

2021 ACF Winter
Packet O (Finals 1)

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Tossups

1. A book in this discipline uses Spinoza's arguments about human nature in its first of three "images of analysis." An institute for this discipline, Chatham House, names a rule whereby people can divulge information from a meeting, but not its source. Susan Strange, a scholar in this discipline, emphasized the power to obtain access to credit as critical in the "market-authority nexus." The lack of a hierarchy among issues is central to this discipline's theory of complex interdependence. Kenneth Waltz claimed the fundamental "ordering principle" of the system studied by this discipline is anarchy. This discipline's dominant theoretical approaches include realism and liberalism. The Westphalian system is studied by, for 10 points, what discipline focused on the connections between countries?

ANSWER: **international relations** [or **IR**; accept **international affairs** or **international political economy** or **global affairs** or **foreign affairs** or **foreign policy** or **diplomacy** or **geopolitics**; prompt on political science or political economy or policy studies or politics or government]

<Social Science>

2. By a theorem named for Euler, a unit vector that represents this construct can, along with a scalar, uniquely represent elements of the group $SO(3)$ ("S-O-3"). It's not a quantity, but this construct lies on the intersection between the body and space cones. Two of these constructs align with each other in gimbal lock. The orientation of this construct is given by the first two Euler angles. The root mean square of distances to this construct gives the radius of gyration. A theorem named for these constructs can be used to find the moment of inertia of a planar object. The square of the distance between the center of mass and this construct multiplied by mass is added to the moment of inertia by a theorem named for a "parallel" one of them. For 10 points, name this construct, the line around which an object spins.

ANSWER: **axis of rotation** [prompt on axis; prompt on parallel axis or parallel axis theorem or perpendicular axis or perpendicular axis theorem]

<Physics>

3. While in this city, Fede Galizia pioneered the still life genre. This is the alphabetically-former of two cities that title a Book of Hours, whose artist known as "Hand G" may be Jan van Eyck. While in this city, an artist only managed to produce a clay model of what would have been the world's largest equestrian statue. It's not London, but a version of Caravaggio's *Supper at Emmaus* is in this city's Pinacoteca di Brera. A mistress of this city's ruler named Cecilia Gallerani holds a weasel in *Lady with an Ermine*. In this city, a doorway was cut through the bottom of a now highly-deteriorated fresco in which Judas clutches a bag of coins. This city's Convent of Santa Maria delle Grazie houses *The Last Supper* by Leonardo, who was patronized by its duke Ludovico Sforza. For 10 points, what city contains the opera house La Scala?

ANSWER: **Milan** [or **Milano**; prompt on Turin–Milan Hours]

<Painting/Sculpture>

4. This concept is likened to “an ancient city: a maze of little streets and squares” after the question “how many houses or streets... before a town begins to be a town?” A passage claiming there are innumerable examples of this concept states that to imagine one is to imagine a “form of life.” A philosopher who claimed that “the limits of [this concept] mean the limits of my world” helped to usher in a “turn” toward the study of this concept in analytic philosophy. A book that opens by critiquing Augustine’s view of this concept presents the beetle-in-a-box thought experiment to argue against the possibility of a private one. For 10 points, Ludwig Wittgenstein’s *Philosophical Investigations* discusses “games” regarding what systems by which humans communicate with each other?

ANSWER: **language** [or **languages**; or **Sprache**; accept **language** games; accept private **language**; accept **linguistic** turn or **linguistics**]

<Philosophy>

5. The section “The Age” is the first of 51 prose pieces that make up this author’s last story, which he discussed in a work that ends with him reminiscing about reading “Empedocles on Etna.” One of this author’s protagonists wishes for someone to “strangle [him] in [his] sleep” after he sees raincoat-wearing men and the title mechanisms filling his vision. This author wrote “A Fool’s Life” before he wrote a suicide note dubbed “A Note to a Certain Old Friend.” This author of “Cogwheels” wrote about a corpse found next to a rope and a comb, whose spirit confesses his suicide through a medium, in a story in which a woodcutter, Masago, and Tajomaru give accounts of the death of Takehiro. For 10 points, name this Japanese author of “In a Grove” and “Rashomon.”

ANSWER: Ryūnosuke **Akutagawa** [or **Akutagawa** Ryūnosuke; or **Chōkōdō** Shujin]

<World Literature>

6. *Note to moderator: Read the answerline carefully.* Within this natural region, aquatic areas near Aventicum contain many “prehistoric pile dwellings.” After 15 BCE, this natural region’s colony of Augusta Vindelicorum exported honey, pitch, cheese, and Augustus’s favorite wine as part of the province of Raetia (“RAI-tee-ah”). In this region, a decimation at Agaunum martyred Saint Maurice’s Theban Legion. This natural region’s steel-forging client kingdom of Noricum arose from the salt-mining Hallstatt culture. This natural region contains the type site of the La Tène (“lah ten”) culture. The Gallic Wars began after a Celtic tribe migrated [emphasize] *from* this natural region to Italy’s Cis-[this region] Gaul. The Helvetii occupied this region a century after its 218 BCE crossing by elephants in the Second Punic War. For 10 points, Hannibal led a surprise invasion through what mountain range?

