

2022 ACF Regionals

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Packet C by Cornell B, CWRU B, MIT A, MIT B

TOSSUPS

1. Swan bands correspond to emission by a carbon-based example of these molecules with triplet spin multiplicity. The recombination efficiency of these molecules may be increased by solvent viscosity in the cage effect. Reactions involving these molecules produce a nonthermal distribution of nuclear spins in an effect misleadingly named for dynamic nuclear polarization, CIDNP (“kid-nip”). These molecules are produced by the decomposition of benzoyl peroxide, as well as by initiators to start chain-growth polymerization reactions. Homolytic bond cleavage produces two of these molecules, which are shown with an odd number of Lewis dots, indicating a half-filled orbital. For 10 points, name these reactive molecules with unpaired electrons.

ANSWER: free **radicals** [accept **diradicals**; accept **radical** initiators]

<Chemistry>

2. In a novel set during this conflict, a man dreams of a giant oak tree with Mars sitting at its top. During this war, that novel’s protagonist lives with mermen under a lake and becomes the “Hunter of Soest (“Sohst”).” In a play set during this conflict, a priest decries an offstage general as an Ahab and a Nebuchadnezzar (“nebu-kad-nezzar”) before he is driven off by the soldiers of that general’s namesake “Camp.” The title character is conscripted to fight on both sides of this war in *Simplicius Simplicissimus* (“sim-PLIH-kee-us sim-PLIH-kee-see-mus”). In a play, a duke during this war is betrayed by Piccolomini, and assassinated after he plans to defect. In a play set in this war, Katrin is shot while beating a drum and Swiss Cheese dies while their mother, Anna Fierling, sells bread to soldiers. For 10 points, name this European war, the setting of Friedrich Schiller’s *Wallenstein* and Bertolt Brecht’s (“breckts”) *Mother Courage and Her Children*.

ANSWER: **Thirty Years’ War** [or **Dreißigjähriger Krieg** (“dry-sikh-YAIR-ikher KREEK”)]

<European Literature>

3. This artist depicted his patron and her husband as Venus and Mars on Mount Parnassus in a painting for a studiolo. The predellas of an altarpiece by this artist were replaced with copies after they were stolen by the French; that altarpiece is divided by four Corinthian columns. Two bugle players carry SPQR banners in a painting by this artist that is part of a nine-panel series now located in the Hampton Court Palace. This artist uniquely used an arch as the backdrop for one of his three paintings of a plague-protecting saint riddled with arrows. This artist of the *Triumphs of Caesar* and *St. Sebastian* created another painting that depicts Mary, Saint John, and Mary Magdalene weeping over an extremely foreshortened Jesus. For 10 points, name this Renaissance artist of *The Dead Christ*.

ANSWER: Andrea **Mantegna** (“ahn-DRAY-ah mahn-TANE-yah”) (The painting in the first sentence is *Parnassus*, which depicts Isabella d’Este and Francisco II of Gonzaga.)

<Painting/Sculpture>

4. This government's founding document details a process whereby when a lord is deposed, women are able to "repossess" his lordship, and also commands men to follow the "warnings of their women." Under this government, women led the False Face Society. Madam Sacho, who survived the Town Destroyer's attacks against this government, was encountered during the Sullivan Campaign. During the formation of this government, a woman known as "the Mother of Nations" was instructed that in a certain structure there would be five fires, but one mind and law. Jigonhasee helped create this government's Great Law of Peace, which was recorded on wampum belts. For 10 points, name this union made up of five nations, including the Seneca and Mohawk.

ANSWER: **Iroquois** Confederacy [or **Haudenosaunee**; accept the **Five Nations** before read; accept the **Six Nations**; prompt on **Mohawk** or **Oneida** or **Onondaga** or **Cayuga** or **Seneca** or **Tuscarora** by asking "what confederacy did they belong to?"] (The Town Destroyer is the nickname the Haudenosaunee gave to George Washington.)

<American History>

5. This figure "and its enemies" title a Buchananite critique of the rise of the "managerial elite" that was written by Samuel T. Francis. This figure inspired the title of a 2018 Joel Wainwright and Geoff Mann book that considered future global responses to climate change in forms like "Climate X" and "Climate Mao." Another book calls this figure "but an Artificial Man; though of greater stature and strength than the Natural." A book titled for this figure states that both men and women may rule by virtue of their ability to dominate, since dominion is obtained not by "generation, but by contract." According to that book titled for this being, the state of nature is "a war of every man against every man." For 10 points, name this creature that titles a political philosophy book by Thomas Hobbes.

ANSWER: the **Leviathan** [accept Thomas Hobbes's **Leviathan**; accept *Climate **Leviathan**: A Political Theory of Our Planetary Future*; accept **Leviathan and Its Enemies**]

<Philosophy>

6. An upper bound on preferred-frame effects has been obtained by analyzing a unique binary system of these sources discovered by Marta Burgay. Three citizen scientists made the first major discovery of the Einstein@Home ("Einstein-at-home") project by finding one of these sources in Arecibo ("ah-reh-SEE-boh") data. Signals from these sources are un-smearing using the dispersion measure. Dale Frail and Alexander Wolszczan ("volsh-chahn") used one of these sources now called Lich to find the first extrasolar planets. The first of these sources to be discovered was dubbed Little Green Men by Antony Hewish and Jocelyn Bell Burnell. Due to their radiation pattern, these sources are likened to lighthouses. For 10 points, name these periodic emitters of radiation, most of which are neutron stars.

ANSWER: **pulsars** [prompt on **neutron stars** before "neutron"] (The lead-in refers to PSR J0737-3039A/B.)

