurence Li]

---

6. This essay describes passengers asking inane questions such as “whether the crew sleeps on board, and what time the Midnight Buffet is.” For 10 points each:

[H] Name this essay whose author cynically describes a free one-week vacation in the Carribean.

ANSWER: “A **Supposedly Fun Thing I’ll Never Do Again**” [accept “**Shipping Out**: On the (nearly lethal) comforts of a luxury cruise”]

[M] This author of “A Supposedly Fun Thing I’ll Never Do Again” wrote about the Incandenza family in a novel partially set at the Enfield Tennis Academy.

ANSWER: David Foster **Wallace** [prompt on **DFW**] (The novel is *Infinite Jest*.)

[E] In “A Supposedly Fun Thing I’ll Never Do Again,” Wallace makes extensive use of these things, such as when he says, “Long Story, not worth it” after admitting to wearing the same Spiderman hat as a little boy. These things are comments made by the author at the bottom of a page.

ANSWER: **footnotes** [prompt on **notes**; do NOT accept or prompt on “endnotes”]

<Other Literature — Louis Li> [Ed. Mayers]

---

7. **The difference between theoretical and experimental values of this quantity can be computed from the Tafel equation. This quantity and pH are the axes in a diagram that describes the equilibrium phases of an aqueous system. Elements are sorted by this quantity in a single displacement reactivity series. This quantity is measured in relation to that of a (\*) platinum bar in an acidic solution. This quantity is defined as zero for the conversion of protons into hydrogen gas. For non-standard conditions, this quantity is calculated by applying the Nernst equation to a half-cell. For 10 points, name this quantity that represents the tendency of a chemical species to gain or lose electrons.**

ANSWER: **reduction potential** [or **redox potential**; accept **oxidation potential** or **half-cell potential**; prompt on **potential** or cell **potential** or standard cell **potential**; do NOT accept or prompt on “overpotential”]

<Chemistry — Ye> [Edited]

7. This revolt was crushed at the Battle of Mello by forces under Charles the Bad. For 10 points each:

[H] Name this 1358 peasant revolt in northern France led by a man nicknamed Jack Goodfellow. This uprising was chronicled by Jean Froissart (“FWAH-sar”) and was catalyzed by forced labor and a tax known as the *taille* (“tie”).

ANSWER: **Jacquerie** (“ZHAAHK-uh-ree”)

[E] The Jacquerie occurred during one phase of this war between England and France that lasted from 1337 to 1453. This war also saw fighting at Sluys (“SLOO-iz”) and Agincourt.

ANSWER: **Hundred Years’ War** [or **Guerre de Cent Ans**]

[M] Another catalyst of the Jacquerie was the capture of John II (“the second”) at the battle of Poitiers (“PWAH-tee-ay”) by this English commander. This commander never gained the English throne despite being the first born because he died during the war.

ANSWER: **Edward** the **Black Prince** [or **Edward** of **Woodstock**; prompt on **Edward** or the **Black Prince**]

<European History — Athreya> [Ed. Iyer]

---

8. **WE Charity left a government contract after it was revealed that it had paid this politician’s family members to speak. Mario Dion concluded that this politician had “directly and through his senior officials used various means to exert influence” in a scandal where Jody Wilson-Raybould became Veterans Affairs Minister. This politician was accused of pressuring a minister improperly into helping the construction company (\*) SNC-Lavalin (“S-N-C LAH-vuh-lin”).** This politician was criticized for wearing brownface makeup for an “Arabian Nights” party. In a 2019 election, this politician formed a minority government after Andrew Scheer’s Conservatives gained seats. For 10 points, name this current prime minister of Canada.

ANSWER: **Justin Trudeau** [prompt on **Trudeau**]

<Current Events — McAvoy-Bickford> [Edited]

8. In a play by this author, the title character opens a bank book and discovers that her husband has been giving money to Mrs. Erlynne. For 10 points each:

[M] Name this author who wrote a play in which a character hiding from her husband in Lord Darlington’s closet is able to slip away after Mrs. Erlynne reveals herself and claims to have accidentally taken the title object.

ANSWER: Oscar **Wilde** (The play is *Lady Windermere’s Fan*.)

[E] In this other Wilde play, Jack Worthing and Algernon Moncrief adopt the title name to pursue relationships with Gwendolen Fairfax and Cecily Cardew.