ANSWER: the **Alps** [accept **Cisalpine** Gaul; accept **Swiss** Plateau or **Switzerland** or **Helvetica** or **Helvetia** or die **Schweiz** or **Svizzera**; accept **Austria** or **Österreich** or **Slovenia** or **Tyrol** or **Carinthia** or **Salzburg** or **Vorarlberg**; accept **Jura** or **Julian** Alps; accept **Raetia** or **Noricum** or **Noric** steel before read; prompt on **Germania** Superior or **Germany** or **Deutschland** or **Bavaria** or **Bayern** or **Swabia** or **Schwaben** by asking “what natural region?”; prompt on **mountains**]

<Other History>

7. The slow movement of this composer’s first piano quartet in C minor may have been inspired by the end of his engagement to Marianne Viardot. In the sixth movement of a piece by this composer, the melody “long D, up to A–A, G, B-flat, B-flat–A” is sung by a solo baritone over pulsing strings. The text “Word, one with the Highest” begins a youthful choral piece by this composer based on a Jean Racine paraphrase. A “Kitty-valse” is included in this composer’s *Dolly Suite* for piano four-hands. A liturgical work by this composer includes a “Pie Jesu” for soprano solo and unusually concludes with a movement titled “In Paradisum.” This composer’s student Maurice Ravel imitated his *Pavane* in F-sharp minor. For 10 points, name this French composer of a *Requiem* in D minor.

ANSWER: Gabriel **Fauré** [or Gabriel Urbain **Fauré**]

<Classical Music>

8. This quantity can be measured using a Thomas Hoover apparatus. One method of distinguishing aldehydes is to measure this quantity for their semicarbazone derivatives. This quantity jumps when going from an even-numbered to the next highest odd-numbered alkane. For DNA, this quantity occurs at the spike in the first derivative of the absorbance at 260 nanometers and occurs when half the sample is dissociated. This quantity is measured with a capillary tube placed in a metal block with a window. For a binary mixture, this quantity is minimized at the eutectic point. Solutes depress this quantity in a classic example of a colligative property. For 10 points, name this temperature at which a solid becomes a liquid or vice versa.

ANSWER: **melting point** [or **freezing point**; prompt on T or temperature or T-m or T-sub-m]

<Chemistry>

9. Tankers from this country used American flags while they were escorted by warships during Operation Earnest Will. After Operation Vantage, this country skirmished with its northern neighbor at the Sanita border post. This country's ruling al-Sabah family has denied citizenship to many stateless Bedoon people who once dominated its military. This country's Dasman Palace was raided during a conflict that began due to disputes over slant drilling by the INOC. Foreign invading forces in this country, which included the al-Medina and Hammurabi divisions, fired SCUD missiles at Israel and Saudi Arabia. In this country, vehicles were abandoned along the Highway of Death during a retreat from an American-led U.N. coalition. For 10 points, name this small country that was invaded by Iraq in 1990, triggering the Gulf War.

ANSWER: **Kuwait** [or State of **Kuwait**; or Dawlat al-**Kuwayt**] (The INOC is the Iraq National Oil Company.)

<World History>

10. This poet's line "Scar in the sky, red comet" provides the title for a 2020 biography of this poet by Heather Clark. One of this author's poems asks, "Pure? What does it mean?" before describing the "Tongues of dull, fat Cerberus." Another speaker created by this poet states that "there is a charge / For the hearing of my heart" and proclaims "I am your opus, / I am your valuable." In another poem, this author of "Stings" and "Fever 103" describes flying "Into the red / Eye, the cauldron of morning" while riding the title horse. This poet states that "Dying / Is an art" done "exceptionally well" because "like the cat I have nine times to die." That poem by this author concludes "I rise with my red hair / And I eat men like air." For 10 points, name this confessional poet of *Ariel* and "Lady Lazarus."

ANSWER: Sylvia **Plath**

<American Literature>

11. It's not an infection or cancer, but this disease is treated with verteporfin photodynamic therapy. Late in this disease, geographic atrophy occurs. An inherited form of this condition is caused by mutations in ABCA4 and is called Stargardt's disease. Risk factors for this disease include the Y402H ("Y-402-H") allele of complement factor H. This disease can be treated with aflibercept ("a-flib-er-cept"), ranibizumab ("ran-ib-i-zu-mab"), or bevacizumab ("bev-ac-i-zu-mab"), which are all VEGF ("VEG-F") inhibitors. Neovascularization through Bruch's membrane causes the "wet" form of this disease, while accumulation of drusen occurs in its dry form. This disease is named for a yellow structure with a high concentration of photoreceptors. For 10 points, name this most common cause of vision loss in older adults, a disease that damages the central retina.

ANSWER: age-related **macular degeneration** [or **AMD**; accept wet **macular degeneration** or dry **macular degeneration**; prompt on blindness or vision loss or equivalents]

<Biology>

12. Małgorzata Szejnert's ("maw-gawr-ZAH-tah SHAY-ner't's") recent "people's history" of this place draws on its National Park Service Oral History Project. A 1903 "actuality film" by Alfred C. Abadie was the first to record this place, which, with Crystal City, housed most victims of Truman's Proclamation 2655. Navajo and Apache trachoma outbreaks [emphasize] *elsewhere* led this place's "buttonhook men" to administer "six-second physicals" in its invasive medical exams. Halifax's Pier 21 was the Canadian analogue of this successor of Castle Garden, where Lewis Hine photographed people with luggage in *Climbing into the Promised Land*. The case *New Jersey v. New York* resolved a boundary dispute over this place, which only rarely altered foreign surnames. For 10 points, what New York Harbor island was America's main immigration station?