<Other Science: Astronomy>

7. Famous classical pieces are reinterpreted using this technique on several albums by Mary Schneider. Performances using this musical technique brought fame to a pair of *National Barn Dance* stars called the DeZurik Sisters. Harry Hopkinson and Franzl Lang are famous for their skill in this technique, a "voiceless" form of which features in the slow-tempo zäuerli ("z'woy-lee"). Jimmie Rodgers used this trademark technique of his in a series of recordings of 12-bar blues songs. This technique can be heard in the song "The Lonely Goatherd," and it was used by Hollywood "singing cowboys" like Gene Autry and Roy Rogers. For 10 points, name this vocal technique that involves rapidly changing back and forth between a chest and head register and is most closely associated with singers from the Swiss Alps.

ANSWER: **yodeling** [or **jodeling**; accept blue **yodel**; prompt on **singing**; prompt on singing **falsetto**]

<Other Fine Arts>

8. In *Sharing the Light*, Lisa Raphals details a shift during this dynasty from equitable portrayals of men and women in scholarship to polarized depictions that marginalized women. A diplomat from this dynasty, Lady Féng Liáo (“fung l’yao”), avoided a conflict in a place that Princess Liú Xìjūn (“loo shee-jwin”) called “the edge of the world” in a melancholic poem. Four ideal feminine virtues were detailed in *Lessons for Women* by a historian from this dynasty, Bān Zhāo (“bahn jow”). In a practice known as *hégīn* (“huh-chin”), emperors of this dynasty married off “tribute princesses” to nomads in the Western Regions called the Xīōngnú (“sh’yong-noo”). This dynasty fought a pair of women often depicted riding war elephants during its invasion of Vietnam. For 10 points, the Trung sisters rebelled against what Chinese dynasty, which lends its name to China’s majority ethnic group?

ANSWER: **Hàn** dynasty

<Other History>

9. In this city, a woman fulfills her daydream of ice skating when her children blindfold her and take her to an ice rink. In a novel set in this city, Nikki accidentally brings a pornography book to a writing seminar she is teaching to Sikh widows. A man in this city models a character after his uncle, who went on a hunger strike, during a play directed by Pyke. In that novel set in this city, Karim witnesses Eva having an affair with his father, who pretends to be a guru. This city is the setting of Hanif Kureishi’s novel *The Buddha of Suburbia*, as well as a book about Chanu and Nazneen set on a street inhabited by its Bangladeshi community, Monica Ali’s *Brick Lane*. After falling from a bombed plane, Saladin and Gibreel end up in this European city in *The Satanic Verses*. For 10 points, name this British city.

ANSWER: **London**, England (The unnamed novel is *Erotic Stories for Punjabi Widows* by Balli Kaur Jaswal.)

<British Literature>

10. This figure calmed a storm started by burning oil that was given to sailors by a spirit driven from the Temple of Artemis. Bottles purported to hold healing oil from this figure’s bones actually contained poison called Aqua Tofana. A limping subordinate of this figure beats victims with a bag of ashes. Villages like Rovaniemi claim to be the hometown of this owner of the donkey Gui (“ghee”), who provided three sacks of gold as dowries to prevent three girls from being forced into prostitution. A Dutch companion of this figure is controversially depicted using golden earrings, red lipstick, and blackface. In some traditions, this figure travels with a half-goat devil who wields a birch switch. For 10 points, Krampus accompanies what figure, who brings presents to children on Christmas?

ANSWER: **Santa** Claus [or **Père Noël** or **Father Christmas**; accept **Saint Nicholas** of Myra or **Saint Nicholas** of Bari or **San Nicola** or **Saint Nick** or **Mikulás** or **Szent Miklós**] (The limping figure is Knecht Ruprecht.)

<Mythology>

11. This author wrote a poem whose speaker understands that there is “much virtue in grandfathers” while seeing a “little man / Who stood against the mountains.” A poem by this author ends, “Thus the ride of sin,” after the narrator hears “wild shouts and the wave of hair” that accompany the “clang and clang of spear and shield”; that poem by this author claims the title people “came from the sea.” In a poem by this author, the speaker asks a creature, “Is it good, friend?” to which the creature replies, “It is bitter”; that poem by this author describes a “naked” and “bestial” creature who “held his heart in his hands, / And ate of it.” For 10 points, name this author whose collection *The Black Riders* includes the poem “In the Desert” and who also wrote *Maggie: A Girl of the Streets*.

ANSWER: Stephen **Crane**

<American Literature>

12. This symphony may allude to a Goethe (“GUR-tuh”) poem with an E-major flute passage labeled *Meeresstille* (“MARE-ez-SHTILL-uh”), or “calm of the sea.” A trumpet plays Liszt’s “tonic symbol of the cross” motif over a bass ostinato and tam-tams in the exposition of this symphony’s first movement. This symphony’s scherzo, which begins with two timpani hits, draws from a song about Saint Anthony preaching to the fishes from a song cycle by its composer. An alto soloist sings a text beginning, “Oh, little red rose,” in this symphony’s “Urlicht” fourth movement, which precedes an apocalyptic choral finale movement that closes with the tolling of bells. For 10 points, identify this C-minor symphony by an Austrian composer, which succeeded his symphony nicknamed *Titan*. ANSWER: Gustav **Mahler**’s Symphony no. **2** in C Minor [or **Resurrection** Symphony or **Auferstehungs**sinfonie or **2**. Sinfonie in c-Moll von Gustav **Mahler**]

<Classical Music>

13. A nomogram of this process’s “predicted four-hour rate” derives from World War II–era studies of the Royal Navy. During this process, the antimicrobial peptide dermcidin is produced in structures that contain dark cell granules and myoepithelial cells in a “coil” adjacent to the acrosyringium. This process provides the common nickname for Claus Wedekind’s studies of MHC polymorphism and mate choice. An excessive type of this process named for occurring at night is a common sign of tuberculosis and menopause. In humans, merocrine, or eccrine, glands perform this process more than the apocrine glands that release fatty acids during this process in the areolae and axillae, causing body odor. For 10 points, what thermoregulatory process facilitates evaporative cooling by secreting a salty fluid during exercise?

