

2022 Winter Closed

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Packet K

Tossups

1. **In microeconomics, either this process or an economist names a symmetric matrix of partial derivatives that can be shown via Shephard's lemma to be negative semidefinite. In real business cycle models, wage changes cause laborers to engage in an "intertemporal" form of this process. This process never happens with a Leontief production function because its isoquants are L-shaped. The ratio of marginal products for two factor inputs defines the (*) marginal rate of this process. The derivative of Hicksian demand with respect to price gives an effect named for this process, which the Slutsky equation relates to the income effect. The ease of this process is measured by a namesake elasticity that is high for pairs like butter and margarine. For 10 points, complementary goods are the opposite of goods named for what process that can be easily interchanged?**

ANSWER: **substitution** [or word forms like **substitute**; accept the **substitution** effect; accept **substitute** goods; accept intertemporal **substitution** or technical **substitution**; accept the (Slutsky) **substitution** matrix; prompt on synonyms like **trading off** or **replacement**]

<Morrison, Social Science>

2. **In an equation named for this scientist, the change in the product of blade speed and tangential fluid velocity gives the work done per unit mass by turbomachinery. Flow analysis that considers pressure differences between points makes use of a dimensionless number named for this scientist given by the ratio of pressure forces to inertial forces. This scientist's description of fluids emphasizes fields rather than individual particles. This scientist is the alphabetically first in the name of an equation that is solved to obtain (*) trajectories for which the system's action is stationary. An equation named for this scientist, which can be integrated to demonstrate Bernoulli's principle, is the zero-viscosity case of the Navier–Stokes equations. For 10 points, what mathematician and physicist names the base of the natural logarithm?**

ANSWER: Leonhard **Euler** ("OY-lur")

<Morrison, Physics>

3. **A 2019 history of this region by Richard Eaton discusses its medieval culture focusing on linguistic rather than religious distinctions. A 1768 translation of a history of this region into English likely influenced a work that criticized this region's culture despite its author, James Mill, never visiting it. The treatise *Minute on Education*, which supported teaching the English language to this region's inhabitants, was written by Thomas Babington Macaulay. An 11th-century history of this region was written by (*) al-Biruni, who sought to understand the conflicts between its peoples' majority religion and Islam. In the 2019 book *The Anarchy*, William Dalrymple described the conquest of this region after the victories of Robert Clive and the death of Aurangzeb. For 10 points, much of what region was conquered by the British Empire after the decline of the Mughals?**

ANSWER: **India** [accept al-**Hind** or **Hindustan**; accept **South Asia**; prompt on **Bengal** by asking "what larger region is it part of?"] (The book mentioned in the first line is *India in the Persianate Age*. The history mentioned in the second line was by Ferishta.)

<Raje, Other History>

4. **A man from this state murders a dwarf embodying his conscience after steering his Aunt Mary to chastise him merely for smoking in a story titled for a “Recent Carnival of Crime.” While living in this state’s Nook Farm area with his wife Olivia Langdon, an author hired Louis Comfort Tiffany to decorate his house, now a historic museum. In a novel, a man from this state mumbles to himself while dreaming of a call with a telephone operator, inspiring his wife (*) Sandy to name their baby “Hello-Central.” That man from this state fixes a leak in a fountain in the Valley of Holiness and narrowly avoids being burned alive by prophesying (“PROFF-uh-sigh-ing”) a solar eclipse. In that novel, a crowbar blow to the head knocks out an engineer from this state, who awakens in Camelot. For 10 points, in a Mark Twain novel, Hank Morgan is the title “Yankee in King Arthur’s Court” from what state?**

ANSWER: **Connecticut** [or **CT**; accept “The Facts Concerning the Recent Carnival of Crime in **Connecticut**”]; accept *A **Connecticut** Yankee in King Arthur’s Court*]