ANSWER: **Ellis** Island [or **Ellis** Island Immigration Station; prompt on Statue of Liberty National Monument; prompt on New York City or NYC or New York Harbor; prompt on New Jersey or NJ]
<American History>

13. This religious group developed a type of drama in which the protagonist and his family wear green and sing, whereas the antagonists wear black and recite. A pilgrimage for this religious group to commemorate the end of a 40-day mourning period is likely the world's largest annual religious gathering. Among members of this religious group, giving blood sometimes replaces the custom of hitting oneself on the head with a sword, which is called *tatbir*. This religious group carries out the Arba'een pilgrimage and stages ta'ziyeh plays on Ashura in the month of Muharram in order to commemorate the Battle of Karbala, when Husayn was killed. For 10 points, name this religious group which believes that Ali was the rightful successor of Muhammad, in contrast to Sunni Islam.

ANSWER: **Shi'a** Islam [or **Shiite** or **Shi'i** or **Shi'ism**; prompt on Ismā'ilism or Twelver or Zaidi; prompt on Islam or Muslims]
<Religion>

14. In a play in this language, a woman exclaims that "we can't love one another" because "filth doesn't love filth." In that play in this language, a character secretly tries on a red velvet dress while she argues with her sister over seducing a milkman and later demands to drink a cup of poisoned tea during a sadomasochistic fantasy. Characters discuss a family made up entirely of people named Bobby Watson in a play in this language that begins, "The English clock strikes 17 English strokes." This language was used to write *The Maids* and a play that includes a poem in honor of the Fire Chief, which the maid Mary recites to the Smiths. For 10 points, *The Bald Soprano* was written in what language used by the absurdist playwrights Eugène Ionesco ("yo-NESS-coo") and Jean Genet ("zhuh-NAY")?

ANSWER: **French** [or **français**; or la langue **française**]
<European Literature>

15. The Wabanaki culture hero Glooscap turned the chief Mikcheech into one of these animals, allowing him to survive being burned alive. According to Haudenosaunee myth, Sky Woman landed on one of these animals after she fell from the sky. This animal's role as a "Knowledge Keeper" was partially inspired by multiple tribes using this animal to track the lunar calendar. The Ojibwe and Iroquois refer to North America as an "Island" of this animal due to its role in their creation myths. This animal was the form of Vishnu's second avatar, Kurma. According to Hindu cosmology, the world is supported by four elephants standing on top of, for 10 points, what animal, which wins a race against a hare in a popular fable?

ANSWER: **turtles** [accept **tortoises**; accept **Turtle** Island; or **kachhua**; prompt on chelonians or reptiles]
<Mythology>

16. This ethnic group pioneered a delicacy of baby eels cooked with garlic and pepper. Members of this ethnic group traditionally hang silver thistles to ward off spirits on farmhouses called baserri. This ethnic group is represented by a flag with a red background and white and green crosses. This ethnic group's language uses the letters T and X together to represent the sound "ch." Whalers of this ethnicity working in Iceland developed a pidgin tongue. A center of this ethnic group's cuisine is Donostia, which is also known as San Sebastián. This ethnic group's language is the only extant non-Indo-European language that is indigenous to Western Europe. Gipuzkoa and Biscay are part of this ethnic group's autonomous area. For 10 points, what ethnic group inhabits a "Country" in Northern Spain that contains Bilbao?

ANSWER: **Basque** people [or **euskaldunak** or **euskotarrak** or **Euskara** speakers; accept **Basque** Country or **Euskadi**; prompt on **Vasco** or **Vasconic** or **Vascones**; do not accept or prompt on "Spanish" or "French"]
<CE/Geo/Other/Pop Culture>

17. In one work, a photographer with this first name showed eight bread rolls on a table in front of the arms of Pablo Picasso. The contents of the "Mexican Suitcase" suggested that a photographer known by this first name faked a photo of Federico Borrell García while working with Gerda Taro. A photographer with this first name had two actors stage his work *The Kiss by the Town Hall*. A photographer known by this first name took the "Magnificent Eleven" photos of D-Day, as well as *The Falling Soldier*. The Corcoran Gallery hosted a controversial exhibition by a photographer with this first name titled *The Perfect Moment*, which included many explicit photos of BDSM. For 10 points, give this first name shared by photographers with surnames Doisneau, Capa, and Mapplethorpe.

ANSWER: **Robert** [accept **Endre** Ernő Friedmann; accept **Robert** Doisneau or **Robert** Capa or **Robert** Mapplethorpe or **Robert** Michael Mapplethorpe]
<Other Arts>

18. In an interview, this novel's author revealed that the narrator's confession, "at that moment, my heart was breaking" was inspired by the Tom Waits song "Ruby's Arms." At the end of this novel, the narrator is offered a handkerchief by a stranger on a pier and questions whether his past decisions had any "dignity." In this novel, the narrator's faith that another character is a "true gentleman" is challenged when that character dismisses two maids for being Jewish. That character in this novel, who is revealed to be a Nazi sympathizer, is replaced by the American Mr. Farraday. In this novel, a letter from the former housekeeper Miss Kenton causes the narrator to embark on a road trip from Darlington Hall. For 10 points, name this novel about the butler Stevens by Kazuo Ishiguro.