ANSWER: *The **Importance of Being Earnest***

[H] When he wants to avoid social engagements, Algernon frequently says he has to visit this fictitious friend, a supposed invalid who resides in the countryside.

ANSWER: **Bunbury** [accept **Bunburying**]

<Drama — Modali> [Ed. Mayers]

---

9. **A work in this medium exploring the artist’s gender fluidity shows two copies of the shaved head of Claude Cahun (“ca-AHN”). A comedic lithograph depicts Nadar in a hot-air balloon “elevating” this medium to art. Another work in this medium shows a man’s heel almost touching its reflection in a large puddle. That work in this medium is emblematic of (\*) Henri Cartier-Bresson’s (“car-tee-AY bress-ON’s”) “decisive moment.”** An early method to produce works in this medium used copper plated with silver and sensitized with iodine; that method is the daguerreotype (da-GARE-oh-type). For 10 points, name this medium in which a still image is captured with a camera.

ANSWER: **photography** [accept equivalents like **photo** or **photograph**; accept **daguerreotype** before “daguerreotype”]

<Misc. Art — Condrón> [Edited]

9. Phillip Cagan assumed adaptive expectations in his model of this phenomenon, which he based on data from seven instances of it in the 1920s and 1940s. For 10 points each:

[M] Name this phenomenon, which causes shoe-leather costs to rapidly increase. It occurred in Bolivia in the 1980s and in Zimbabwe in the 2000s.

ANSWER: **hyperinflation** [prompt on inflation]

[H] This type of money can be vulnerable to hyperinflation, since it has no intrinsic value. Unlike commodity money, this type of money only has value because people agree to use it.

ANSWER: **fiat** money [or **fiat** currency]

[E] During Zimbabwe's hyperinflation, many people switched from Zimbabwean money to using this currency. This currency became a fiat currency in 1971 when Richard Nixon ended the gold standard.

ANSWER: United States **dollar** [or **USD**]

<Economics — McAvoy-Bickford> [Ed. French]

---

10. **One of this country's emperors committed suicide after the Battle of Magdala during a British expedition led by Robert Napier. The Hoare-Laval pact was a secret plan to end this country's independence. A socialist movement in this country that deposed its last emperor was led by Mengistu Haile Mariam** ("men-GHEE-stoo HAI-luh MAR-ee-am"); **that regime, the (\*) Derg**, won the Ogaden War against a neighboring country led by Siad Barre ("BAR-ray"). This country's occupation by Italy in 1936 reversed its earlier victory at the 1896 battle of Adwa under Menelik II ("the second"). This country's last emperor, who is considered the Rastafarian Messiah, was Haile Selassie ("HAI-luh seh-LAS-see"). For 10 points, name this east African country led from Addis Ababa.

ANSWER: **Ethiopian** Empire [or Federal Democratic Republic of **Ethiopia** or the Provisional Military Government of Socialist **Ethiopia**; accept **Abyssinian** Empire before mention]

<World History — Athreya> [Ed. Iyer]

10. This poem was first read aloud during a visit made by King George V ("the fifth") to a 1911 political convention. For 10 points each:

[H] Name this poem which states that "Thou art the ruler of the minds of all people" and ends by exclaiming "Victory, victory, victory to thee."

ANSWER: **Jana Gana Mana** [or **Bharoto Bhagyo Bidhata**; prompt on the Indian national anthem]

[E] *Jana Gana Mana*, the national anthem of India, was written by this Indian poet, who also wrote the national anthem of Bangladesh.

ANSWER: Rabindranath **Tagore** [or Robindronath **Thakur** or **Gurudev**]

[M] Tagore won the Nobel Prize in Literature for an English translation of this collection. This collection, which Yeats called "the work of supreme culture" in its introduction, has a poem that begins by declaring "Thou hast made me endless / such is thy pleasure."

ANSWER: **Gitanjali** [or **Song Offerings**]

<Poetry — McAvoy-Bickford> [Ed. Mayers]

---

11. **Lester Ford names a sequence of these shapes which correspond to the elements of the Farey sequence. These shapes are nested in a fractal called the Apollonian gasket. The rational points on one of these shapes correspond to Pythagorean triples. A torus is the Cartesian product of two of these shapes. An angle (\*) inscribed in one of these shapes has half the measure of the corresponding central angle. Brahmagupta's formula applies to quadrilaterals which can be inscribed in one of these shapes. This shape is a conic section with eccentricity zero.** For 10 points, name these shapes which may be drawn with a compass.