<Morrison, Misc. Literature>

5. **In 2020, Angela Hewitt became the first woman to win an award for interpreting the music of this composer, who also names a Japanese “collegium” led by Masaaki Suzuki. Karl Richter’s serious approach to this composer’s music is decried in John Eliot Gardiner’s biography of him, subtitled *Music in the Castle of Heaven*. Self-criticism of a performer’s handling of a piece by this composer led that performer to (*) re-record it digitally in 1981. A silhouette image of Leopold Stokowski conducts his orchestration of one of this composer’s pieces at the beginning of the film *Fantasia*. Ferruccio Busoni’s (“fair-ROO-cho boo-ZO-nee’s”) transcriptions of this composer’s works include his *Italian Concerto* and a D minor chaconne (“sha-KUN”) originally written for solo violin. For 10 points, Glenn Gould twice recorded what composer’s *Goldberg Variations*?**

ANSWER: **Johann Sebastian Bach** [or **J. S. Bach**; prompt on **Bach**]

<Golden, Classical Music>

6. **Two answers required. These two figures are spoofed in a Lilian Hellman-inspired short film by Peter Spears that resulted in a cease-and-desist order. In 2018, Mark Saltzman claimed that the dynamic between these two characters was inspired by his relationship with Arnold Glassman. The Jack Hunter work *Moment of Joy*, which shows these two characters watching TV, was used for the cover of a *New Yorker* article about (*) Proposition 8, to the fury of these characters’ creators. It is debated whether these characters’ names were inspired by a policeman and a cab driver from *It’s a Wonderful Life*. One of these characters sang “Doin’ the Pigeon,” while the other sang about a “yellow and chubby” bath toy in “Rubber Ducky.” Frank Oz and Jim Henson were the original portrayers of, for 10 points, what pair of Muppets that *Sesame Street* claims are “best friends?”**

ANSWER: **Bert** AND **Ernie** [accept in either order]

<Lo, Other Academic>

7. **This poet praised “truths that wake, / To perish never” in a poem that compares a child to a “little Actor” who fills his “humorous stage” with characters “as if his whole vocation / Were endless imitation.” A poem by this author describes “wreaths of smoke / Sent up, in silence, from among the trees!” This poet asked, “Whither is fled the visionary gleam?” and described a time when “meadow, grove, and stream... to me did seem / (*) Apparelled in celestial light” in a poem subtitled for “Recollections of Early Childhood.” A poem by this author describes a “mansion for all lovely forms” in a section addressed to his “dear, dear Sister.” That poem begins, “Five years have past; five summers, with the length / Of five long winters!” and was “Composed a Few Miles Above” the title building. For 10 points, name this poet of “Ode: Intimations of Immortality” and “Tintern Abbey.”**

ANSWER: William **Wordsworth**

<French, Poetry>

8. *Original-language term required.* **Ganachakra** feasts were part of this tradition, which produced texts using a “twilight language.” Shambhala kingdom and controversial passages about a holy war with *mleccha* (“MLET-cha”), or “barbarians,” appear in the *Kalachakra* named for this tradition that is a favorite of the Dalai Lama. The Nyingma school classifies the last six of the nine Buddhist vehicles as “inner” and “outer” kinds of this tradition. This antinomian, “left-handed” tradition influenced (*) Vajrayana Buddhism. It’s not *yoga*, but this tradition is the origin of a snakelike, coiled energy called *kundalini* and the energy centers it passes through, the *chakras*. Shiva and Shakti may be depicted on mystical diagrams from this tradition called *yantras*. For 10 points, name this esoteric Hindu and Buddhist tradition that also names sexual rituals popularized by the New Age movement.

ANSWER: tantra [or word forms like tantric; accept *Kalachakra Tantra*; accept Neotantra; accept Tantric Buddhism; prompt on Tibetan Buddhism; prompt on Vajrayana Buddhism]

<A. Koyal, Religion>

9. 1,2-dichloroethane (“1-2-di-chloro-ethane”) is the preferred solvent for synthesizing this functional group using the reagent STAB. One reaction begins by oxidizing this functional group, proceeds through a five-membered cyclic transition state, and ends when this functional group is eliminated with a *syn*-periplanar (“sin-peri-PLAY-nar”) beta-hydrogen. New instances of this functional group are synthesized by starting with this functional group and treating it with a carbonyl and sodium cyanoborohydride (“cyano-boro-hydride”). Exhaustive methylation converts this functional group to a good leaving group in the (*) Hofmann elimination. On infrared spectra, the stretching bands of the primary and secondary type of this functional group overlap with the O–H stretch band. Reduction of a nitrile gives this functional group. For 10 points, name this functional group in which substituents replace hydrogens in ammonia.