ANSWER: **sweating** [or **perspiration** or **diaphoresis** or **hidrosis**; or **sudor**; accept night **sweats**; accept **sweat** glands; accept “**sweaty** T-shirt study”; prompt on evaporative **cooling** before read; prompt on **thermoregulation** before “thermoregulatory”; prompt on **dehydration**]

<Biology>

14. *Two answers required.* With papal consent, one of these rulers donated land to Philippe Villiers de L’Isle-Adam (“veel-YAY duh LEEL-ah-DOM”) after a siege by the other caused L’Isle-Adam to retreat while flying a white flag that read, “In the extremity of my affliction, you are my only hope.” To encourage one of these rulers to attack Venetian possessions, Jean de La Forêt (“duh lah for-AY”) spread rumors claiming the other restored the throne of Moulay Hassan. On the disastrous Algiers expedition against one of these rulers, the other was accompanied by Andrea Doria. An admiral for one of these rulers, Hayreddin (“HAL-reh-tin”) Barbarossa, conducted the Siege of Nice (“neese”) against the other. Pope Paul III organized a Holy League with one of these rulers to challenge the other’s naval hegemony at the Battle of Preveza (“PRAY-vay-zuh”). For 10 points, name these two 16th-century rulers of the Holy Roman Empire and the Ottoman Empire.

ANSWER: **Charles V** [or **Charles I** of **Spain** or **Carlos I** of **Spain**; prompt on **Charles** or **Carlos**] AND **Suleiman I** [or **Suleiman the Magnificent** or **Suleiman the Lawgiver** or **Kānūnī** Sulṭān **Süleymān**; prompt on **Suleiman**] (The first line refers to the 1522 Siege of Rhodes.)

<European History>

15. After a fourteen-verse introduction, a written example of this practice makes up the first section of the Book of Baruch. Raffaele Pettazzoni theorized that this practice developed in several religions from primitive magic spells of expulsion. Bloodletting priests of Tlazōlteōtl wearing paper ornaments would facilitate this practice, which Aztec nobles could do just once in their life. Two lists in the Egyptian *Book of Going Forth by Day* were used in a form of this practice that involved 42 “negative” declarations. Practitioners of a version of this practice that evolved from Irish monastic tradition must be “contrite” for it to be valid. In Christianity, this practice involves the naming of deeds that are classified as venial (“VEE-nee-ul”) or mortal. For 10 points, name this practice of admitting to sins, after which penance may be assigned.

ANSWER: **confession** of sins [or word forms like **confessing**; accept negative **confession**; accept **confessional** prayers or praying; accept **repentance**; prompt on **atonement**; prompt on answers about listing of or naming of **sins**; prompt on **penance** before read by asking “what other practice occurs before that?”; prompt on **reconciliation** by asking “what other practice occurs before that?”]

<Religion>

16. Giorgio Parisi claims that the difference between the “field cooled” and “zero field cooled” forms of this quantity is explainable only with his replica symmetry breaking framework. The Evans method measures this quantity using NMR spectroscopy. This dimensionless quantity oscillates in the de Haas–van Alphen effect. The complex form of this quantity that arises in AC fields is measured to find the freezing temperature of spin glasses and the superconducting critical temperature. This quantity equals negative one for materials that exhibit the Meissner effect. This quantity is inversely proportional to temperature in the Curie law. For 10 points, name this quantity that relates induced magnetization to the external B-field, denoted chi (“kai”).

ANSWER: magnetic **susceptibility** [accept mass (magnetic) **susceptibility** or molar (magnetic) **susceptibility** or volume (magnetic) **susceptibility**; prompt on **chi** or **chi-v** or **chi-m** or **chi-rho** before “chi”; reject “electric susceptibility”]

<Physics>

17. Edmund Carpenter gave cameras and these objects to Papua New Guinea’s Biama, who feared them for a few days. These objects name living structures that Gregory Hickok called a “myth,” dismissing Giacomo Rizzolatti’s studies of their role in M1’s “action understanding.” Cleaner wrasses can interact with these objects in a procedure devised by Gordon G. Gallup. V. S. Ramachandran used these objects to provide “feedback” as therapy for phantom limb pain by forming them into a “box.” These objects name a cognition test passed by magpies and orangutans; they also name parietal (“puh-RAI-uh-tul”) neurons whose deficit may underlie autism. The ego develops from contact with these objects, which invite the gaze, in a “stage” formulated by Jacques Lacan (“lah-CON”). For 10 points, by 18 to 22 months, most babies who look at what objects achieve self-recognition?

ANSWER: **mirror**s [or **speculum** or **looking glass**; accept **reflective** surfaces or equivalents; accept **mirror** stage or stade du **miroir**; accept **mirror** neurons; accept **mirror** therapy or **mirror** visual feedback or **mirror** box; prompt on **glasses**; prompt on **boxes** before read] (M1 is the primary motor cortex.)