ANSWER: *The **Remains of the Day***
<British Literature>

19. A poet born in this modern-day country wrote *White Dawns* before he died with Mirče Acev's ("meer-cheh aht-sev's") Partisans. This modern country and its eastern neighbor led the Manastir Vijalet's 1878 Kresna–Razlog uprising and 1903 Ilinden uprising. Bulgarians like Gotse Delchev led this "Vardar" country's revolutionary groups Ohrana, SMAC, and IMRO. This country's VMRO-DPMNE party led the 2014 neoclassical "antiquization" of its capital and opposed the Prespa accord. This country is about 25% Albanian, and its capital was the birthplace of Mother Teresa. This former Yugoslav republic's southern neighbor claims the yellow Vergina Sun on its red flag for its own region around Thessaloniki. For 10 points, in 2019, what landlocked Balkan country added "North" to its name to appease its southern neighbor Greece?

ANSWER: North **Macedonia** [or Republic of North **Macedonia** or Republika Severna **Makedonija** or Republika e **Maqedonisë** së Veriut; accept Former Yugoslav Republic of **Macedonia** or **FYROM** or Vardar **Macedonia**; accept Internal **Macedonian** Revolutionary Organization or Supreme **Macedonian** Adrianople Committee or **Macedonian** Partisans] (The first line is about Kočo Racin. Manastir was the Turkish name for Bitola.)
<European History>

20. A technique named for this property performed around loops on a manifold gives rise to linear transformations that form the holonomy group. Convergence to an ideal point defines objects with a “limiting” form of this property, which is contrasted with an “ultra” form. Tangent vectors along geodesics are preserved by this property’s namesake “transport.” Vectors with this property saturate the Cauchy–Schwarz inequality. Playfair’s axiom asserts that at most one object with this property may exist. Given a point and a line, the existence of an infinite number of lines with this property passing through the point is a defining feature of hyperbolic geometry. This property provides an alternate name for Euclid’s fifth postulate. For 10 points, what adjective describes pairs of lines that do not intersect?

ANSWER: **parallel** [or **parallelism**; accept **parallel** transport or limiting **parallel** or ultra **parallel**]

<Other Science>

21. In the title of a 1715 book on this discipline, Colen Campbell refers to himself as the “British” version of its foremost classical expert. A treatise titled for this discipline by Filarete (“fill-ah-RET-ay”) describes Sforzinda (“s’for-DZIN-dah”). A ten-book classical treatise on this discipline includes the dictum that it requires “firmness, commodity, and delight.” A 1580 treatise titled for “The Four Books” of this discipline discusses the author’s work in Vicenza (“vee-CHENTZ-ah”). Leon Battista Alberti adapted the only surviving classical work about this discipline, which includes a section on human proportions that inspired Leonardo da Vinci, and is by Vitruvius. A book about this discipline, which Thomas Jefferson referred to as “the Bible,” heavily inspired Monticello and is by Andrea Palladio. For 10 points, name this main discipline of Sir Christopher Wren.

ANSWER: **architecture** [accept *De architectura*; accept *I quattro libri di architettura* or *The Four Books of Architecture*; accept *Trattato di architettura* or *Treatise on Architecture*; accept city **planning** or equivalents; prompt on **art** or equivalents]

<Other Arts>

Bonuses

1. Answer the following about early advances in computer graphics at the University of Utah, for 10 points each.

[10e] The Warnock algorithm for rendering polygons relies on this general technique by repeatedly subdividing the scene into smaller components. In this technique, a function calls itself as a subroutine.

ANSWER: **recursion** [or word forms such as **recursive**; accept **divide and conquer**]

[10m] Henri Gouraud and Bui Tuong Phong developed two different models of how this phenomenon interacts with objects. Ray tracing is a computationally-intensive process that is primarily used to model this phenomenon.

ANSWER: **light** [or visible **light**; or word forms such as **lighting**; do not accept or prompt on “radiation”]

[10h] The future Pixar co-founder Edwin Catmull pioneered this process to simplify rendering details on objects.

This process typically takes a two-dimensional image and applies it to a three-dimensional object’s surface.

ANSWER: **texture** mapping [or **texturing**]

<Other Science>

2. This film ends with Elizabeth Russell returning to England after she falls in unrequited love with the protagonist, Bhuvan. For 10 points each:

[10h] Name this 2001 epic film, in which soldiers of the British Raj challenge the Indian villagers of Champaner to a game of cricket, in order to decide whether or not they have to pay a colonial tax.

ANSWER: **Lagaan** [or *Lagaan: Once Upon a Time in India*]

[10e] *Lagaan* is a historical epic from the Indian film industry that is usually known by this name. This film industry is known for its Hindi-language musical numbers and is based in Mumbai.