ANSWER: **circle** [or **1-sphere**; accept Ford **circle** or unit **circle**; do NOT accept or prompt on "sphere"]

<Math — French> [Edited]

11. After one of these people was unfairly whipped by John Thompson, they killed and ate Europeans aboard a brigantine (“BRIG-un-teen”) ship in the Boyd Massacre. For 10 points each:

[H] Name these people that opposed colonization of their land as a part of the “King Movement,” which called for a single ruling monarch. These people clashed with a colonizing power in the Wairau (“WAI-rao”) Affray.

ANSWER: **Māori**

[M] From 1807 to 1842, The Maori fought a series of intertribal wars named for these weapons. These weapons evolved as a more effective version of the arquebus (“ar-K’WE-bus”).

ANSWER: **muskets** [accept **Musket Wars**; prompt on **guns**; do not accept or prompt on “rifles” or other forms of weaponry]

[E] The Maori resided on the North and South islands of this modern-day country. This country’s modern-day capital is Wellington.

ANSWER: **New Zealand** [or **Aotearoa**]

<World History — Louis Li> [Edited]

---

12. **A cadenza reminiscent of a Bach fantasia opens this composer's second piano concerto in G minor. The sounds of frogs and crickets are emulated in the middle movement of this composer's fifth piano concerto, which he claims was inspired by a Nubian love song. This composer of the (\*) “Egyptian” concerto wrote a suite in which the two pianos play scales to imitate novice pianists before xylophones mimic the sounds of bones in the movement “Fossils.” That fourteen-movement suite begins with the royal march of a lion and ends with a solo cello depicting a swan gliding on water.** For 10 points, name this French composer of *The Carnival of the Animals*.

ANSWER: Camille **Saint-Saëns** (“san-SAWN”) [accept **baboon**]

<Classical Music — Ye> [Ed. Jeffrey Ma]

12. In an interview with *Vogue*, this film’s costume designer Mona May discussed accidentally finding an iconic dress worn by the main character that helped skyrocket the popularity of fashion designer Alaïa. For 10 points each:

[H] Name this 1995 movie, whose other notable outfits include a campy sailor outfit with a dollar sign hat worn by Amber and a 40s costume inspired by James Dean that is donned by the bad boy Christian.

ANSWER: **Clueless**

[E] Cher’s first outfit in *Clueless* is a yellow schoolgirl outfit overlaid with this general pattern, which consists of intersecting colored stripes that form a checkered design.

ANSWER: **plaid** [or **tartan**]

[M] Cher’s father mistakes Cher’s plain white dress designed by this fashion company for underwear. This company’s monochrome, simple clothing designs have been modeled by people like Kate Moss, Lara Stone, and Justin Bieber.

ANSWER: **Calvin Klein**

<Popular Culture — Ashbrook> [Edited]

---

13. **One of these programs can be optimized by enabling the -O0 (“dash oh zero”) through -O3 (“dash oh three”) options, which enable techniques such as the peephole technique. The output of these programs can be passed into a linker. One of these programs created by Oracle produces dot-class files. These programs can be run just before execution in the (\*) “just-in-time” strategy.** Languages that do not use these programs are called “interpreted.” `clang` (“klang”) and `gcc` (“G-C-C”) are this kind of program for C, and `javac` (“java-C”) is this kind of program for Java. For 10 points, name this type of program that converts human-readable code to assembly or machine code.

ANSWER: **compiler** [accept **assembler** before “assembly”]

<Computer Science — Maharjan> [Ed. Gurazada]

13. Richard Montgomery proved the validity of the “figure-8” solutions to this system by mapping its trajectories to a two-dimensional space he calls the “shape-sphere.” For 10 points each:

[H] Name this non-integrable system. Henri Poincaré (“pwann-cah-RAY”) discovered the foundations of chaos theory after realizing his general solution to this system was critically flawed.

ANSWER: **three-body** system [accept **three-body** problem; prompt on *n*-body system or *n*-body problem; do NOT accept or prompt on “two-body system” or “two-body problem”]

[E] Montgomery rephrased the three-body problem by mapping the three bodies to the vertices of one of these shapes. These polygons have three sides.