ANSWER: amine (The first and third sentences refer to reductive amination. STAB is sodium triacetoxyborohydride. The second sentence refers to the Cope elimination.)

<Settle, Chemistry>

10. Donaldina Cameron was known as the “White Devil” of one of these places for her efforts to maintain the Occidental Board Mission House. Assassins who patrolled these places were either known as “highbinders” for their hairstyle or “hatchetmen” for the method used to dispose of their victims. The creation of these places was funded by the CCBA, also called the “Six Companies.” Members of the Workingmen’s Party almost destroyed one of these places on Stockton Street after being spurred on by (*) Denis Kearny. These places saw fighting between the Hip Sing and On Leong during the Tong Wars. San Francisco is home to the oldest one of these places in the US, which were raided in search of prostitution rings and opium dens. For 10 points, name these immigrant neighborhoods whose populations were the subject of an 1882 exclusion act.

ANSWER: Chinatowns [accept San Francisco’s Chinatown; accept Chinese neighborhoods; prompt on ethnic neighborhoods by asking “of what specific ethnicity?”]

<Parameswaran, American History>

11. Dolly Parton names one of these organisms found on North Carolina’s Hangover Mountain. These organisms name an inflammatory skin condition that presents as purplish, flat-topped bumps. The characteristic red protrusions of one of these organisms in the *Cladonia* genus has given it the common name “British soldiers.” Fragile parts of these organisms called *soredia* and *isidia* can be dispersed by wind. During the winter, (*) reindeer primarily subsist on one of these organisms. Dyes extracted from these organisms are used to make litmus. The growth forms of these organisms can be classified as crustose, foliose, and fruticose. These organisms have a photobiont layer interspersed between two layers of hyphae networks. For 10 points, name these organisms, a symbiotic relationship between fungi and cyanobacteria or algae.

ANSWER: lichens

<A. Koyal, Biology>

12. In a song titled for a place of this type, the singer “lays down” his “sword and shield” and claims they “ain’t gonna study war no more.” A collection of songs titled for one of these places contains 26 songs that Woody Guthrie wrote in a month for the federal government. For the soundtrack to *O Brother, Where Art Thou?*, Alison Krauss asks, “Who shall wear the starry crown?” in her cover of a traditional song about going to one of these places to (*) pray. Controversially, the state song of Florida is a minstrel song by Stephen Foster about one of these places titled “Old Folks at Home.” Paul Robeson performed an iconic rendition of a song from the musical *Show Boat* that personifies one of these places as an “Ol’ Man.” For 10 points, what kind of place titles George Gershwin’s “Swanee” and the spiritual “Roll, Jordan, Roll?”

ANSWER: rivers [accept “Down by the Riverside”; accept *Columbia River Songs*, *Columbia River Collection*, or *Columbia River Ballads*; accept “Down to the River to Pray”; accept the Swanee River; accept “Ol’ Man River”; prompt on the Columbia, Swanee, or Jordan until read]

<Golden, Other Arts>

13. During this decade, the Mexican president’s brother-in-law José Ruiz Massieu was assassinated in broad daylight, for which the president’s brother Raúl was later convicted. During this decade, presidential candidate Luis Donaldo Colosio gave a speech distancing himself from predecessor Carlos Salinas de Gortari, and Colosio was assassinated shortly afterwards. During this decade, a devaluation of the currency that resulted in massive capital flight known as the December Mistake was carried out by newly elected president (*) Ernesto Zedillo (“seh-DEE-yo”). A free trade agreement during this decade sparked an uprising led by Subcomandante Marcos in Chiapas. This decade was the last one during which the Mexican presidency was completely held by the PRI, as Vicente Fox was elected president immediately after. For 10 points, name this decade during which NAFTA was signed.