ANSWER: **Bollywood** [prompt on **Bombay** cinema or **Hindu** cinema]

[10m] The impact of British colonialism on the Indian rural poor is also depicted in this Indian director’s *Apu Trilogy*, which begins with the film *Pather Panchali*.

ANSWER: Satyajit **Ray**

<Other Arts>

3. Abd ar-Rahman II brought cutting-edge 9th-century technology to the Emirate of Córdoba. For 10 points each:

[10e] The emir patronized Abbas ibn Firnas, who allegedly attempted to fly, but more practically made planispheres for this scientific discipline, which medieval scholars pursued with armillary spheres and astrolabes.

ANSWER: **astronomy** [accept **stargazing**; prompt on **observatories** or related answers]

[10m] Abbas ibn Firnas also designed a clepsydra, a “water” type of this device, to aid prayer. The later Andalusian Ibn Khalaf al-Muradi improved these devices, which Charlemagne received from Harun al-Rashid with an elephant.

ANSWER: **clocks** [accept water **clocks**; accept **watches** or **timekeeping** devices or **hourglasses** or equivalents]

[10h] Like the Fatimids, Abbas ibn Firnas cut ewers from this material used in burning glasses like the Visby lenses. Ziryab introduced cups of this material, which includes a type named for a “city of the blind” opposite Byzantium.

ANSWER: **quartz** [accept rock **crystal**; accept **chalcedony**; accept rose **quartz** or other specific varieties; accept

carnelian or **sard** or **jasper** or **moganite** or **onyx** or **amethyst**; prompt on **silica** or **silicon dioxide** or **SiO₂** (“S-I-O-2”)] (The “city of the blind” was Chalcedon. Ziryab was an oudist who also popularized asparagus, daily bathing, seasonal clothing, lead (II) oxide deodorant, and allegedly a form of toothpaste.)

<European History>

4. Answer the following about famous props in Shakespeare plays, for 10 points each.

[10m] Different ways of staging this creature include a lightning flash, a puppet made of book pages, and perhaps a real one in Shakespeare's time. This creature pursues Antigonus offstage in a stage direction from *The Winter's Tale*.

ANSWER: the **bear** [accept "Exit, pursued by a **bear**"; accept brown **bears** or **ursids**]

[10e] During the gravedigger scene, David Tennant held a real object of this kind donated by André Tchaikowsky. In Ralph Fiennes's ("rafe fines's") portrayal, Hamlet kisses the forehead of one of these objects that belonged to Yorick's skeleton.

ANSWER: **skulls** [prompt on **head** or **bones**]

[10h] In a different play, a character states "Nature seems dead, and wicked dreams abuse / The curtained sleep" while questioning if this object is a "false creation, Proceeding from the heat-oppressed brain."

ANSWER: the bloody **dagger** from *Macbeth* [prompt on **knife** or synonyms; do not accept or prompt on "the dagger from *Romeo and Juliet*" or daggers from other plays]

<British Literature>

5. Callimachus's fourth hymn relates how this island was formed after the Titan Asteria fled Zeus's pursuit by diving into the Aegean Sea. For 10 points each:

[10m] Name this island in the Cyclades ("SICK-luh-dees"). Hera cursed Leto not to give birth on solid ground, so she delivered her children on this floating island, causing it to anchor.

ANSWER: **Delos**

[10e] Leto gave birth to these two Greek gods, who later slaughtered Niobe's children after she challenged Leto's fertility. These twin gods are the god of music and goddess of the hunt, respectively.

ANSWER: **Apollo** AND **Artemis** [accept in either order; accept **Apollon** or **Phoebus** in place of "Apollo"; do not accept or prompt on "Diana" in place of "Artemis"]

[10h] To make Leto's experience worse, Hera instructed this goddess of childbirth not to attend the birth. Galanthis distracted this goddess from preventing Alcmena's childbirth, leading to the births of Iphicles and Heracles.

ANSWER: **Eileithyia** [or **Ilithyia**; or **Eleuthia**; or **Ilithyiae**; or **Elvsia**]

<Mythology>

6. In 2004, Vassil Dobrev argued that one of these sculptural features, now located separately in the British Museum, was not an original part of the sculpture it comes from. For 10 points each:

[10h] Name this type of sculptural feature. After one of them detached from a sculpture in 2014, panicking museum workers hastily reattached it off-center with quick-drying epoxy glue.

ANSWER: ceremonial pharaonic **beards** [or **postiches**]

[10e] Long ceremonial beards decorate many sculptures from this civilization, though they have become detached from both its Mask of Tutankhamun and its massive sculpture of the Sphinx at Giza.

ANSWER: ancient **Egypt** [or word forms like **Egyptian**; or **kmt**]

[10m] The beard on the mask of Tutankhamun is decorated with gold and this rock, which was used for beads in the Indus Valley. A rare, bright pigment was derived from this rock that was mainly mined in Afghanistan.

