

2022 ACF Regionals

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Packet G by Yale A, UBC A, Berkeley

TOSSUPS

1. In a play, this man invites a friend to dinner to use a new set of forks, which the friend says will confuse some nobles. In another play, the lines “Clear the air! Clean the sky! Wash the wind!” are repeated as this man is attacked. In a play, this man’s lover Gwendolen kills herself rather than sleep with a king. This man was mistakenly depicted as a Saxon rather than a Norman in that Jean Anouilh (“zhan ahn-WEE”) play subtitled *The Honor of God*. A play about the death of this character begins with a chorus of lamenting women. This character is approached by four tempters in that play, T.S. Eliot’s *Murder in the Cathedral*. The pilgrims journey to a shrine to this “turbulent priest” in *The Canterbury Tales*. For 10 points, name this archbishop who was killed by the knights of Henry II.

ANSWER: Thomas **Becket** [or Thomas à **Becket**; or Saint **Thomas** of **Canterbury**; prompt on **Thomas**]
<British Literature>

2. In a painting set in this city, a woman dressed in blue looks on as three of her friends are about to be hit by a swerving car. An artist who worked in this city depicted Salome wearing a green bra in a painting created for an exhibition at the Macbeth Galleries. An artist who worked in this city depicted three women drying their hair on a rooftop and painted *McSorley’s Bar*, which he was a regular at. An impressionistic painting depicts a row of flags in the rain in this city, where Robert Henri founded The Eight. Crowds of people stand underneath clotheslines that stretch between this city’s tenements in the painting *Cliff Dwellers*. For 10 points, name this American city home to George Bellows and other members of the Ashcan School.

ANSWER: **New York** City [or **NYC**] (The painting in the first sentence is John Sloan’s *Sixth Avenue Elevated at Third Street*.)
<Painting/Sculpture>

3. In the Langevin (“lahn-jeh-vehn”) equation governing Brownian motion, one of these functions for the force term is proportional to a Kronecker delta indexed by a spatial component times a Dirac delta function of time. Transport coefficients are obtained from the integral over one of these functions for an observable using the Green–Kubo relation. The fluctuation-dissipation theorem relates the response function of an out-of-equilibrium system to one of these functions or its Fourier transform. These functions define a length that becomes infinite in second-order phase transitions. These functions quantify how much their inputs affect each other across space and through time. For 10 points, name these functions that output the statistical relationship between nonindependent random variables.

ANSWER: **correlation** functions [accept auto**correlation** functions; accept time (auto)**correlation** functions; accept space (auto)**correlation** functions; accept **TCFs**; prompt on **power spectrum** by asking “what function’s Fourier transform is equivalent to the power spectrum?”]
<Physics>

4. After one of these events, the Hän people were forced onto the Moosehide Reserve. People who joined one of these events late were called “cheechakos.” During one of these events, American aggression in the town of Yale against the Nlaka’pamux (“ing-kluh-KAP-muh”) people led to the Fraser Canyon War. Credit for one of these events was claimed by the Tagish woman Kate and her husband, George Carmack. Skookum Jim Mason partially caused one of these events, which led to the development of the ports of Dyea (“dai-EE”) and Skagway. People who came to one of these events heavily used the White Pass and Chilkoot Trails. During one of these events, settlers founded the boomtown of Dawson City. For 10 points, what type of event began after an 1896 discovery in the Klondike region?
ANSWER: **gold rushes** [accept the Klondike **gold rush**; accept the Fraser Canyon **gold rush**]
<American History>

5. India is said to possess an asymmetric, “quasi” type of this model revoked during three kinds of emergencies. A symmetric type of this model derives from Section 51 and the uniform tax cases in Australia. A form of this political model is likened to a “layer cake,” in contrast to the cooperative “marble cake” cited in *Printz v. US*. Governments with this political model fund various programs by issuing categorical and block grants. This political model appears in the official names of the republics of Somalia, Nigeria, and Brazil. “Trialists” would have expanded the “ethnic” type of this political model in Austria-Hungary. The supremacy clause circumscribes this political model codified by the Tenth Amendment. For 10 points, non-unitary states like Russia exhibit what political model that reserves some powers to regional units?
ANSWER: **federalism** [or **federation** or **federative**; accept **confederalism**; accept dual **federalism** or **divided sovereignty** or **dual sovereignty**; accept specific types, such as ethnic **federalism**; prompt on **states’ rights** or **separation of powers** or **power sharing**; prompt on **devolution** or **devoled**; prompt on **dualism** or **trialism** or **dual monarchy**; prompt on **commonwealth**]
<Social Science>

6. Radiosonde (“radio-sond”) measurements are compared to a quantity characterizing processes with this property to determine atmosphere stability. The LCL lies at the intersection of the mixing ratio line and a curve of a process with this property. Potential temperature is found by tracing a curve of a process with this property down to 1,000 hectopascals on a skew-T diagram. An expression for the dry lapse rate for processes with this property is found using the fact that, for processes with this property, temperature times pressure to the gamma is constant. In a process with this property, an air parcel ascends and converts kinetic energy to potential energy without interacting with its surroundings. For 10 points, name this property of processes that do not add or remove heat from a system.
ANSWER: **adiabatic** [accept **adiabats**; accept **adiabatic** lifting; accept **adiabatic** lapse rate; accept **adiabatic** cooling; prompt on **dry** or **moist** before “dry” with “what thermodynamic property does the process have?”; prompt on **closed systems** by asking “what property does the process undergone by the system have?”; reject “isolated”]
(The first sentence refers to the dry adiabatic lapse rate.)
<Other Science>