<Social Science>

18. The fifth of Callimachus's *Hymns* depicts this deity along with the nymph Chariclo and is titled for this deity's bath. This deity is the second character to appear onstage at the beginning of Euripides's *Trojan Women*. This deity is disguised as Deiphobus ("day-FOH-bus") to trick Hector in book 22 of the *Iliad*. This deity says that they are "completely for the male and firmly on the father's side" in Aeschylus's *Eumenides* ("yoo-MEN-id-eez"), in which they cast the deciding vote to acquit Orestes ("or-EST-eez"). In another work, this goddess disguises herself as Mentor and is frequently described using the epithet "grey-eyed." This goddess advises Telemachus ("teh-LEM-uh-kus") to sail to Menelaus's home and often helps Odysseus on his journey. For 10 points, name this Greek goddess associated with war and wisdom.

ANSWER: **Athene** [or **Athena**; accept **Pallas**; accept **Minerva** before "Greek"]

<World Literature>

19. The pirate Lin Dàoqián ("dow-ch'yen") mythically created three of these objects for Raja Biru of Pattani. The da Cruz family produced these objects for Đại Việt's Nguyễn ("win") Lords and competed with Macau's Bocarro works. In the Dzungar Khanate, these objects included zamburak fixed to camel saddles. The largest examples of these objects included Johor's ("jo-HOR'S") bronze Seri Rambai and Bijapur's bell-founded Malik-E-Maidan. Some of these objects called chongtong were used with hwacha fire-arrow launchers by Joseon's turtle ships. These objects unnerved Ibrahim Lodhi's elephants when they premiered alongside muskets at the First Battle of Panipat. Instead of these unwieldy weapons, Sengoku period daimyō favored smaller matchlock arquebuses. For 10 points, the "gunpowder empires" besieged cities with what heavy artillery?

ANSWER: **cannons** [accept bore **cannons** or hand **cannons**; accept **culverins**; accept **swivel** guns or **field guns**; accept **mortars** or **howitzer** or **bombards**; prompt on heavy **artillery** before read; prompt on high-caliber **guns** or **gunpowder** weapons before "gunpowder"; prompt on **muzzleloaders** or **firearms**]

<World History>

20. An ethnography about these events highlights the transgender activist "The Mermaid Bride" performing dances from them, like the "dollar dance" and a "surprise." A 2006 film by Richard Glatzer and Wash Westmoreland depicts one of these events in a gentrifying Echo Park enclave. A memoir set "Once upon [one of these events]" was written by the author of *In the Time of the Butterflies*. The central participant in these events performs a change of shoes and may receive a "last doll," which wears the same dress as her. They're not weddings, but these events feature a "court of honor" composed of male chambelanes and female damas and are funded by madrinas and padrinos. For 10 points, what elaborate parties are thrown for fifteen-year-old girls in Latin America?

ANSWER: **quinceañeras** [or **quinces**; or fiesta de **quinceaños**; accept *Once upon a Quinceañera*; accept **Quinceañera Style**; accept Trans**Quinceañera**; prompt on **birthday** parties or birthday **parties** or equivalents; prompt on **coming-of-age** ceremonies or **rites of passage**; prompt on **XV** or **fifteen** before read]

<Other Academic>

Tiebreaker. A piece titled for this thing is, along with *In the Forest*, one of the two posthumously published symphonic poems by Lithuanian composer M. K. Čiurlionis ("chur-lee-OH-nis"). Henry Wood's "fantasia" partially titled for this thing is a staple of the Last Night of the Proms. An 1899 song cycle titled for this thing was written for the contralto voice of Clara Butt and sets poems by Elizabeth Barrett Browning and Alice Elgar. Poems by Walt Whitman are set in a symphony titled for this thing; that symphony is Ralph Vaughan Williams's first. Four orchestral pieces depicting this entity at different times of day appear as interludes between scenes of *Peter Grimes*. For 10 points, an impressionist orchestral piece by Claude Debussy titled for what entity features the movement "Play of the Waves"?

ANSWER: the **sea** [accept the **ocean**; accept **Jura**; accept **Sea Songs**; prompt on **water**] (The song cycle in the third clue is *Sea Songs* by Edward Elgar.)

<Classical Music>

BONUSES

1. According to Plato's *Gorgias*, Zeus mandated that these figures perform their duties with their souls and the souls of their subjects stripped naked. For 10 points each:

[10m] Name these figures who included Aecus, who was often depicted holding a scepter and keys. Pindar claimed that another of these figures, Rhadamanthys, sat at the right hand of Cronus.

ANSWER: **judges** of the **dead** [or **judges** of the **underworld**; prompt on **judges**]

[10e] This king of Crete cast the deciding vote during the judgment of the dead. This man employed Daedalus to build the Labyrinth and demanded tribute from Athens to feed the Minotaur.

ANSWER: **Minos**

[10h] In a possible substitution for the anti-Athenian Minos, some identified this brother of Demophon as a judge of the dead. The king of Scythia was turned into a lynx for attacking this figure and the dragons that pulled this figure's chariot.

ANSWER: **Triptolemus** [or **Triptólemos**]

<Mythology>

2. Olsen et al. fully sequenced one of these plants to study the genes it had lost as these plants made the most dramatic habitat shift ever accomplished by flowering plants. For 10 points each:

[10h] Identify these plants that form meadow ecosystems that provide valuable nursery habitat to some of the world's largest fisheries. Although these plants are submerged, they have a similar structure to terrestrial plants.

ANSWER: **seagrasses** [or **Alismatales**; accept **seagrass** meadows; accept **eelgrass**; accept **Posidoniaceae** or **Zosteraceae** or **Hydrocharitaceae** or **Cymodoceaceae**; reject "seaweed"] (The Olsen et al. article is "The genome of the seagrass *Zostera marina* reveals angiosperm adaptation to the sea." Evidence for the seagrass meadows supporting fisheries can be found in "Seagrass meadows support global fisheries production" by Unsworth et al.)