ANSWER: 1990s [prompt on the ’90s]

<Raje, World History>

14. A woman from this play is compared to Miranda from *The Tempest* in an essay that quotes a remark that her name is “Earth and heaven combined.” In this play, a king discovers his son trying to count the number of teeth of a lion. A figure’s eight forms are praised in a “Benediction Upon the Audience” from this play’s prologue, during which an actress sings a song about summer upon an actor-manager’s request. This play’s male lead spares a (*) deer while hunting in a forest during the first of its seven acts. After the title heroine of this play fails to help a short-tempered sage visiting her monastery, she suffers a curse only broken when a fisherman discovers her signet ring within the belly of a fish, causing her husband, the king Dushyanta, to remember her. For 10 points, a story from the *Mahābhārata* (“muh-huh-BAH-ruh-tuh”) inspired what play by Kālidāsa?

ANSWER: *The Recognition of Shakuntala* [or *Shakuntala*; or *The Sign of Shakuntala*; or *Abhijnanashakuntalam*; accept answers with Sakuntala in place of “Shakuntala”] (The first sentence refers to Rabindranath Tagore’s essay “Shakuntala,” which quotes Goethe’s epigram about the play.)

<R. Keyal, Drama>

15. The nasal cavity of a representation of this deity is lined with red thorny oyster shells; that turquoise mosaic skull is housed at the British Museum. A mermaid, whale, and turtle assisted a wind god sent by this deity to retrieve music from the Sun. This god's love of music was evident during Tōxcatl ("TOHSH-ka-tull"), when this god's human personification ascended steps while playing the flute. For making a smoky fire that disturbed the stars, Tata and Nene were turned into dogs by this god. Codices often depicted this "Lord of the (*) North" with black stripes. This deity caused the expulsion of one rival from Tula by tricking the latter into drinking pulque ("PULL-kay"). In creation myths, this god used his foot as bait to defeat Cipactli and then replaced that foot with obsidian. For 10 points, name this Aztec jaguar god nicknamed "smoking mirror."

ANSWER: Tezcatlipoca ("tess-kaht-lee-POH-kah") [accept Red Tezcatlipoca or Tlatlauhqui Tezcatlipoca]
<Parameswaran, Mythology>

16. Greenwich ("GREN-itch") Village is renamed amid a slew of these events stretching into the 2090s in the final section of Hanya Yanagihara's novel *To Paradise*. In a 2014 novel, an ex-paparazzo first learns of one of these events after failing to perform CPR on an actor who has a heart attack while playing King Lear. As one of these events winds down in another novel, a formerly suicidal recluse grows paranoid, shuts himself in his apartment, and kills a (*) dog while firing his gun into the street. One of these events provides the setting of Emily St. John Mandel's novel *Station Eleven*. Cottard evades arrest and profits as a smuggler amid one of these events, which is interpreted as an act of God in a pair of sermons delivered by Father Paneloux ("pan-LOO"). For 10 points, Dr. Bernard Rieux works to stave off what title event that besets Oran, Algeria in an Albert Camus novel?

ANSWER: pandemic [or epidemic; or plague; accept disease or virus or similar answers; accept influenza or the Georgia flu; accept *La Peste*; prompt on lockdown or quarantine]
<Morrison, Long Fiction>

17. A September 2021 article by Zhang et al. on 200,000-year-old footprints made in this region sparked debate over whether it was the oldest known art. Wandering monks in this region paint *tsakli* miniatures. This region's capital city contains a gilded statue topped by a bejeweled crown known as Jowo. A myth from this region about an inability to offer flowers to a visiting princess prompted the tradition of creating butter sculptures known as (*) *torma*. Either appliqué ("ah-plee-KAY") or oil paint is used to create scroll artworks in this region known as *thangka* ("TAHNG-kah"). Wood-block printing is used to etch religious verses onto prayer flags and wheels made in this region. This region is home to a type of artwork made out of sand that is destroyed immediately after creation. For 10 points, name this region whose people create mandalas and venerate the Dalai Lama.