7. A “palace” named for these objects at Kabah is called the *Codz Poop* (“POPE”) since its façade resembles a “rolled mat.” Examples of these objects covered in stucco flank a namesake “temple” at Uaxactún (“wah-shock-TOON”). A bow-and-arrow human sacrifice is depicted on the walls of another “temple” named for these objects at Tikal. In 2018, one of these objects was returned to the Maya Architecture Museum in Campeche (“cahm-PAY-chay”), three decades after it was taken from Calakmul. The Kwakwaka’wakw (“kwah-KWAH-keh-wahk”) make “transformation” types of these objects based on formline design that depict animals on the exterior but human faces when opened. For 10 points, the tomb of Pakal the Great contained a jade “death” type of what objects that are worn to conceal a shaman’s human characteristics during rituals?
ANSWER: **mask** [accept death **mask** or funerary **masks**; accept transformation **mask**; accept Palace of the **Masks**; accept Temple of the **Masks**; accept jaguar **mask**; accept **Mask** of Calakmul]
<Other History>

8. This story contrasts a “band of choristers” “blowing joyous airs on golden horns” with hired ritual mourners who wail after the striking of “doleful iron bells.” This story opens by describing a man who loves “to make the crooked straight and crush down uneven places.” A woman in this story uses “the power of a woman’s will” to defy “impartial and incorruptible chance” and learn a secret about one of the “loveliest of the damsels of the court,” whom she hates due to her “savage blood.” This story’s sequel, “The Discourager of Hesitancy,” does not reveal what happened in a “semi-barbaric” king’s amphitheater. For 10 points, the title question of what story by Frank R. Stockton asks whether a princess’s lover opened a door to find a new bride or a “savage and relentless beast”?
ANSWER: “The **Lady, or the Tiger?**”
<American Literature>

9. Betty Freeman names a suite for this non-violin instrument that uses what its composer called “spastic rhythm” in a bluesy canon. During the 1920s, the QRS Company sold tens of millions of components used with these instruments, which inspired a John Adams concerto with movements titled “Manny’s Gym” and “Hail, Bop.” Stravinsky’s ballet *Les Noces* (“lay NOSS”) was originally composed for these instruments, which are the most numerous in the original instrumentation for George Antheil’s (“AN-tiles”) *Ballet Mécanique*. A series of 49 études composed by Conlon Nancarrow for this instrument are considered unplayable by humans. Punch marks on paper rolls are used to “program” these instruments. For 10 points, name this uncommon instrument that uses mechanical parts to automatically press keys.
ANSWER: **player piano** [accept **pianola**; prompt on **piano**; prompt on **keyboard**] (The John Adams concerto is *Century Rolls*.)
<Classical Music>

10. Anthony Flew coined a term that references a person from this country by imagining a man reading about a sex maniac in the newspaper. A thinker from this country imagined a “lowly caterpillar” that crawls across a thousand leaves as an illustration of a two-word concept and challenged Locke’s definition of personal identity with the “brave officer” account in his *Inquiry into the Human Mind*. A person from this country names a fallacy in which a speaker revises a generalization upon encountering a falsifying counterexample. A thinker from this country’s namesake “enlightenment” defined causation as the noticing of “constant conjunction.” For 10 points, name this country where Thomas Reid and thinkers from its “common sense” school disputed the skepticism of native son David Hume.
ANSWER: **Scotland** [or **Alba**; accept No True **Scotsman** fallacy; accept **Scottish** Enlightenment; accept **Scottish** common sense school; prompt on **UK** or **United Kingdom**; prompt on Great **Britain**; reject “England” or “Wales” or “Northern Ireland”]
<Philosophy>

11. Golden spiny mice gain this trait when they are released from competition with sympatric common spiny mice. Gordon L. Walls proposed that this trait evolved via the transmutation of one cell type into another, causing the loss of *SWS1* and *RH2* in monotremes. The musky rat kangaroo and numbat are the only species that typically (emphasize) *lack* this trait among marsupials. Michael Menaker hypothesized that endothermy enabled small, insectivorous, early eutherians to evolve this trait in a “bottleneck” driven by avoiding predation from dinosaurs. Species with this behavioral trait may have a tapetum lucidum that causes eyeshine. Animals with this trait forage before matutinal species and after vespertine species since they are active between the crepuscular (“cruh-PUSK-yuh-lur”) periods. For 10 points, what trait makes owls vulnerable to light pollution? ANSWER: **nocturnality** [accept descriptions such as active at **night**; accept **nocturnal** bottleneck hypothesis; accept **crepuscularity** or **vespertine** before read; prompt on **trichromacy** or **dichromacy** or (loss of) color **vision** or night **vision** or **seeing** in the dark before “vision” by asking “evolution altered that trait alongside what ethological trait?”; prompt on circadian **rhythmicity**]

<Biology>

12. The contributions of women, Jews, and hard-drinking laborers to this tradition’s music are examined in a Richard C. Jankowsky study of its “ambient” character. Different branches of this tradition are represented by each of the bright colors of the tanoura garment. Performing a song form associated with this tradition brought fame to the Sabri Brothers. People from this tradition were historically depicted wearing woolen clothes, reflecting the possible etymology of this tradition’s name as referring to “those who wear wool.” Poetry from this tradition is performed by qawwali vocalists like Nusrat Fateh Ali Khan. Orders in this tradition called tariqat include the Chishtis, Qadiris, and Naqshbandis. For 10 points, the Mevlevi order of what Islamic mystical tradition practices a whirling dance?