ANSWER: **lapis lazuli** [accept **lazurite**]

<Painting/Sculpture>

7. Laura Arata's *Race in the Wild West* examines the Black water investor Sarah Bickford in this territory, whose mine towns were ruled by "Vigilantes" like "Stuart's stranglers" and Henry Plummer. For 10 points each:

[10m] Name this territory led by the Radical Republican James M. Ashley after Lincoln carved it from the Idaho Territory. Red Cloud's War was fought on the Bozeman trail from Wyoming to this birthplace of Jeannette Rankin.
ANSWER: **Montana** Territory [or Territory of **Montana**; or **MT**; accept **Montana** Vigilantes; accept *Race and the Wild West: Sarah Bickford, the Montana Vigilantes, and the Tourism of Decline, 1870–1930*]

[10h] John F. Stevens surveyed Montana for this railway led by James J. Hill, whose route crossed Marias Pass and Glacier National Park. Amtrak now operates this former competitor of Northern Pacific with a mountain goat logo.
ANSWER: **Great Northern** Railway [or **GN**; accept **Empire Builder**; accept **Burlington Northern** and Santa Fe or or **BNSF**]

[10e] Unlike most railroads, the Great Northern Railway hired few workers of this ethnicity murdered in the Rock Springs massacre. Idaho settler Polly Bemis was from this ethnic group that founded Butte's Pekin Noodle Parlor.
ANSWER: **Chinese**-Americans [or **Zhōngguó rén**; accept more specific answers such as **Hàn** or **Huárén** or **Huáqiáo**]

<American History>

8. The effective form of this quantity is equal to specific impulse times standard gravity. For 10 points each:

[10h] Name this quantity that, when multiplied by mass flow rate, yields thrust. This quantity multiplies the logarithm of the ratio of initial and dry mass in the Tsiolkovsky rocket equation.

ANSWER: effective **exhaust velocity** [or **v sub e**; prompt on **velocity** or **v** by asking "of what?"]

[10e] The effective exhaust velocity of these airbreathing engines can exceed their actual exhaust velocity by factors of over a hundred. These engines, whose subtypes include turbofans, are often used on large passenger aircraft.

ANSWER: **jet** engines

[10m] Designing a nozzle to over-expand the exhaust and increase its velocity causes "diamonds" of these phenomena to form. People experience sonic booms when these discontinuities are encountered.

ANSWER: **shock** waves [accept more specific answers such as **shock** diamonds or oblique **shocks** or bow **shocks**]
<Physics>

9. Simon Karlinsky analyzed how this author's repressed sexuality surfaced in his writings in his book *The Sexual Labyrinth of* [this author]. For 10 points each:

[10h] Name this possibly gay Russian author who burned the second part of his only novel a few days before he died horribly from an ascetic lifestyle that was prescribed to rid him of his "inner filth."

ANSWER: Nikolai **Gogol** [or Nikolai Vasilyevich **Gogol**] (The novel that he burned was the second part to *Dead Souls*.)

[10m] Karlinsky compares the "atrocious tortures" of Gogol's deathbed treatments to those undergone by Poprishchin, the protagonist of this Gogol story, who convinces himself that he is the king of Spain as he descends into insanity.

ANSWER: "**Diary of a Madman**" [accept "**Zapiski sumasshedshevo**"]

[10e] One of Gogol's last letters was to the priest who prescribed him his ascetic lifestyle, asking if they could "exchange" these clothing items. In another Gogol story, Akaky Akakievich is robbed of this title piece of clothing.

ANSWER: **overcoats** [accept "The **Overcoat**"; or **shinel**; accept "The **Cloak**"; prompt on **coats**]

<European Literature>

10. This framework models decision-making as beginning with an editing phase, where outcomes are ordered based on a heuristic. For 10 points each:

[10h] Name this framework, which centrally posits an S-shaped asymmetrical value function that is concave above a reference point and convex below.

ANSWER: **prospect theory**

[10e] Prospect theory was developed by Daniel Kahneman and Amos Tversky to account for discrepancies between experimental results and theoretical predictions based on this economic concept. This concept is defined as the value an agent receives from a good.

ANSWER: **utility** [accept expected **utility**]

[10m] This book by Daniel Kahneman outlines numerous heuristics and biases that depart from classical utility theory in positing a distinction between the instinctive “System 1” and the deliberate “System 2.”

ANSWER: **Thinking, Fast and Slow**

<Social Science>

11. This symphony opens with a slow introduction in D minor, which then proceeds to its first movement’s monothematic exposition. For 10 points each:

[10h] Name this symphony, which is sometimes nicknamed for the impresario Johann Peter Salomon. At its premiere, the composer of this symphony remarked with pleasure about his revenues of 4000 gulden.

ANSWER: **London** symphony [or **Haydn**’s symphony No. **104**]

[10e] Like the first movement of the *London* symphony, many of Haydn’s other works in this musical form have monothematic expositions, meaning that their first two themes are nearly identical. This Classical-era form’s other main sections are the development and recapitulation.

ANSWER: **sonata**-allegro form

[10m] Haydn’s 103rd symphony, whose finale has a monothematic exposition, is nicknamed for its opening solo by this instrument. Four notes by this instrument play softly at the start of Beethoven’s violin concerto.

ANSWER: **timpani** [or **kettledrums**; prompt on **drums**]

<Classical Music>

12. A. R. Kapila and Fitz de Souza helped defend a group of nationalists during this conflict. For 10 points each:

[10m] Name this uprising, during which the Kapenguria Six were arrested. Field Marshal Muthoni was the highest ranking woman to fight in this conflict, which was suppressed through Operation Anvil and Operation Jock Scott.