ANSWER: Tibet [or Tibet Autonomous Region; or Xizang Autonomous Region; prompt on the Himalayas]
<Parameswaran, Painting and Sculpture>

18. This movement prioritizes schizophrenia over paranoia and the Holy Ghost over God the Father, according to a "Table of Differences" in Ihab Hassan's *The Dismemberment of Orpheus*. A book titled for this movement claims that it is characterized by a "new kind of flatness" after comparing Van Gogh's *Peasant Shoes* to Andy Warhol's *Diamond Dust Shoes*. Jean Bricmont and Alan Sokal criticized this movement for misusing (*) science in their book *Fashionable Nonsense*. Fredric Jameson described this movement as "the Cultural Logic of Late Capitalism." Jean-François Lyotard ("lee-oh-TAR") wrote that this movement was characterized by an "incredulity towards metanarratives." For 10 points, post-structuralists like Gilles Deleuze ("zheel duh-LOOZ") and Jean Baudrillard ("bo-dree-YARR") exemplify what broad mid-to-late 20th-century movement that critiques its predecessor?

ANSWER: postmodernism [reject "modernism"]
<Kulkarni, Philosophy>

19. **The air density inside these devices is increased by using [emphasize] *other* devices that typically have a twin scroll design with two wastegates. The performance of these devices is improved by VVT and VVL, which in simple implementations just switches between two cam profiles. In these devices, IVO occurs a few degrees before top dead center, and IVC occurs a few degrees after bottom dead center due to the “ram effect.” In the United States, the working fluid of these devices is rated with the (*) “R plus M over two” method, with higher ratings necessary for higher compression ratios. End gas autoignition in these devices can lead to abnormal oscillations in cylinder pressure that causes a loud “knocking” sound. These devices are ignited by compression or by spark plugs. For 10 points, name these devices that generate mechanical energy by burning fuel within.**

ANSWER: **internal combustion engines** [or **IC engine** or **ICE**; accept **Otto engine**; or **Diesel engine** or **two-stroke engine** or **four-stroke engine** or **compression-ignition engine** or **spark-ignition engine**; prompt on **combustion engines**; prompt on **engines** or **car engines** by asking “what type of engine?”; prompt on **pistons**, **valves**, **cylinders**, or **turbochargers** by asking “are a part of what larger devices?”] (The first sentence refers to turbochargers.)

<Settle, Other Science>

20. **The most comprehensive analysis of this treaty was produced by Kenneth H. F. Dyson and Kevin Featherstone, who noted the influence of the Werner Report. Alan Sked, a leading figure in the Bruges (“broozh”) Group and founder of the Anti-Federalist League, led opposition to this treaty, which was the subject of a judicial challenge by William Rees-Mogg. One world leader proclaimed “game, set, and match” after negotiating a provision of this treaty with Jacques Delors. Building upon the earlier Treaty of (*) Brussels, which united “atomic energy” and “coal and steel” communities, this treaty established “three pillars” that were later dismantled in 2009 by the Treaty of Lisbon. Convergence criteria named after this city requires the countries that signed it to keep deficits below 3 percent of their GDP. For 10 points, the European Union was established by what 1992 treaty that is named after a Dutch city?**

ANSWER: **Maastricht** Treaty

<Parameswaran, European History>

Bonuses

1. A 1744 marriage alliance between the families of an emir and a religious reformer formed the cultural basis for this state in its attempt to unify Arabia. For 10 points each:

[H] Name this state based in Nejd whose conservative interpretation of Islam was marked by desecration of tombs and expansion of the Hanbali school of jurisprudence.

ANSWER: Emirate of **Diriyah** [or **First Saudi** State; prompt on **Saudi** State; reject “Saudi Arabia”] (The emir was Muhammad bin Saud and the religion reformer was Muhammad ibn Abd al-Wahhab.)

[M] As part of their opposition to Shia Islam, the Saudis sacked this city in modern Iraq where Ali’s grandson Husayn was martyred.

ANSWER: **Karbala**

[E] The First Saudi State was ended by forces under Muhammad Ali after angering the Ottomans by conquering Medina and this other Arabian city, the holiest in Islam.