ANSWER: **Sufism** [or **Tasawwuf**; accept **dervishism**; accept **Mevlevi** before read; accept *Ambient Sufism*; prompt on Islamic **mysticism** or **Islam** or **Muslim** before “Islamic”]

<Religion>

13. In a poem, a character with this profession cannot distinguish a Gounod (“GOO-noh”) opera’s plot from reality. In another poem, a character with this profession loses a contest to “John Clothless,” who is the Devil in disguise. In a poem whose protagonist has this profession, a card sharp cons an Italian peddler before losing half his winnings to a district officer known as “Pug-face.” A character with this profession is the protagonist of Estanislao del Campo’s poem *Fausto*. A character with this profession, whose second son receives advice from the dying thief Vizcacha, has a nightlong singing duel with a black singer. In a *payada*-style epic poem, the police officer Cruz befriends a protagonist with this profession, who has “the blood of the Pampas” in his veins. For 10 points, José Hernández’s character Martín Fierro is what type of Argentinian horseman?

ANSWER: **gaucho** (“GOW-chohs”) [accept **gauchesco** or **gauchosque**; prompt on **horsemen** or **cowboys**]

<World Literature>

14. In this kingdom, a sword-wielding bishop named Absalon paused a Palm Sunday service to fend off attacking pirates. A ruler of this kingdom supposedly besieged an island without siege equipment by waiting for a fire to break out on Saint Vitus's Day. Another ruler of this kingdom sold a foreign duchy to the Teutonic Order after the Saint George's Night Uprising. A praying bishop won a battle for this kingdom after a banner falling from the sky inspired a defense that caused the adoption of that banner as one of Europe's oldest national flags. This kingdom's last attempt to invade England failed when angry peasants murdered the last ruler whose deeds were recorded by Saxo Grammaticus, Saint Canute IV. For 10 points, name this Scandinavian kingdom that, along with Norway and Sweden, formed the Kalmar Union.

ANSWER: **Denmark** [or Kingdom of **Denmark** or Kongeriget **Danmark**] (The second sentence refers to the 12th-century siege of Arkona. Valdemar IV Atterdag sold Estonia to the Teutonic Order. The adoption of Denmark's flag occurred after the Battle of Lyndanisse.)

<European History>

15. In a series, a character named for resembling one of these objects is next to Henry Emily's daughter, Charlie, as she dies in the alley of a pizzeria. Samuel Jackson's character is forced to move like one of these objects at the end of the 2021 movie *Spiral*. In *Resident Evil Village*, the player is chased by a giant baby before a boss fight involving these objects in the shrouded Donna Beneviento's home. Videos of one of these objects accompany cassette recordings by John Kramer. A sign reading "Warning: Positively Do Not Open" appears on a box containing one of these objects in the Warren's Occult Museum. At the start of a 1988 movie, the spirit of serial killer Charles Ray is trapped in one of these objects by a voodoo ritual. For 10 points, name these objects exemplified in horror movies by Annabelle and Chucky.

ANSWER: **dolls** [accept **puppets** or **marionettes**; accept a ventriloquist **dummy**; prompt on **toys**; prompt on **animatronic** or **robot** by asking "what is the animatronic of?"] (The first clue is from the *Five Nights at Freddy's* series and refers to "The Puppet.")

<Pop Culture>

Note to moderator: Read the answerline carefully.

16. Violence after one of these events led to a communist student's failed assassination of a prince, which, two years later, inspired the anti-riot Peace Preservation Law. A bureau created "recovery parks" after one of these events, whose namesake discount bills caused a financial crisis four years later, enriching the "Big Four" firms after the Seiyūkai refused to bail out the Bank of Taiwan. During the Ansei era in 1855, these events inspired *namazu-e* prints of catfish. After one of these events during the Taishō era, nationalists killed around 6,000 Koreans and firestorms killed 100,000 others; that 1923 event of this kind failed to harm Frank Lloyd Wright's Imperial Hotel but devastated Yokohama, Kantō. For 10 points, the 3.11 tsunami and Fukushima nuclear accident in Tōhoku were caused by what type of natural disaster?

ANSWER: **earthquake** [or **seismic** activity; or dai-**jishin** or Dae**jijin**; accept 2011 Tōhoku **earthquake**; accept Great Kantō **earthquake** of 1923 or Tōkyō-Yokohama **earthquake** of 1923; accept Ansei great **earthquakes**; prompt on natural **disasters**; prompt on **firestorms** or massacre of **Koreans** or **Zainichi** by asking "in the aftermath of what type of event?"] (The student was Nanba Daisuke, who tried to assassinate Hirohito in the Toranomon incident.)

<World History>

17. According to Thomas of Britain, this hero kept a “hall of statues” with golden tubes delivering fragrant scents to a likeness of his lover. This hero is not Diarmuid (“DEER-mid”), but a splash of water caused a woman to remark that the water was bolder than him. This hero and his lover were compared to intertwined honeysuckle and hazel in Marie de France’s “Chevrefoil.” This hero won the right to take away a princess of Ireland by presenting a dragon’s tongue in a poem by Gottfried von Strassburg; that woman recognized the sword of this hero based on a piece that had lodged in Morholt’s body. This rival of Palamedes (“pal-ah-MEE-deez”) died after black sails were allegedly sighted by a woman renowned for her white hands. For 10 points, name this knight, the nephew of Mark of Cornwall, who fell in love with Iseult (“is-OOLT”).