[10m] Coastal environments such as seagrass meadows are reservoirs for carbon described by this adjective. This adjective describes "holes" of fresh water and salt water that form in karst topography, such as a "great" one in Belize's Lighthouse Reef atoll.

ANSWER: **blue** [accept **blue** carbon; accept **blue** holes or Great **Blue** Hole]

[10e] Seagrasses struggle to grow when excess rainfall and this process increase salinity and turbidity. In this process, precipitation flows over ground, potentially carrying pollutants to aquatic ecosystems.

ANSWER: stormwater **runoff** [or surface **runoff**; accept **overland flow**]

<Other Science: Earth Science>

3. A senator from this state chaired a Senate committee that uncovered programs such as Project MKUltra ("em-kay-UHL-truh") and surveillance conducted by the NSA on American citizens. For 10 points each:

[10m] Name this home state of Senator Frank Church. Frank Steunenberg served as governor of this western state, which was also represented by the isolationist William Borah in the Senate.

ANSWER: **Idaho** [or **ID**]

[10h] The Church Committee's findings led to allegations about a CIA operation of this name to influence media reporting. The *Family Jewels* document revealed a CIA project of this name which involved wiretapping journalists.

ANSWER: **Mockingbird** [accept Operation **Mockingbird**; accept Project **Mockingbird**]

[10e] The Church Committee also uncovered the COINTELPRO ("co-in-TELL-pro") program run by this organization, which targeted those seen as "subversive," such as Martin Luther King Jr. This organization's longtime leader was J. Edgar Hoover.

ANSWER: **FBI** [or **Federal Bureau of Investigation**]

<American History>

4. In 2016, this prize was shared by Han Kang and her translator Deborah Smith. For 10 points each:

[10m] Name this literary prize that, since 2016, has been awarded jointly to the author and translator of a work translated into English. The organization that funds this prize also funds a similarly named prize that Damon Galgut's novel *The Promise* won in 2021.

ANSWER: **International Booker** Prize [accept Man **Booker International** Prize; prompt on Man **Booker** Prize]

[10h] Marilyn Booth co-won the 2019 International Booker Prize for translating *Celestial Bodies* from this language into English. The literary magazine *Banipal* promotes literature written in this language.

ANSWER: **Arabic** [or al-'**arabiyyah**] (The Omani author Jokha al-Harhi wrote *Celestial Bodies*.)

[10e] In 2017, one of the International Booker Prize judges was Elif Shafak, a novelist and activist from this country. This country's best-selling writer is Orhan Pamuk.

ANSWER: **Turkey** [or **Türkiye**; or Republic of **Turkey** or **Türkiye** Cumhuriyeti]

<World Literature>

5. A chord progression consisting of a flat major six chord, a flat major seven chord, and a major one chord makes up a cadence informally named for a character created by this company. For 10 points each:

[10m] Name this company for whom the in-house composer Kōji Kondō has created many iconic scores, including a fanfare-like piece composed to replace Maurice Ravel's *Bolero*.

ANSWER: **Nintendo** [or **Nintendō** kabushiki gaisha] (The informal cadence is usually called the "Mario cadence" for its appearance in *Super Mario Bros*. The other piece referenced is the theme from *The Legend of Zelda*.)

[10e] Partial voicings called chordoids ("core-dee-oidz") emphasize atmosphere in the music of Nintendo composers and composers of this movement associated with Claude Debussy and Maurice Ravel. It shares its name with a 19th-century French painting movement.

ANSWER: **Impressionism** [accept **Impressionist** movement]

[10h] Toby Fox used a number of chordoids in a piece from *Undertale* titled for this substance. This substance is "dancing" in the title of a Debussy piece from *Children's Corner* covered by synthesizer player Isao Tomita.

ANSWER: **snow** [accept **snowflakes**; accept "The **Snow** Is Dancing" or **Snowflakes** Are Dancing or *La neige danse*; accept "**Snowy**"]

<Classical Music>

6. Answer the following about theories of moral responsibility, for 10 points each.

[10m] A thinker with this surname and the first name Galen wrote the essay "The Impossibility of Moral Responsibility"; that thinker's father with this surname wrote that responsibility rests on the "reactive attitudes" of those affected by action in "Freedom and Resentment."

ANSWER: **Strawson** [accept Galen **Strawson**; accept P. F. **Strawson** or Peter Frederick **Strawson**]

[10h] Harry Frankfurt's treatment of moral responsibility claims that it relies on this principle, sometimes abbreviated PAP. This principle states that a person is morally responsible for an action only if they could have done otherwise than they actually do.

ANSWER: principle of **alternative possibilities** [or principle of **alternate possibilities**]

[10e] Frankfurt's version of the PAP implies incompatibility between moral responsibility and this position on free will. The "hard" version of this position states that there is no free will, since all events have causes external to the human will.

ANSWER: **determinism** [or word forms like **determinist**; accept hard **determinism**]

<Philosophy>

7. Jøssings (“YOSS-ings”) in this country changed seats whenever a German soldier sat next to them on public transportation in an act of passive resistance punningly termed the “ice front.” For 10 points each:

[10m] Name this country administered during World War II by Josef Terboven. In Operation Gunnerside, resistance fighters destroyed heavy water supplies at the Vemork power plant in this country.

ANSWER: **Norway** [or Kingdom of **Norway** or Kongeriket **Norge** or Kongeriket **Noreg**; or **Nöörjen** or **Norjan** or **Vuona**]

[10e] Jøssings also targeted this nominal head of government during the Nazi occupation of Norway, comparing his name to the similar-sounding Norwegian phrase for “widely known scoundrel.” In popular culture, this leader’s surname has come to mean “traitor.”

ANSWER: Vidkun **Quisling** [or Vidkun Abraham Lauritz Jonsson **Quisling**] (“Vidkjent usling” means “widely known scoundrel.”)