ANSWER: **triangles**

[M] The poles of the shape-sphere correspond to the trajectories discovered by this physicist, in which the three bodies always form an equilateral triangle. This physicist names five points where a small third body can reside in a two-body system.

ANSWER: Joseph-Louis **Lagrange** (“luh-GRAHNZH”)

<Physics — French> [Edited]

---

14. **The epilogue of a novel by this author describes “a man progressing over the plain by means of holes.” Another novel by this author describes brook trout whose backs show “vermiculate patterns” after a boy asks a man whether he is “carrying the fire.” The main characters of that novel by this author discover naked and limbless people in the basement of a house owned by cannibals. In another novel by this author, the (\*) Glanton gang and “the kid” attack Apaches along the Mexican border. This author created an unnamed father and son who travel toward the coast after an unknown apocalyptic event. For 10 points, name this author of *Blood Meridian* and *The Road*.**

ANSWER: Cormac **McCarthy**

<Long Fiction — Condon> [Edited]

14. Cutter Laboratories was contracted to produce a vaccine for this disease in 1955, but its live vaccine inadvertently caused 204 people to contract it. For 10 points each:

[E] Name this viral disease, the first effective vaccine for which was developed by Jonas Salk. Many patients with this paralyzing disease were outfitted with iron lungs to help them breathe.

ANSWER: **polio** [or **poliomyelitis**; accept **polio**virus]

[H] In a later scandal, Cutter Laboratories sold contaminated products to treat this genetic disorder in the 1970s and 1980s. Warfarin and heparin can aggravate this disorder’s symptoms, which typically result from a deficiency in factor VIII (“eight”) or factor IX (“nine”).

ANSWER: **hemophilia** [or **haemophilia**; accept **hemophilia** A or **hemophilia** B]

[M] Cutter Laboratories’ hemophilia treatments were found to be contaminated with this virus. This virus uses a complex composed of gp120 and gp41 to bind to the CD4 receptors of its host cells.

ANSWER: **HIV** (“H-I-V”) [or **human immunodeficiency** virus]

<Biology — Iyer> [Ed. Yin]

---

15. **In this kingdom, an aristocrat was accused of murdering more than six hundred girls by Count György Thurzó (“jurg TOOR-zoh”). One general from this kingdom led a “Long Campaign” into the Balkan peninsula, but narrowly escaped from the Crusade of Varna in 1444. That general’s son was victorious at the Battle of Breadfield against the Ottomans while leading this country’s (\*) Black Army. In 1526, this kingdom lost its independence to Suleiman the Magnificent at the Battle of Mohacs (“MOH-hotch”). This kingdom was ruled by the Arpad dynasty, and it was converted to Christianity by its patron saint, Stephen. For 10 points, name this kingdom of the Magyar people whose modern successor state has its capital at Budapest.**

ANSWER: **Hungary** [or Kingdom of **Hungary**; accept **Magyarország** before “Magyar” is read]

<European History — Modali> [Ed. Laurence Li]

15. The whammy bar on electric guitars allows the player to modulate this characteristic of sound. For 10 points each:

[E] Name this characteristic that allows a person to distinguish between higher and lower notes. Someone with a “perfect” perception of this characteristic is able to identify a note without a reference.

ANSWER: **pitch** [accept perfect **pitch**; prompt on **frequency**]

[H] Through this technique, a guitarist can raise the pitch by moving a held-down string with the fretting hand perpendicular to the length of the string.

ANSWER: string **bending** [or **radial pitch-shifting**]

[M] By using an effects unit with an electric guitar, a guitarist can change the pitch, dynamic, and this attribute used to describe sound. This attribute allows one to distinguish between different instruments even if they are playing the same note at the same volume.