ANSWER: **Tristan** [or **Tristram** or **Tristain**]

<Mythology>

18. A series of tiered lightning rods on top of a complex in this city transfers electricity down to a series of eight golden wall medallions depicting “treasures.” A gilded sculpture of an eleven-faced figure in this city was legendarily formed in the interior of a sandalwood tree. Steep, inward-sloping rammed earth and stone walls protect a fortress in this city that consists of upper red and lower white sections. Distinctive curved, gold-painted roof elements appear atop this city’s Jokhang (“joh-KAAN”) Temple, part of a World Heritage Site along with Norbulingka. A mausoleum in this city inside a dzong-style complex houses the remains of religious leaders like Ngawang Lobsang Gyatso. For 10 points, the Potala Palace has served as the longtime home of the Dalai Lama in what capital of Tibet?

ANSWER: **Lhasa** [or **Chéngguān**]

<Other Fine Arts>

19. During one of these events, a man recalls telling his son, “It ... isn’t possible for you to ask me all the questions, or for me to give you all the answers”; during another of these events, his son later recalls that exchange while near a black bowl. Mary Hare sees a crack widen in the marble at her estate, Xanadu, as one of these events involving Mordecai Himmelfarb occurs in Patrick White’s *Riders in the Chariot*. The title character is disturbed by one of these events and the gaze of a mourning mother in the opening of a novel by Pär Lagerkvist. In a controversial José Saramago (“zhoo-ZEH sah-ruh-MAH-goo”) novel, a man whose father forced him to undergo one of these events declares, “Men, forgive Him, for He knows not what He has done.” For 10 points, a death by what method occurs at the end of *The Gospel According to Jesus Christ*?

ANSWER: **crucifixion** [accept Jesus dying on the **cross**; prompt on **execution** or **murder** or **death** or similar by asking “by what method?”] (The Lagerkvist novel is *Barabbas*.)

<European Literature>

20. One of these systems prepared from arsenic containing cacodylate (“KAK-uh-DIL-ate”) salts is used to prepare specimens for electron microscopy. One of these systems named for McIlvaine can be combined with glycerol to prepare a microscope slide. One of these systems called RIPA is often used to lyse cells in preparation for the Western blot technique. An example of these systems is made by mixing compounds that contain citrate and phosphate. The capacity of one of these systems depends on the molarity of the species it consists of and is highest when pH equals pKa (“P-K-A”). The Henderson–Hasselbalch equation estimates the pH of these solutions. For 10 points, name these solutions that are formed from weak acids and their conjugate bases or vice versa and resist changes in pH.

ANSWER: **buffers** [or **buffer** solutions; accept **buffering** agents; prompt on **solutions** before read]

<Chemistry>

Tiebreaker. Hormuz used this resource to make larins that were adopted in Kandy. Joseon cultivated red ginseng to keep up tributes after a decline in this resource's imports via Busan's Waegwan. This was the main resource traded for sharkskin and deerskin from Taiwan and Ayutthaya ("ah-YOO-tuh-YAH") by red seal ships until a 1668 embargo on exports from Dejima ("deh-jee-mah"). Kurufone ships of the Nanban trade exchanged silk from Ningbō for this resource, which became Japan's main export after it was found in Sado and Iwami. Richard von Glahn dubbed 1550 to 1650 a "century" of this resource for the Míng dynasty, which imported tons of tael of it from Guanajuato ("gwah-nah-WAH-toh") and Zacatecas on Acapulco's Manila galleons after it became an uncoined monetary standard. For 10 points, Spanish "treasure ships" supplied China with ingots of what metal mined in Potosí?

ANSWER: **silver** [or **Ag**; or **yín** or **plata** or **prata**; accept **silver** bullion or **silver** bars; accept **silver** chloride or **AgCl**; accept **silver** ships or naus da **prata**; prompt on **bullion** or precious **metals**] (Joseon imported Japanese silver to pay tributes to Míng and Qīng China. Sado's Aikawa mine also produced gold, but silver was by far Japan's largest export during the period.)

<World History>

BONUSES

1. This author prescribes cabbage for indigestion, applying a cabbage poultice for wound healing, and bathing infants in a cabbage-eater's urine for raising strong children. For 10 points each:

[10m] Name this author who claims that "from the farming class . . . the bravest men and the sturdiest soldiers come" in *On Agriculture*. A lost prose history called *Origines* was written by this author, the great-grandfather of a similarly named member of the Optimates.

ANSWER: **Cato** the **Elder** [or Marcus Porcius **Cato** the **Elder**; or **Cato Major** or **Cato** the **Censor** or **Cato** the **Wise**; prompt on **Cato**; reject "Cato the Younger" or "Cato of Utica"]

[10e] When listing types of agricultural land, Cato calls land used to cultivate grapes for producing this substance his first choice. Sophisticated Romans disdained consumption of *merum*, an undiluted form of this substance.

ANSWER: **wine** [or **vinum**]

[10h] Cato claims that the best farm would cover one hundred *iūgera* ("EE-oo-gay-ruh"), a measurement derived from the name for this object. After the Battle of the Caudine Forks, the Samnites forced defeated Roman soldiers to walk under an example of this object constructed from spears.