ANSWER: **Mau-Mau** uprising [or **Mau-Mau** rebellion; or **Mau-Mau** revolt; accept, but DO NOT REVEAL, **Kenya Emergency**]

[10e] The Mau-Mau uprising took place in what is now this modern-day country, where the Kapenguria Six were taken away from Nairobi.

ANSWER: **Kenya** [or Republic of **Kenya** or Jamhuri ya **Kenya**; accept **Kenya** Colony or British **Kenya** or The Colony and Protectorate of **Kenya**; prompt on **British East Africa**]

[10h] Kenyan natives were forbidden from settling in this fertile region, fueling resentment that culminated in the Mau-Mau uprising. This area in Kenya’s central uplands was reserved exclusively for Europeans.

ANSWER: **White Highlands**

<World History>

13. While he waits out a blizzard in the 1925 film *The Gold Rush*, Charlie Chaplin performs this specific action before Big Jim hallucinates that Chaplin is a chicken and a bear enters the cabin. For 10 points each:

[10h] Identify this specific action famously performed by Werner Herzog after he lost a bet that Errol Morris would not complete his documentary about pet cemeteries, *Gates of Heaven*.

ANSWER: **eating a shoe** [accept similar answers like **consuming a boot** or **cooking footwear** or **boiling a shoe**; accept *Werner Herzog Eats His Shoe*; prompt on **eating** or **cooking** or similar answers by asking “eating what?”]

[10e] Unlike modern footwear, most older shoes and boots were edible because they were made from this material created by liming, tanning, and currying animal skins.

ANSWER: **leather** [accept **suede**; accept **nubuck**; accept patent **leather** or other specific types; prompt on **rawhide** or **cowhide** or **horsehide** or similar]

[10m] Before the Industrial Revolution, lucrative leather tanning pits surrounded this English city’s Bull Ring Market. The “Midlands Enlightenment” occurred around this city, whose street gangs inspired *Peaky Blinders*.

ANSWER: **Birmingham**

<CE/Geo/Other/Pop Culture>

14. In Rabih Alameddine’s *An Unnecessary Woman*, Aaliya mocks this author’s iceberg theory by saying that his story “Hills Like White Elephants” is “more like the tip of an ice cube, if you ask me.” For 10 points each:

[10e] Name this author of the six-word story “For sale: baby shoes, never worn.” He also wrote the novel *The Old Man and the Sea*.

ANSWER: Ernest **Hemingway** [or Ernest Miller **Hemingway**]

[10m] Aaliya discusses Hemingway’s use of the phrase “let the air out” in “Hills Like White Elephants” to suggest this action. In *The Cider House Rules*, Wilbur Larch secretly performs these actions at St. Cloud’s Orphanage.

ANSWER: **abortions** [or equivalents like **terminating a pregnancy**]

[10h] Aaliya, who secretly works in this profession, praises Constance Garnett by quoting Walter Benjamin’s essay titled “The Task of the [this profession].” Other members of this profession include Alfred Birnbaum and Jay Rubin.

ANSWER: **translator** [or word forms like **translate**; accept “The Task of the **Translator**” or “Die Aufgabe des **Übersetzer**”; prompt on **writer** or **author** or equivalents]

<American Literature>

15. In this technique, gating is used to subset the data, which is then plotted two-dimensionally to compare the co-expression of two markers. For 10 points each:

[10m] Name this technique in which cells are stained with fluorescently-conjugated antibodies or dyes, then streamed one-at-a-time through an apparatus that contains a series of lasers.

ANSWER: **flow cytometry** [accept **FACS** or **fluorescence-activated cell sorting**; prompt on **flow** or **cytometry**]

[10e] The dye DAPI (“DAH-pee”), which is used to stain DNA in flow cytometry, glows with this color. Human color vision is based on cones sensitive to green, red, and this third primary color.

ANSWER: **blue**

[10h] A key step in flow cytometry is using a height-versus-area curve to exclude these things, which tend to occur more when the flow rate is increased.

ANSWER: **doublets** [or **multiplets**; or **aggregates**; accept any answer that indicates multiple cells **clumped** together]

<Biology>

16. Princess Prabhavati served as regent of the Vākāṭaka lands in this empire, which venerated the bodhisattva Mañjuśrī according to the Chinese explorer Fāxiān (“fah-shyen”). For 10 points each:

[10m] Name this classical empire that conquered the Saka Kshatrapas under Samudra’s son, who was idealized as Vikramāditya. Licchavi noblewomen married into this dynasty, per one of the pillars built by an earlier empire.

ANSWER: **Gupta** Empire [accept Chandragupta II or Samudragupta or Prabhavati**gupta**] (The pillar was the Allahabad Pillar built by the Mauryan Empire.)

[10h] A group with this name at Chandragupta II’s court in Ujjain included the lexicographer Amarasimha and the astronomer Varāhamihira. Faizi, Tansen, and Birbal joined a later set of luminaries with this name in Akbar’s court.

ANSWER: **Nine Gems** [or **Nine Jewels**; or **Navaratnas**; prompt on partial answers]

[10e] A few generations after the Nine Gems, the Gupta astronomer Āryabhaṭa created the place-value system as a precursor of this concept developed by Brahmagupta. This placeholder arose independently in Maya numerals.