ANSWER: **Mecca**

<Raje, Other History>

2. In this film, Alma delivers an explicit monologue about a sexual encounter at the beach. For 10 points each:

[M] Name this experimental 1966 film directed by Ingmar Bergman. In a shot from this film, the faces of the central characters, a mute actress and her nurse, are superimposed on top of one another.

ANSWER: **Persona**

[E] In an iconic scene from Bergman’s *The Seventh Seal*, a knight plays this game with Death while at a beach. A child prodigy at this game is the subject of the film *Searching for Bobby Fischer*.

ANSWER: **chess**

[H] This is the first word in the title of a Bergman movie in which Harriet Andersson plays Monika, who runs away to the beach with her boyfriend. This word modifies “night” in the title of a Bergman comedy that climaxes in four new couples forming at a country house.

ANSWER: **summer** [or **sommar**; accept **Summer** with *Monika*; accept *Smiles of a Summer Night*; accept **Sommaren** med *Monika*; accept **Sommarnattens leende**; reject “Midsommar”]

<Golden, Other Arts>

3. *Two answers required.* In Joanna Macy’s translation of the sonnet “Go to the Limits of Your Longing,” God commands “Let everything happen to you,” then lists these two concepts and says “Just keep going. No feeling is final.” For 10 points each:

[H] Identify these two concepts. An elegy says that the first of these two concepts “serenely disdains to annihilate us” after defining it as “nothing but the beginning” of the second of them, “which we are still just able to endure.”

ANSWER: **beauty** AND **terror** [accept **Schönheit** or **Schöne** in place of “beauty”; accept **Schrecken** or **Schrecklichen** in place of “terror”]

[E] This German-language poet meditated upon beauty and terror throughout his ten mystical *Duino Elegies*.

ANSWER: Rainer Maria **Rilke**

[M] Rilke wrote “there is much beauty everywhere” and described “our terrors [and] abysses” in this set of epistles addressed to the cadet Franz Xaver Kappus, whom he advises to “go into yourself” and “live the questions now.”

ANSWER: **Letters to a Young Poet** [or **Briefe an einen jungen Dichter**]

<R. Keyal, Poetry>

4. These devices are attached to measurement instruments called radiosondes (“radio-sonds”). For 10 points each:
[E] Name these hydrogen- or helium-filled devices launched into the atmosphere to record data for use in meteorological models.

ANSWER: weather **balloons** [or sounding **balloons**]

[M] Radiosondes record temperature and this quantity at mandatory pressure levels. This quantity is plotted on the y-axis of psychrometric charts.

ANSWER: **humidity** [accept relative or absolute or specific **humidity**]

[H] Atmospheric sounding data is typically plotted on these graphs. The fixed lines on these graphs include curved lines for moist and dry adiabats (“AY-dee-uh-bats”), horizontal isobars, and 45-degree isotherms.

ANSWER: **skew-T** plots [or **skew-T log-P** diagrams]

<Settle, Other Science>

5. In 2009, Samoa declared a 2-day holiday and 3-day ban on alcohol sales in order to implement this policy. For 10 points each:

[H] Describe this policy that was intended to align Samoa more closely to its neighbors in Oceania and reduce the cost of imports through buying from Australia and New Zealand rather than the US.

ANSWER: **switching the side of the road** for driving [or switching from **driving on the right side to the left side** of the road; or equivalents; prompt on more general answers that mention **driving** or **cars**]

[E] Many countries that drive on the left such as Australia and India do so because they were colonies of this country.

ANSWER: **United Kingdom** [or **UK**; accept **Great Britain**; accept **British** Empire]

[M] This territory is the only part of the US with left-hand traffic, both as a holdover from its time as a Danish colony and because of its proximity to many former British territories.

ANSWER: United States **Virgin Islands** [or **Virgin Islands** of the United States; accept **USVI**]

<Raje, Other Academic>

6. Elisabetta Sirani wears a laurel wreath in a 1658 self-portrait as this figure. For 10 points each:

[H] Name this figure. Sketches by Cesare (“CHEZZ-ah-ray”) Ripa inspired a different self-portrait as this figure that depicts its subject in profile wearing a necklace of a mask pendant.