[10h] When the Nazis enforced the publication of the “V” symbol of victory in the Norwegian press, members of the resistance began using it to spell out the German word for “lost” or filling the letter in with a monogram of this person’s initials.

ANSWER: **Haakon VII** [accept **H7**; prompt on **Haakon**; prompt on Prince **Carl**] (“Verloren” means “lost” in German.)

<European History>

8. A character in this novel loses an eye in the Civil War and subsequently becomes known for his piercing stare when he returns. For 10 points each:

[10h] Name this novel that won the 2005 Pulitzer Prize for Fiction. This novel is narrated by a dying John Ames and centers on his distrust of Jack Boughton, who has recently returned to the title town.

ANSWER: **Gilead** (“GIL-ee-ad”) (by Marilynne Robinson)

[10m] Marilynne Robinson’s novel *Gilead* is set in a fictional town in this state. She also taught for 25 years at a writers’ workshop in this state whose other past faculty include Jorie Graham and Raymond Carver.

ANSWER: **Iowa** [or **IA**; accept **Iowa** Writers’ Workshop; accept University of **Iowa**]

[10e] *Gilead* is an epistolary novel, meaning it is composed of this type of text.

ANSWER: **letters** [or **correspondences**; prompt on **mail**; prompt on **writings**]

<American Literature>

9. The Cahn–Hilliard equation models this process in systems including diffusion. For 10 points each:

[10h] Name this process that can occur via spinodal decomposition. In cells, a type of this process produces biomolecular condensates, or “membraneless organelles.”

ANSWER: **phase separation** [or **phase segregation**; accept liquid-liquid **phase separation**]

[10m] Spinodal decomposition occurs immediately without a thermodynamic barrier, in contrast to phase changes requiring this process. Silver iodide can induce this process for cloud seeding, and boiling chips provide sites for it when heating pure liquids.

ANSWER: **nucleation** [or word forms; accept **nucleation** sites]

[10e] Supercooling occurs when there are no nucleation sites for the solid to begin forming despite it being below this temperature, which is zero degrees Celsius for water at standard pressure.

ANSWER: **freezing** point [or **crystallization** point or **melting** point or **liquefaction** point]

<Chemistry>

10. Painterly planes are layered in a way that suggests architectural elements in this painter's *Memoria in Aeternum* and *Pompeii*, which make use of his "push-pull" technique. For 10 points each:

[10h] Name this German American painter who both refigured and was a part of the abstract expressionist movement with works like his "slab" paintings. This artist taught scores of abstract painters, including Lee Krasner and Helen Frankenthaler.

ANSWER: Hans **Hofmann**

[10e] Hofmann's colorful paintings of rectangles have been compared to the works of this De Stijl ("duh STYLE") painter of *Broadway Boogie-Woogie*.

ANSWER: Piet **Mondrian** [or Pieter Cornelis **Mondriaan**]

[10m] A thick glob of this color lies in front of several rectangles in Hofmann's painting *The Vanquished*. Thick lines of this color provide the structure to paintings like *Mahoning* by Franz Kline and *Elegy to the Spanish Republic* by Robert Motherwell.

ANSWER: **black**

<Painting/Sculpture>

11. Susan P. Campbell's *Global Governance and Local Peace* examines the CNDD–FDD government run by this class, whose FRODEBU party president Melchior Ndadaye took power in 1993. For 10 points each:

[10h] Name this originally agrarian social class that included the officers who rebelled against King Mwambutsa IV in 1965. The Ikiza was a 1972 genocide of these people, who were purged from Michel Micombero's UPRONA party.

ANSWER: **Burundian Hutus** [accept Bahutu or Abahutu or Wakhutu in place of "Hutus"; accept **Urundi** in place of "Burundi"; prompt on **Hutus** by asking "in what country?"; prompt on **Burundians** or **Urundi**]

[10m] Six months after the 1993 Burundian genocide, the Hutu President Juvénal Habyarimana ("hob-yah-ree-MAH-nah") and Cyprien Ntaryamira died in this type of event. Samora Machel and Barthélemy ("bar-teh-lay-mee") Boganda also died in events of this kind.

ANSWER: **plane** crashes [accept shooting down a **plane** or **aircraft** collision or similar; prompt on **crash** or **collision**; prompt on **explosion** or similar; prompt on **assassination** or equivalents by asking "by what means?"]

[10e] After he survived a 1974 plane crash, this country's longtime president Gnassingbé ("nah-sing-BAY") Eyadéma nationalized the phosphate company COTOMIB. In 1994, Ewe ("ay-way") commandos from Ghana invaded this neighboring country's capital, Lomé.

ANSWER: **Togo** [or **Togolese** Republic or République **togolaise**] (COTOMIB stands for Compagnie Togolaise des Mines du Bénin.)

<World History>

12. Answer the following about messiah claimants in Judaism, for 10 points each.

[10h] Many Hasidic Jews believe that this last rebbe (“REB-eh”) of the Chabad-Lubavitch house was the messiah. Education and Sharing Day was established in honor of this man, who is credited with popularizing Hasidic Evangelism.

ANSWER: Menachem Mendel **Schneerson** (“muh-NAHK-um MEN-del SHNEER-son”) [prompt on the Lubavitcher Rebbe]

[10m] The 17th-century mystic Sabbatai Zevi (“SHAH-beh-tye ts’VEE”) was promoted as the messiah by a rabbi from Gaza with this name. In the Bible, a prophet with this name reprimands King David for sleeping with Bathsheba.