ANSWER: **zero** [or equivalents such as **null**]

<Other History>

17. A holiday celebrating these objects was used as a date to determine whether these objects were considered *orlah*, and thus unable to be used. For 10 points each:

[10h] Name these objects that include one used to represent the ten Sefirot in a common diagram. The holiday Tu BiShvat is described as being a “new year” for these objects.

ANSWER: **trees** [accept specific trees such as fruit **trees**; accept **Tree** of Life; prompt on **fruit** by asking “as part of what object?”]

[10m] The custom of hosting a seder with fruit on Tu BiShvat came from Isaac Luria, who founded a major school in this religious tradition. The Tree of Life, which depicts ten Sefirot, also comes from this tradition.

ANSWER: **Kabbalah** [do not accept or prompt on “Judaism”]

[10e] While Tu BiShvat is described as a new year for trees in the Mishnah, this holiday is typically considered the main Jewish new year. This holiday starts the High Holy Days.

ANSWER: **Rosh Hashanah**

<Religion>

18. Decreasing the particle diameter in this technique doubles the efficiency, but drastically increases the backpressure. For 10 points each:

[10m] Name this form of chromatography in which the mobile phase moves through a tightly-packed bed in a column at pressures of hundreds of atmospheres.

ANSWER: **HPLC** [or **high pressure liquid chromatography** or **high performance liquid chromatography**; prompt on liquid **chromatography** or **LC** or column **chromatography**]

[10h] All chromatography runs into this problem, in which setups that resolve early peaks often make it difficult to resolve late peaks, and vice versa. In HPLC, using a gradient in the mobile phase can help solve this problem.

ANSWER: **general elution** problem [prompt on **elution** problem]

[10e] A common mobile phase in HPLC includes this simplest alcohol, whose chemical formula is CH₃OH (“C-H-3-O-H”).

ANSWER: **methanol** [or **methyl alcohol** or **wood alcohol**]

<Chemistry>

19. In his book titled for a form of this concept, Jack Halberstam criticized Paul Smith for ignoring one form of it in favor of studying supposedly “larger” issues of general privilege. For 10 points each:

[10h] Name this concept. Raewyn Connell proposed that there are multiple forms of this concept throughout history, such as a “complicit” form that doesn’t challenge dominant trends, in a 1995 book titled for it.

ANSWER: **masculinity** [or **masculine**; accept **manliness**; accept **machismo**; accept *Female Masculinity*; accept **Masculinities**; accept, but DO NOT REVEAL, hegemonic **masculinity**; prompt on being **male** or synonyms]

[10e] Masculinity is studied in queer theory in relation to this concept. In their book on this concept’s “Trouble,” Judith Butler argued that it is a social construct and mostly performative.

ANSWER: **gender** [accept **Gender Trouble**]

[10m] Inspired by Antonio Gramsci, Connell used this word to refer to cultural practices that legitimize men and masculinity as dominant. This word refers to a power that exerts high political or cultural influence on society.

ANSWER: **hegemony** [or **hegemonic**; accept **hegemonic** masculinity; accept cultural **hegemony**]

<Philosophy>

20. Answer the following about drum accompaniments to West African poetry, for 10 points each.

[10e] Talking drums often accompany “praise singers” called griots, who orally preserved many poems from this West African empire, including the *Epic of Sundiata*.

ANSWER: **Mali** Empire [or **Manden** Kurufaba or **Mandé**]

[10m] Critics like Renée Tillot have connected traditional drumming to the rhythm of Léopold Senghor’s poems written as part of this movement. Aimé Césaire co-founded this francophone movement.

ANSWER: **Négritude**

[10h] The parenthetical instruction “with drum accompaniment” opens this writer’s poem “Elegy for Alto.” This author of *Heavensgate* died while fighting in the Biafran War.

ANSWER: Christopher **Okigbo** [or Christopher Ifekandu **Okigbo**]

<World Literature>

21. The best meals don’t just taste good, they also prevent you from dying. For 10 points each:

[10e] Hindu devas attain immortality from the amritā that they got the asuras to recover during the “Churning of the Ocean of [this foodstuff].” South Asian cuisines use dahi, paneer, and ghee made from this animal product.

ANSWER: **milk** [or **doodh**; accept Ocean of **Milk** or **Kṣīra** Sāgara; prompt on **dairy** or clarified **butter** or **yogurt** or **curd** or **cheese** or other dairy products by asking “what natural substance is it made from?”]

[10m] “Amritā” is a cognate of this delicacy served by Hebe, which confers immortality upon the Greek gods. A 1950s-era marshmallow salad is named for this stuff, which Tantalus steals along with nectar in some myths.

ANSWER: **ambrosia**

[10h] *Two answers required*. In Mesopotamian myth, Adapa suspects that Anu is trying to trick him into consuming these two substances “of death,” so he misses out on gaining immortality from these two substances “of life.”

ANSWER: **bread** AND **water** [accept **bread** of life AND **water** of life or **bread** of death AND **water** of death; accept answers in either order; accept **H₂O** (“H-2-O”) in place of “water”]

<Mythology>