ANSWER: **yoke** [accept **iugum** or **jugum**]

<Other History>

2. Voyager 2 discovered this body's plumes Mahilani and Hili, which are hypothesized to be driven by a solid-state greenhouse effect. For 10 points each:

[10h] Name this body whose large mass and retrograde orbit mean it was likely captured from the Kuiper ("kai-per") Belt. Voyager 2 recorded a Bond albedo of 0.89 in the visual region for this body.

ANSWER: **Triton**

[10e] Triton is a moon of this planet. The Great (emphasize) *Dark Spot* is no longer visible on this ice giant.

ANSWER: **Neptune**

[10m] This phenomenon is a possible cause of Triton's plumes, and it is known to be the source of Enceladus's water-rich plumes. This phenomenon releases low viscosity lava composed of water, dissolved gasses, and salts.

ANSWER: **cryovolcanism** [or **cryovolcanoes**; reject "volcanism" or "volcanoes"]

<Other Science>

3. David P. Byrne and Nicolas de Roos used 15 years of data from Perth gas stations to study the evolution of this situation after equilibrium selection. For 10 points each:

[10m] Name this situation that is "undifferentiated" if it involves a standard commodity. Simple forms of this situation are modeled by the Cournot ("COOR-NO") and Bertrand frameworks and by repeated games with the possibility of retaliation.

ANSWER: **oligopoly** [or word forms like **oligopolistic** market; accept **duopoly**; accept undifferentiated **oligopoly**; prompt on imperfect **competition** by asking "what specific market structure?"; prompt on **interdependence** or **collusion** or **cartels**]

[10e] Microeconomics textbooks often illustrate collusion-based theories of oligopoly with this cartel, whose members include Gabon, Kuwait, and the UAE. This cartel's oil embargo exacerbated 1970s-era stagflation.

ANSWER: **OPEC** [or **Organization** of the **Petroleum Exporting Countries**; accept **OPEC Plus**]

[10h] Saudi Arabia historically served in this role for OPEC by maintaining a "spot" quantity for oil as high, fixed, and "parametric." Tacit collusion is induced by dominant firms in this role, which may also be "low cost" or "barometric."

ANSWER: **price leader** [or **leader pricing**; accept dominant-firm **price leadership** or collusive **price leadership** or barometric **price leadership** or low-cost **price leadership**; accept **Stackelberg price leadership**; prompt on **leadership**]

<Social Science>

4. The *paraklausithyron* (“pa-ra-CLOW-si-THAIR-on”) is a type of lament delivered by a lover in one of these locations. For 10 points each:

[10h] Describe these locations, one of which provides the setting for Tibullus’s second poem addressed to Delia. An *exclusus amator* is usually found in these locations.

ANSWER: outside a **door** [or *ianua* or *limen* or *limina*; accept description such as **outdoors** or **outside** or on a **threshold** or at the **entrance** of a house; accept “at a **door**” or “at/in the **doorway**” or “at/on a **doorstep**”; prompt on **liminal spaces**; reject “inside a door” or “indoors”]

[10m] Another frequent motif in Latin love elegies compares the lover to a member of this profession. A Plautus comedy depicts Pyrgopolynices (“PEER-goh-poll-ee-NY-seez”), the title “swaggering” member of this profession.

ANSWER: **soldiers** [or *miles* or *milites*; accept *Miles Gloriosus* or *The Swaggering Soldier* or *militia amoris*]

[10e] Ovid’s *Amores* (“ah-MOR-ayz”) begins with this god stealing a metrical foot from the poem. Roman love elegies often attribute the torment of love to the arrows shot by this god, the son of Venus.

ANSWER: **Cupid** [or **Cupido**; accept **Eros**; prompt on **Amor**]

<World Literature>

5. A descending A-minor scale represents one of these events in the second phase of *An Alpine Symphony*. For 10 points each:

[10m] Name this type of event. In the opening of a tone poem by the same composer, an ascending root, fifth, and octave in the brass over a sustained root in the bass represents one of these events.

ANSWER: **sunrise** [accept **dawn** or **daybreak**; accept **morning**]

[10e] Those evocations of sunrise are part of this German composer’s pieces *An Alpine Symphony* and *Thus Spoke Zarathustra*.

ANSWER: Richard **Strauss** (“ree-kard shtrowss”) [or Richard Georg **Strauss**]

[10h] Another brass-heavy evocation of sunrise that premiered in the 1890s is this composer’s “Inno del sol” from his Japan-set opera *Iris*. An oft-excerpted orchestral piece by this composer accompanies a deserted town square during Easter in an 1890 opera.

ANSWER: Pietro **Mascagni** (“mah-SKAHN-yee”) (The piece is the intermezzo from *Cavalleria rusticana*.)

<Classical Music>

6. The book *The Golden Rhinoceros* notes that this city's people were called "quarrelsome" in records from Zhèng Hé's ("jung huh's") fleet, which stopped here before reaching Barawa and Malindi to its south. For 10 points each: [10h] Name this home city of Abd al-Aziz of the Maldives, a country that may have been Islamized by this city's northern rival Zeila. The ancient port of Sarapion grew into a sultanate based in this city before the Ajuran Empire conquered it.

ANSWER: **Mogadishu** [or variants like **Muqadishū** or **Maqdishū** or **Mu-ku-tu-shu**; or **Xamar** or **Hamar** Weyne; accept Sultanate of **Mogadishu**]

[10e] Yāqūt al-Hamawī wrote that Mogadishu exported sandalwood and ambergris for these products, which were later made with Madagascan and Comorian ylang-ylang. Musk deer and rose petals supplied "notes" for these cosmetics.