ANSWER: **Painting** [or *La Pittura*; accept *Self-Portrait as the Allegory of Painting* or *veste di Pittura*]

[M] This artist was inspired by Ripa’s sketches to create the *Self-Portrait as the Allegory of Painting*. At age 17, this artist painted a nude woman blocking out the faces of two elderly men in *Susanna and the Elders*.

ANSWER: Artemisia **Gentileschi** (“jen-tee-LESS-kee”)

[E] Artemisia Gentileschi painted *Self-Portrait as the Allegory of Painting* while accompanying her father Orazio to this country. Anthony van Dyck painted this country’s king Charles I “at the Hunt.”

ANSWER: **England** [accept **Scotland**; prompt on **United Kingdom** or the **UK** or Great **Britain**]

<Parameswaran, Painting and Sculpture>

7. To increase airflow, these structures are bridged by collateral passageways known as pores of Kohn. For 10 points each:

[E] Identify these basic units of respiration. These thin-walled cavities are located in the lungs, coated by surfactant, and lined by capillaries to facilitate gas exchange with the blood.

ANSWER: pulmonary **alveoli** [or **alveolus**]

[M] Along with the “respiratory” type of these structures, the alveoli form the functional parenchyma (“puh-RANK-uh-muh”) of the lung. In contrast to the larger cartilaginous airways, these terminal passageways lack cartilage.

ANSWER: **bronchioles** [accept respiratory or terminal **bronchioles**]

[H] *Two answers required.* Complete obstruction of an alveolus can lead to shunting, in which the ratio between these two values is locally zero. The ratio between these values, which is typically around 0.8, can be “mismatched” in various pathologies.

ANSWER: **ventilation** AND **perfusion** [or **V** AND **Q**; accept **V/Q** mismatch]

<Naveh-Benjamin, Biology>

8. Oswald Spengler proposed a “Copernican” view of this thing by studying “organisms” that he named Apollonian, Magian, and Faustian. For 10 points each:

[M] Name this thing. Another philosopher wrote, “the owl of Minerva spreads its wings only with the falling of the dusk” in a work that describes this thing as a process by which the Spirit discovers its own freedom.

ANSWER: **history** [or world **history** or **geschichte** or **weltgeschichte**; accept *Lectures on the Philosophy of History*]

[E] The description of history in terms of the World-Spirit comes from this philosopher’s *Lectures on the Philosophy of History*, which employs the dialectical method he laid out in his *Phenomenology of Spirit*.

ANSWER: Georg Wilhelm Friedrich **Hegel**

[H] This philosopher presaged Hegel by focusing on the “innerness” of historical individuals in *This Too a Philosophy of History*. This philosopher explored the dependence of thought on language in his *Treatise on the Origin of Language*.

ANSWER: Johann Gottfried von **Herder**

<French, Philosophy>

9. Sinkholes around this body of water known as *foibe* (“FOY-bay”) name a series of World War II massacres commemorated on February 10. For 10 points each:

[H] Name this body of water, which was the namesake of an early-20th-century “question” concerning land in the Julian March.

ANSWER: **Adriatic** Sea

[M] After World War I, this city on the Adriatic Sea became independent of Austria-Hungary and was declared a free territory. The 1975 Treaty of Osimo (“OH-zee-mo”) officially ended the dispute over this city between Italy and Yugoslavia.

ANSWER: **Trieste**

[E] On the Adriatic Sea, Gabriele D’Annunzio established the Regency of Carnaro, a state that practiced a precursor to this ideology. This militaristic ideology was promoted by Italian dictator Benito Mussolini.

ANSWER: **fascism** [or **fascist**]

<Parameswaran, European History>

10. An essay titled for this system remarks that “To live is the rarest thing in the world. Most people exist, that is all” after imagining a time when “we shall have true, beautiful, healthy Individualism.” For 10 points each:

[H] Name this title system of an essay that describes how people “swallow their classics whole, and never taste them.” Michael Walzer attributed the quip that this system “would take too many evenings” to that essay’s author.