ANSWER: **timbre** (“TAM-ber”) [prompt on **tone quality** or **tone color**]

<Classical Music — Zhou> [Edited]

---

16. **The fixed trunnion and rolling lift are used to operate the “bascule” (BASS-kyool) design of these structures. The Széchenyi (“seh-CHEN-yee”) one of these structures in Budapest is one of many “Chain” ones of them. Statues of Saint Luthgard and the knight Bruncvík are on one of these structures in Prague named after King Charles IV (“the fourth”). Norman Foster and Michel Virlogeux designed the tallest of these structures in the world in (\*) Millau. The Vasari Corridor in Florence connects two palaces while passing through one of these structures, the “Vecchio” (“VEHK-k’yoh”). One of these structures “of Sighs,” as well as the Rialto one, cross the Grand Canal in Venice. For 10 points, name these structures that span over a body of water.**

ANSWER: **bridges** [accept Charles **Bridge** or Millau **Viaduct** or **Ponte Vecchio**]

<Geography — Ashbrook> [Ed. Daniel Ma]

16. For 10 points each, answer the following about the Daily Telegraph’s involvement in World War II:

[M] The Telegraph used a fiendishly complicated one of these things in its January 13th, 1942, edition to recruit possible code breakers to Bletchley Park. Leonard Dawe wrote these things for the Telegraph while working as a schoolteacher.

ANSWER: **crossword** puzzles [or **crosswords**]

[E] Dawe’s clue “One of the US” set off alarm bells in British military intelligence since its answer, “Utah,” referenced one of the beaches in this operation, the June 6, 1944 invasion of Normandy by Allied Forces.

ANSWER: **D-Day** [or Operation **Overlord** or *Le Jour J*]

[H] Clare Hollingworth, while working as a reporter for the Telegraph, was the first to publish an eyewitness account of this event. The charge at Krojanty (“kroh-YAN-tee”) opposed this action, which occurred after the Gleiwitz (“GLYE-vitz”) incident.

ANSWER: German **invasion of Poland** [or **Case White** or **Fall Weiss** or **German Polish Campaign** or **September Campaign**; prompt on **Start of World War 2** and similar answers in that vein that do not mention an **invasion of Poland** specifically]

<European History — Iyer> [Edited]

---

17. **A character in a play by this author asks for a “man-slaying axe” before Pylades (“PIE-luh-deez”) convinces that character’s killer to heed Apollo’s command. In a play by this author, the ornate dress of Queen Atossa while entering the stage on a chariot is contrasted with the rags worn by Xerxes (“zerks-eez”) which symbolize the defeat of the title (\*) Persians. A purple carpet rolled out in another play by this author foreshadows the death of a king in his bathtub. The title character of a trilogy by this playwright murders Clytemnestra before being put on trial in Athens in *The Eumenides*. For 10 points, name this Ancient Greek tragedian who included the *Libation Bearers* in the *Oresteia* trilogy.**

ANSWER: **Aeschylus** (“ESS-kuh-lus”)

<Drama — Felix Wang> [Ed. Condron]



17. This tribe signed the Treaty of Walla Walla, establishing a reservation of 7.7 million acres in size. For 10 points each:

[M] Name this people group that fought the 1877 Battle of Bear Paw, where they were defeated by Nelson Miles and Oliver Otis Howard. They were led by Chief Joseph.

ANSWER: **Nez Perce**

[H] The Nez Perce were confined to reservations in Oregon, Idaho, and Oklahoma after their namesake war via this act. This law allowed for the subdivision of tribal holdings and opened up native land to appropriation by white settlers.

ANSWER: **Dawes** Severalty Act of 1887

[E] Chief Joseph led the Nez Perce out of the United States to seek refuge in Canada alongside Sitting Bull, who led this Great Plains tribe to Wood Mountain. Part of this tribe is now located at Pine Ridge reservation in South Dakota.

ANSWER: **Sioux** (“soo”) [accept Lakota **Sioux** or Oglála **Sioux** or **Lakota** or **Oglála**]

<U.S. History — Daniel Ma> [Ed. Iyer]

---

18. In the Vulgate Bible, St. Jerome translated a word that only appears in this text, *epiousios* (“eh-pee-YOOS-yohs”), as “super-substantial.” Many Roman Catholics insert an embolism at the end of this text to elaborate on the last of its seven petitions. Pope Francis approved a change to the Italian translation of this text to clarify that God is not tempting people to do evil. Although most scholars deny its authenticity, the Byzantine Rite ended this text by adding the doxology “for (\*) thine is the kingdom, the power, and the glory.” This text states “give us today our daily bread.” For 10 points, Jesus taught his followers to pray using what prayer that begins, “Our father in heaven”?