ANSWER: **perfumes** [or **parfums**; accept **eau de toilette** or eau de **cologne**; accept **fragrances** or **scents** or **aromas**; accept **incense**; accept **essential oils** or **volatile oils** or **ethereal oils**; prompt on **smells** or **odors**; prompt on **oils**]

[10m] Alabastra and "pilgrim bottles" held perfumes in this historical region, where Polish archaeologists excavated Orthodox cathedrals in Faras and Dongola. Nobatia, Alodia, and Makuria ruled this region after the decline of Meroë ("MAIR-oh-ee").

ANSWER: **Nubia** [or an-**Nūba** or **Nobīn**; accept Upper **Nubia** or Lower **Nubia**; accept **Kush** or **Oes**; accept **Triakontaschoinos** or **Dodekaschoinos**; prompt on **Sudan** or Bilād as-**sūdān** or **Sahel** or **Kordofan**; prompt on Southern **Egypt** or **Misr** or **Kemet** or **km.t** or the **Nile**; reject "Upper Egypt" or "Lower Egypt"]
<World History>

7. A set of laws and a set of facts are the antecedents to Carl Hempel's deductive-nomological, or DN, model of this sort of statement. For 10 points each:

[10h] Name this sort of statement central to analytic accounts of the philosophy of science. Wesley Salmon's statistical relevance and causal mechanical models are alternatives to the DN account of these statements.

ANSWER: scientific **explanations** [accept word forms like **explaining** how phenomena work]

[10e] Many accounts of scientific explanation use abductive reasoning, which is most closely associated with this American pragmatist philosopher who wrote the essays "The Fixation of Belief" and "How to Make Our Ideas Clear."

ANSWER: C. S. **Peirce** ("purse") [or Charles Sanders **Peirce**]

[10m] The complexity of scientific explanation can be contrasted with the simplicity of these statements, which are enumerations of the facts of observation. Bertrand Russell's "On Denoting" discusses "definite" statements of this type.

ANSWER: **descriptions** [accept definite **descriptions**]

<Philosophy>

8. The Gross–Pitaevskii (“gross pih-TAH-yiff-ski”) interaction constant equals $4\pi\hbar^2/m$, all times this constant. For 10 points each:

[10h] Name this constant equal to the (read slowly) negative of the limit as the wave number goes to zero of one over the wave number times the tangent of the phase shift.

ANSWER: **scattering length** [prompt on **a**-naught; prompt on, BUT DO NOT OTHERWISE REVEAL, **a**-sub-s]

[10e] For low-energy scattering between waves denoted by this letter, only the first term in the partial wave expansion is kept. This letter denotes atomic orbitals with l equal to zero.

ANSWER: **s**

[10m] Partial wave expansion is valid only for potentials with this property. Because the potential of the hydrogen atom has this property, its Schrödinger equation is solved by separation of variables into a radial wave function and an angular wave function.

ANSWER: **spherical symmetry** [or **spherically symmetric**; accept answers indicating that it has the **symmetry** of a **sphere**; prompt on **symmetry**]

<Physics>

9. A character in this short story receives a note written in six different languages and orders two gunshots to be fired because he finds no errors in any of the versions. For 10 points each:

[10h] Name this short story, whose protagonist laments “throwing away two million.” That banker in this story kisses a sleeping man on the head after reading about his contempt for earthly life and money.

ANSWER: “The **Bet**” [or **Pari**]

[10m] In this short story by the author of “The Bet,” the banker Dmitri Gurov begins a “double life” “which flowed in secret” by starting an affair with Anna Sergeevna, whom he meets in Yalta.

ANSWER: “The **Lady with the Dog**” [or “The **Lady with** the Lapdog” or “The **Lady with** the Pet **Dog**” or “The **Lady with** the Toy **Dog**”; accept “a” in place of “the”; or **Dama s sobachkoy**;

[10e] This Russian author wrote “The Bet” and “The Lady with the Dog.” Gayev takes a job as a bank official in this author’s play *The Cherry Orchard*.

ANSWER: Anton **Chekhov** [or Anton Pavlovich **Chekhov**]

<European Literature>

10. During the early 2000s, a panic about swallowing cockroach eggs erupted due to PETA (“pee-tah”) reports about performing this action that were conflated with a 1998 incident of a woman eating a nasty Taco Bell meal. For 10 points each:

[10h] Name this action that apocryphally killed Sigmund Fechheimer from blood poisoning. A Rowland Hill invention for the Penny Black popularized this action, which ingests about 0.17 calories.

ANSWER: **licking** an **envelope** [accept **licking** a **stamp**]

[10e] The Penny Black stamp depicts this woman, who was gifted the Koh-i-noor diamond as a brooch while empress of India. This woman’s collection of Turkish-cut diamond brooches was a gift from her husband, Albert.

ANSWER: Queen **Victoria** [or Alexandrina **Victoria**; prompt on **Vicky**]

[10m] This country was the first to develop self-adhesive stamps. Members of this country’s Mende (“MEN-day”) and Temne people panned for diamonds in its Kono District to support Foday Sankoh’s RUF in a civil war.

ANSWER: **Sierra Leone** [or Republic of **Sierra Leone** or **Salone**]

<Other Academic>

11. This man wrote the pamphlet “Grant against Hancock,” but he changed the names when it was revealed that Grant would not be nominated for president. For 10 points each:

[10h] Name this man whose “companion to the Bible,” *The Truth*, was plagiarized from John Humphrey Noyes (“noise”). Despite his devotion to Noyes, this man was rejected by members of the Oneida Community.