ANSWER: **Nathan** [or **Nātān**; accept **Nathan** of Gaza or **Nathan** Ghazzati or **Nathan** Benjamin ben Elisha Hayyim ha’Levi Ashkenazi]

[10e] A 5th-century messianic claimant from Crete with this name supposedly had his followers cast themselves into the sea, an event likely inspired by a biblical man of this name parting the Red Sea to allow the Jews to escape Egypt.

ANSWER: **Moses** [or **Mōshé** or **Mōysēs**; accept **Moses** of Crete; accept **Moishe**]
<Religion>

13. A poem describes this type of thing as “sweet fetter’d” “like Andromeda.” For 10 points each:

[10h] Name this type of thing compared to a “Memorial from the Soul’s eternity to one dead deathless hour” in a Dante Gabriel Rossetti poem that calls one of these things “coin” whose face reveals the soul and “a moment’s monument.”

ANSWER: **sonnets** [accept “A **sonnet** is a moment’s monument”; accept “On the **Sonnet**”; prompt on poems]

[10e] This poet called sonneteers “misers of sound and syllable” in the sonnet “If By Dull Rhymes Our English Must Be Chain’d.” This poet of the sonnet “On First Looking into Chapman’s Homer” wrote “Ode on a Grecian Urn.”

ANSWER: John **Keats**

[10m] In this poet’s sonnet “Scorn not the Sonnet,” he compares the sonnet to a key for Shakespeare and a trumpet for Milton. This author apostrophized “Milton! thou shouldst be living at this hour” in his sonnet “London, 1802.”

ANSWER: William **Wordsworth**

<British Literature>

14. Jon-Magne Leinaas and Jan Myrheim discovered these particles when they found that the topology of one- and two-dimensional systems allowed for states to pick up a generic phase factor under exchange. For 10 points each:

[10h] Name these particles whose exchange is formulated in terms of representations of braid groups.

ANSWER: **anyons** (“any-ons”)

[10e] The exchange rule for these particles is obtained by using an even integer in the anyonic (“any-on-ick”) phase factor. Unlike fermions, several of these integer spin particles can occupy the same quantum state.

ANSWER: **bosons**

[10m] This system is related to non-abelian (“non ah-BEE-lee-un”) anyon models with three topological charges that have braiding rules characterized by Majorana (“mah-yoh-RAH-nah”) operators. Lars Onsager gave an exact formula for this system’s partition function in two dimensions.

ANSWER: **Ising** model [accept **Ising** anyons; accept two-dimensional **Ising** model]

<Physics>

15. Popular games on this show include “Talking Spit,” in which contestants hold water in their mouths and try not to laugh, and “Pick Up and Kill It,” in which participants carry a freestyle. For 10 points each:

[10h] Name this MTV improv show in which the Red and Black teams rack up points by dissing other participants. Its recurring cast members include DC Young Fly, Justina Valentine, and Chico Bean.

ANSWER: **Wild 'N Out**

[10m] This creator and host of *Wild 'N Out* left the show in 2020 after making anti-Semitic comments but returned in 2021. This host of *The Masked Singer* also hosted *America's Got Talent* while married to Mariah Carey.

ANSWER: Nick **Cannon** [or Nicholas Scott **Cannon**]

[10e] *Wild 'N Out*'s “Hood Jeopardy” game plays more like this other show in which two teams guess popular answers to survey questions. Steve Harvey freaks out at answers like “naked grandma” on this game show.

ANSWER: **Family Feud**

<Pop Culture>

16. A poem by this figure states, “We’re stories telling stories.” For 10 points each:

[10h] Name this figure, the author of an ode that claims, “Only he is free / to whom the gods grant nothing.” This doctor wrote many Greek-inspired odes to Lydia and corresponded with a bisexual futurist naval engineer.

ANSWER: Ricardo **Reis** (“race”) [prompt on, BUT DO NOT OTHERWISE REVEAL, Fernando **Pessoa**] (The last line refers to Reis’s writing to Álvaro de Campos.)

[10m] Richardo Reis was a heteronym of this author of *The Book of Disquiet*. A trunk containing hundreds of poems by this author’s other heteronyms, including Alberto Caeiro (“CAI-air-oo”) and Álvaro de Campos, was found after his death.

ANSWER: Fernando **Pessoa** [or Fernando António Nogueira **Pessoa**]

[10e] Fernando Pessoa was an author from this country. Luís Vaz de Camoes (“kah-MOISH”) fictionalized the travels of Vasco da Gama in this country’s national epic, *The Lusiads*.

ANSWER: **Portugal** [or **Portuguese** Republic or República **Portuguesa**]

<European Literature>

17. Michelle Murray’s *The Struggle for Recognition in International Relations* argues that powers known by this term perceive disrespect, which fuels their insecurity and aggression. For 10 points each:

[10h] Give this term for geopolitical powers that Emma Mawdsley found to be major development aid donors. In a similar context, this term refers to the volatile markets of countries known by the acronyms MINT and CIVETS.

ANSWER: **emerging** powers [or **rising** powers; accept **non-status quo** powers; accept **emerging** markets or **emerging** economies; prompt on **middle** powers or **middle** income or **regional** powers] (MINT is Mexico, Indonesia, Nigeria, and Turkey. CIVETS is Colombia, Indonesia, Vietnam, Egypt, Turkey, and South Africa. Emma Mawdsley’s book is *From Recipients to Donors*.)

[10e] Graham Allison argued that this country’s status as a rising power may cause a “Thucydides (“thoo-SID-id-eez”) trap.” The term “emerging power” was popularized by Jim O’Neill’s acronym “BRIC” for Brazil, Russia, India, and this country.