ANSWER: The **Lord’s Prayer** [accept **Our father** before “Our father”; prompt on Sermon on the Mount or Gospel of Matthew or Gospel of Luke]

<Religion — McAvoy-Bickford> [Ed. Dai]

18. While recovering from an illness, the protagonist of this novel sings at a juke joint opened by Harpo. For 10 points each:

[M] Name this novel whose protagonist has an affair with Shug Avery in Tennessee after running away from her husband in Georgia.

ANSWER: *The **Color Purple***

[E] This African-American author wrote *The Color Purple*, a novel which earned her the Pulitzer Prize for Fiction.

ANSWER: Alice **Walker**

[H] In *The Color Purple*, Celie uses these works to describe how an unnamed “Mr.” decides not to marry Nettie like he had originally wanted. In another of these works, Soaphead Church brags that he has rivaled his addressee by making Pecola (“peh-COL-uh”) Breedlove believe that she has blue eyes.

ANSWER: **letters to God** [prompt on letters by asking, “Letters written to whom?”] (Soaphead Church and Pecola Breedlove are from *The Bluest Eye*.)

<Long Fiction — Ashbrook> [Ed. Condrion]

---

19. After she split from the Donkey’s Tail group, an artist from this country painted *The Cyclist* in the Rayonist style. A painting from this country originated as a stage curtain for the opera *Victory Over the Sun* and was later put in the corner of a room in place of an icon at the 0,10 (“zero, ten”) Exhibition. That painting from the Suprematist movement, titled (\*) *Black Square*, was painted by an artist from this country. An artist born in this country painted *Composition IV* after founding the Blue Rider movement. For 10 points, name this home country of Wassily Kandinsky, who was expelled for his bourgeois art soon after the October Revolution.

ANSWER: **Russia** [accept **Russian** Empire or **U.S.S.R** or the **Soviet Union**] (The unnamed artists are Natalia Goncharova and Kazimir Malevich.)

<Painting and Sculpture — Athreya> [Ed. Bowman]

19. These phenomena are described as “internal” when they occur along the thermocline. For 10 points each:

[M] Name these phenomena which erode sediments through the process of longshore drift. The refraction of these phenomena concentrates their erosional energy on headlands.

ANSWER: **ocean waves** [or **water waves**; prompt on **waves** by asking “in what medium?”]

[H] This type of internal ocean wave results from the conservation of potential vorticity with changes in latitude. Waves of this type also occur in the atmosphere, where they cause meanders to form in jet streams.

ANSWER: **Rossby waves** [or **planetary waves**]

[E] This other type of ocean wave results from seismological disturbances such as earthquakes and volcanic eruptions. One of these massive waves devastated Japan in 2011.

ANSWER: **tsunamis** [do NOT accept or prompt on “tidal waves”]

<Earth, Atmospheric, and Ocean Science — Yin> [Edited]

---

20. A character created by this author is told that “It is a fatal mistake ever to offer resistance to people who are stronger than ourselves.” At the end of a story by this author, a man eats boiled eggs and hums “Liberty, cherished liberty, Fight thou on the side of thy defenders.” In that story by this author, a group of characters is prevented from leaving the village of (\*) Tôtes (“tote”) until an officer can sleep with Elisabeth Rousset (“roo-SAY”). In another story by this author, Mathilde Loisel (“muh-TEEL’D law-ZELL”) works for ten years to replace an item that is revealed to be fake by Madame Forestier (“foh-RES-tee”). For 10 points, name this short story author of “Ball of Fat” and “The Necklace.”

ANSWER: Guy de **Maupassant** (“moh-pah-SON”)

<Short Fiction — Orr> [Ed. Condron]

20. In an ideal gas, this quantity distributes according to the Maxwell-Boltzmann distribution. For 10 points each:

[M] Name this quantity, scales of which are proportional to “root quantity  $R T$  over  $M$ .” The average value of this quantity differs by a factor of “root  $3 \pi$  over  $8$ ” from its root-mean-square value.

ANSWER: **speed** [accept **velocity**]

[E] The root-mean-square speed of an ideal gas is useful when calculating the total amount of this quantity. In classical mechanics, this quantity equals one-half mass times velocity squared.

ANSWER: **kinetic energy** [accept translational **kinetic energy**; prompt on **energy**]

[H] On the other hand, the average speed of the gas is the conversion factor when calculating this quantity from the collision frequency. This length scale is the average distance a gas particle travels before colliding with another particle.

ANSWER: **mean free path**

<Chemistry — French> [Edited]