ANSWER: Charles **Guiteau** (“guh-TOH”) [or Charles Julius **Guiteau**]

[10e] Charles Guiteau (“guh-TOH”) was executed for the assassination of this president. This president, succeeded by Chester A. Arthur, likely actually died due to his surgeons infecting the gunshot wound.

ANSWER: James A. **Garfield** [or James Abram **Garfield**]

[10m] Guiteau proclaimed his allegiance to this faction of Republicans after he was put on trial for Garfield’s murder. This faction, which favored the spoils system, was opposed by James G. Blaine and the Half-Breeds.

ANSWER: **Stalwarts**

<American History>

12. Invertebrates typically undergo autonomous specification during this process, which is regulated by DIF in the stalk-forming model slime mold *Dictyostelium* (“dick-tuh-STEE-lee-um”). For 10 points each:

[10m] Name this process whose status is tracked by barcoding single cells for lineage tracing and fate mapping. Nanog depletion induces this process, which can be reversed by Yamanaka factors like Oct4 in “terminal” fibroblasts.

ANSWER: **differentiation** [or word forms like **differentiated** cells; accept lineage **commitment** or **determination**; accept terminal **differentiation**; prompt on **development** or **specialization** or word forms; prompt on cell **division** or **growth** or **proliferation** or **migration** by asking “what developmental process that is often accompanied by that step?”]

[10h] In this general type of signaling, growth and differentiation factors diffuse to nearby competent cells. This local signaling mode, which may be instructive or permissive, does (emphasize) *not* require direct contact with target cells.

ANSWER: **paracrine** signaling [or **paracrine** factors] (Juxtacrine signaling *does* require cell-cell contact.)

[10e] One of the paracrine factors with the longest-known diffusion range is activin, which promotes folliculogenesis in these organs. A “surge” in luteinizing hormone causes these organs to release eggs during ovulation.

ANSWER: **ovaries** [or **ovary**; accept **ovarian** follicles; prompt on **gonads** or **sex** organs]

<Biology>

13. Adrien Duazats marveled over the “lizard-like” ability of three men to climb one of these structures, which he depicted in an 1830 painting after seeing it in person. For 10 points each:

[10h] Identify this type of structure. In another painting, a ruler riding a white horse has his head turned away from several of these structures but raises his hand and points toward them.

ANSWER: **pyramids** [accept the Great **Pyramid** of Giza; accept, BUT DO NOT OTHERWISE REVEAL, *Napoleon at the **Pyramids***]

[10m] The latter depiction of pyramids is by this French artist, who also depicted that same ruler visiting plague victims in Jaffa in another painting.

ANSWER: Antoine-Jean **Gros** [or Baron **Gros**]

[10e] Gros depicted this ruler “at the Pyramids” in the aforementioned painting. Jacques-Louis David depicted this French emperor’s coronation.

ANSWER: **Napoleon** Bonaparte [or **Napoleon** I; accept ***Napoleon** at the **Pyramids***; prompt on **Bonaparte**]

<Painting/Sculpture>

14. A poem by this author opens, "There are no stars tonight / But those of memory." For 10 points each:

[10m] Name this author who wrote about his grandmother Elizabeth's "love letters" in that poem. This poet also described how "the wind deposits / In slithered and too ample pockets" in "Chaplinsque."

ANSWER: Hart **Crane** [or Harold Hart **Crane**]

[10h] The speaker of a poem by this man describes writing his abusive, illiterate father's love letters for him. This poet half expects to see his own name "in letters like smoke" among a list of names in a poem depicting a visit to the Vietnam Veterans Memorial.

ANSWER: Yusef **Komunyakaa** [prompt on James William **Brown**] (The first poem is "My Father's Love Letters"; the second is "Facing It.")

[10e] This author's "Letter to Her Husband, Absent upon Publick Employment" follows a poem dedicated to her "dear and loving husband" in a posthumous edition of *The Tenth Muse Lately Sprung Up in America*.

ANSWER: Anne **Bradstreet** [or Anne **Dudley**]

<American Literature>

15. You are a visitor to a Hindu temple. For 10 points each:

[10e] When you enter the temple, you make sure to take off these objects before walking in. Many Hindu homes ask that people take these objects off before entering the home.

ANSWER: **shoes** [accept **footwear**; accept specific shoes]

[10m] As part of navagraha ("nuh-vuh-GRAH-huh") parikrama, you perform this action with respect to deities of the nine celestial bodies. In some Hindu weddings, brides and grooms perform this action seven times before taking their first steps together.

ANSWER: **circumambulation** [accept answers about going **around** in a circle; accept walking **around** a fire; accept **circumambulation** of a fire; accept **circling** or making a **circle**]

[10h] If you attend a puja at the temple, you may participate in this ceremony in which fire is waved by priests in front of a specific deity. At the conclusion of this ceremony, participants reach out to the fire and touch their heads.

ANSWER: **aarti** [or **arati**]

<Religion>

16. Solid samples can be prepared for this technique by mixing the analyte with Nujol oil or potassium bromide powder. For 10 points each:

[10e] Name this technique that analyzes the vibrational modes of a molecule by using light with a wavelength longer than visible light.

ANSWER: **infrared spectroscopy** [or **IR spectroscopy**; prompt on **infrared** or **IR**]

[10m] IR spec detects two classes of vibrational modes, one of which changes a molecule's bond angle and one of which changes its bond length. Name either.