ANSWER: **China** [or **Zhōngguó**; or People’s Republic of **China** or **PRC**; or **Zhōnghuá** Rénmín Gònghéguó]

[10m] Rex Li argued that China’s role as a rising power shapes how elites perceive this concept, which states seek and thus spiral into conflict, in a “dilemma” under anarchy. This concept names a US council advised by Jake Sullivan.

ANSWER: **security** [or word forms like **securitization**; accept **security** dilemma; accept public **security**; accept National **Security** Council or **NSC** or national **security** advisor]

<Social Science>

18. Fork regression and translesion bypass “tolerate” this process, which activates the bacterial SOS response and may be reversed by photolyases in fungi. For 10 points each:

[10e] Identify this general process caused by factors like UV light that induce double-stranded breaks repaired by nonhomologous end-joining. This harmful process may trigger mismatch repair by altering DNA’s chemical structure.

ANSWER: DNA **damage** [accept pyrimidine **dimers** or (6-4) **photoproducts** or bulky **adducts** or **intercalations** or **cross-links**; prompt on **lesions**; prompt on **errors** or **mutations** or **mutagenesis** or **mismatches** or **indels** or **insertions** or **deletions** or **transversions** or **transitions** by asking “what general process causes errors by altering DNA structure?”]

[10h] This specific DNA damage repair mechanism primarily fixes endogenous modifications like 8-oxoguanine. In this mechanism, a DNA glycosylase may use “flipping” to form an abasic (“A-basic”) site that is cleaved by AP endonuclease.

ANSWER: **base excision** repair [or **BER**; accept **short-patch** repair or **long-patch** repair; prompt on **base** flipping; reject “nucleotide excision repair” or “NER”]

[10m] The short-patch mode of base excision repair uses the beta enzyme of this kind, while the rarer long-patch mode employs the delta and epsilon types of these enzymes. Their processivity is increased by the sliding clamp PCNA.

ANSWER: DNA **polymerase** [or **pol**; or DNA-directed DNA **polymerase**; accept DNA **polymerase** beta or **POLB**; accept DNA **polymerase** delta or **POLD**; accept DNA **polymerase** epsilon or **POLE**]

<Biology>

19. Answer the following about the Norwegian architecture firm Snøhetta, for 10 points each.

[10e] In 2014, Snøhetta completed a museum’s glass pavilion as part of this complex. Michael Arad designed a pair of sunken reflecting pools memorializing the Minoru Yamasaki–designed Twin Towers for this location.

ANSWER: **World Trade Center** [or **WTC**; accept **Ground Zero**; accept **9/11 Memorial**; prompt on **New York City** or **Manhattan**]

[10m] Snøhetta’s design for the Oslo Opera House uses these architectural features to create a second public space on its roof. In Le Corbusier’s “promenade architecture,” these features “connect,” versus similar-purpose features that “divide.”

ANSWER: **ramps** [prompt on an **inclined plane**] (The other features are staircases.)

[10h] One of these buildings designed by Snøhetta takes a rising discus form and is covered in over 120 different carved scripts. A 10-floor brick facade inspired by Aztec art was created by Juan O’Gorman for one of these buildings in Mexico City.

ANSWER: **library** [or **biblioteca**; accept **Bibliotheca** Alexandrina or **Maktabet** el-Eskendereyya; accept UNAM Central **Library**]

<Other Fine Arts>

20. Researchers determined that a “screaming mummy” discovered next to the body of a pharaoh of this name was his son Pentawere, who had been forced to hang himself over his role in an assassination plot. For 10 points each: [10e] Give this name of the pharaoh targeted by Pentawere’s mother, Tiye, in the “harem conspiracy.” An earlier pharaoh with this name commissioned the temples at Abu Simbel (“AH-boo SEEM-bel”) and won the Battle of Kadesh (“kah-DESH”).

ANSWER: **Ramesses** [accept **Ramesses** the Great or **Ramesses** II; accept **Ramesses** III; accept **Ramses** in place of “Ramesses”; prompt on **Ozymandias**]

[10h] The ensuing trials from the “harem conspiracy” were recorded on a judicial papyrus named for this city, where it is on display at the Museo Egizio. This city also names a “king list” dated to the reign of Ramesses II.

ANSWER: **Turin**, Italy [or **Torino**; accept **Turin** King List or **Turin** Royal Canon; accept Judicial Papyrus of **Turin**]

[10m] To maximize confusion, Tiye arranged the “harem conspiracy” to take place during an annual festival named for this type of location. John Gardner Wilkinson created a naming system for a location of this type in which tombs prefixed “KV” increased in number in a southeasterly direction.

ANSWER: **valley** [accept **Valley** of the Kings; accept Beautiful Festival of the **Valley** or Beautiful Feast of the **Valley**]

<Other History>

Extra. Bob Simmons was dubbed the “Father of the Modern” variety of these objects for developing a curved spoon design for them. For 10 points each:

[10m] Name these objects whose circular *alaia* design was reserved for commoners. Kahunas would place fish in these objects and bless holes from trees uprooted to carve them.

ANSWER: **surfboards** [or **papa he’e nalu**]

[10h] This Hawaiian surfing legend used his solid redwood board to ride a wave for 11 miles off Waikiki Beach, where a massive statue of him with outstretched arms stands today. He won five Olympic gold medals for swimming with his namesake “kick” technique in freestyle.

ANSWER: Duke **Kahanamoku** [accept the **Duke**; accept the **Kahanamoku** Kick; or Duke Paoa Kahinu Mokoe Hulikohola **Kahanamoku**]

[10e] Duke’s board lacked one of these devices since it was made before Tom Blake invented it in 1935. These devices on the bottom of a surfboard provide lateral lift and were inspired by similar structures on sharks.

ANSWER: **fins** [accept **skegs**]

<Other Academic>