ANSWER: **bending** OR **stretching**

[10h] The strength of an absorption peak in IR spec is related to absorptivity, which equals the square of the time derivatives of this quantity, meaning that modes must cause this quantity to change to be IR active.

ANSWER: electric **dipole moment** [or **EDM**; prompt on **μ**]

<Chemistry>

17. This singer sang with Richard Berry on her first R & B hit “The Wallflower,” though she later had to rerecord the chorus to be “dance with me, Henry” since the original “roll with me, Henry” was deemed too suggestive for radio. For 10 points each:

[10m] Name this blues and early rock ’n’ roll singer who scored her biggest hit with her 1960 version of “At Last!”

ANSWER: Etta **James** [or Jamesetta **Hawkins**]

[10e] Etta James’s “The Wallflower” was a response song to “Work with Me, Annie” by the Midnighters, a 1950s R & B group from this city. Berry Gordy later founded the Motown record label in this city.

ANSWER: **Detroit**, Michigan

[10h] The penultimate song on James’s album *At Last!* is her version of this Arlen and Koehler torch song originally sung by Ethel Waters at the Cotton Club. This song’s lyrics begin, “Don’t know why / There’s no sun up in the sky.”

ANSWER: “**Stormy Weather**”

<Other Fine Arts>

18. Answer the following about the modernist artist and poet David Jones, for 10 points each.

[10h] Jones is best known for this book-length poem inspired by his experiences in World War I. This poem uses its title symbols to frame its refrain, “We came no more again.”

ANSWER: ***In Parenthesis***

[10e] As an artist, Jones created engravings illustrating this Samuel Taylor Coleridge poem in which the Wedding-Guest listens to a tale about a ship’s crew killing an albatross.

ANSWER: *The **Rime of the Ancient Mariner***

[10m] This critic called Jones’s poem *The Anathemata* “probably the greatest poem of the twentieth century.” This author collected some of his criticism in *The Dyer’s Hand* and wrote the long poem *The Age of Anxiety*.

ANSWER: W. H. **Auden** [or Wystan Hugh **Auden**]

<British Literature>

19. In the discredited phantom time hypothesis, Heribert Illig proposed that the second pope with this name conspired with Otto III to invent nearly three hundred years of history before 1000 CE. For 10 points each:

[10h] Give this name taken by three medieval popes. A Renaissance humanist exposed the forged nature of a document that strengthened the spiritual authority of the first pope with this name.

ANSWER: **Sylvester** [accept Pope **Sylvester** II; accept Pope **Sylvester** I] (Lorenzo Valla exposed the *Donation of Constantine* as a forgery.)

[10e] Unlike Sylvester I’s fake *Donation of Constantine*, Pepin the Short’s namesake donation to Pope Stephen II really did establish the legal basis of the Papal States, in return for aiding this dynasty, later ruled by Charlemagne.

ANSWER: **Carolingian** dynasty [or **Carlovingians**; prompt on **Pippinids**]

[10m] The unknown Carolingian author Pseudo-Isidore forged the False Decretals, a collection of this type of law. Gratian (“GRAY-shun”) compiled the *Decretum*, a text on this type of law used by the Catholic Church.

ANSWER: **canon** law [or ius **canonicum**]

<European History>

20. During the reign of this dynasty, Greek *and* Egyptian commentators like Timotheus and Manetho recognized a deity blending Osiris, the Apis bull, and Zeus in an effort to unite mythological systems. For 10 points each:

[10e] Name this dynasty. Syncretic deities like Serapis were worshipped at the Serapeum in Alexandria, the capital of this Hellenistic Egyptian dynasty.

ANSWER: **Ptolemaic** (“TAHL-uh-MAY-ick”) dynasty [or **Ptolemy** or the **Ptolemies** or **Ptolemaioi**; or **Lagid** dynasty or **Lagidae**]

[10m] This syncretic figure has a name meaning “thrice-great,” an epithet first used for Thoth in Ptolemaic (“TAHL-uh-MAY-ick”) Egypt. The *Emerald Tablet* of this figure, one of many Hermetic texts attributed to him, was popular among medieval alchemists.

ANSWER: Hermes **Trismegistus** [prompt on **Hermes**]

[10h] *Description acceptable.* Depictions of Mut and Amun alongside Khonsu, who wears a sidelock under his moon disk to indicate this characteristic, were popular during the Ptolemaic era. Harpocrates (“har-POCK-rah-teez”), a Greek translation of an aspect of Horus named for this characteristic, was often shown with a finger to his lips.

ANSWER: being a **child** [accept **youth** or being **young**; accept being a **boy**]

<Mythology>

Extra. While studying abroad, a character in this novel is abused by the sadistic Swedish art photographer Lukas. For 10 points each:

[10h] Name this novel that ambiguously ends with the well-off Marianne encouraging her working-class ex-soccer player lover Connell to leave her to pursue an MFA at Columbia.

ANSWER: ***Normal People***

[10e] Characters in Sally Rooney’s novels *Conversations with Friends* and *Normal People* attend college in this capital city. A collection set in this city contains the stories “Araby” and “The Dead.”

ANSWER: **Dublin**, Ireland (The collection is *Dubliners* by James Joyce.)

[10m] While in high school, Marianne tells Connell that in college he will get all the girls because he has actually read this novel. In this 1962 feminist novel, Anna Wulf recounts her time in colonial Rhodesia and as a member of the English communist party.

ANSWER: *The **Golden Notebook*** (by Doris Lessing)

<British Literature>