ANSWER: **socialism** [accept “The Soul of Man under **Socialism**”]

[E] This Irish author endorsed socialism as a way of strengthening artistic individualism in “The Soul of Man under Socialism.” He also wrote *The Importance of Being Earnest*.

ANSWER: Oscar **Wilde** [or Oscar Fingal O’Flahertie Wills **Wilde**]

[M] The socialist humanism of Oscar Wilde was distinct from the gradualist conception of socialism developed by this British society, which included writers like George Bernard Shaw and H. G. Wells.

ANSWER: **Fabian** Society [or **Fabians**]

<A. Keyal, Misc. Literature>

11. This action was originally meant to assuage complaints about illegal cotton speculation, though it was rescinded by Lincoln shortly afterwards. For 10 points each:

[H] Describe this action that was called for during the Vicksburg Campaign by General Order No. 11.

ANSWER: **expelling Jewish** people [or **expelling Jews**; accept answers indicating that **Jews** or **Jewish** people are being forcibly **removed**]

[E] This Union general gave General Order No. 11. After leaving the army, he attempted to atone as president by becoming the first one to attend the dedication of a synagogue.

ANSWER: Ulysses Simpson **Grant**

[M] Grant backed a failed Constitutional amendment named after this politician, which would have banned the use of public money for religious schools. This politician’s presidential campaign was marred by the anti-Catholic slogan “Rum, Romanism, and Rebellion.”

ANSWER: James Gillespie **Blaine**

<Raje, American History>

12. In 2020, Reinholdt et al. synthesized a high-spin Ti^{II} (“T-eye two”) complex with this geometry using a trispyrazolylborate (“triss-peer-ah-ZOLE-ill-borate”) ligand. For 10 points each:

[M] Name this geometry of coordination complexes that are predicted to be high-spin because the crystal field splitting between the t -sub-2 and e orbitals is about four-ninths of the splitting of an octahedral complex.

ANSWER: **tetrahedral**

[H] These phenomena are allowed in tetrahedral complexes because they are non-centrosymmetric. In octahedral complexes, these phenomena are Laporte forbidden, but vibronic coupling makes their associated electric dipole moment non-zero.

ANSWER: **d–d transitions** [prompt on electron transitions]

[E] This gas is scavenged by Reinholdt et al.’s titanium complex. The Haber–Bosch process hydrogenates this gas.

ANSWER: **nitrogen** gas [or **N₂**]

<Settle, Chemistry>

13. Ruth creates a female one of these beings named Xanthippe (“zan-THIP-ee”) who helps her become mayor of New York in Cynthia Ozick’s novel *The Puttermesser Papers*. For 10 points each:

[M] Name these beings. In Michael Chabon’s (“SHAY-bon’s”) *The Amazing Adventures of Kavalier and Clay*, Josef smuggles himself out of Prague in a casket containing one of these beings.

ANSWER: **golems**

[E] Chabon’s lecture “Golems I Have Known” tells of a man who said he survived this historical event but was really an ex-Nazi. Ozick’s story “The Shawl” concerns women marching to a concentration camp during this event.

ANSWER: the **Holocaust** [or **Shoah**; prompt on **World War II**]

[H] The geneticist Victor Werker creates a golem in this Dutch novelist’s *The Procedure*. In another of his novels, Anton is comforted by an unseen woman in a prison cell while his family is brutally murdered by Nazi forces.

ANSWER: Harry **Mulisch** [or Harry Kurt Victor **Mulisch**] (The second novel is *The Assault*.)

<R. Keyal, Long Fiction>

14. A divine representation of this plant grants Vivanghvant a son named Jamshid. For 10 points each:

[H] Name this plant, which is popularly believed to be in the genus *Ephedra*. The golden-green twigs of this plant are pressed with water and pomegranate leaves to make a drink whose name translates to “before [this plant].”

ANSWER: **haoma** [accept **Hom**; accept *para***haoma**]

[E] This prophet was instilled with the spirit of haoma after his parents, Pouroshaspa and Dugdhoava, drank haoma mixed with milk. This man later founded a namesake dualistic Persian religion that venerates Ahura Mazda.

ANSWER: **Zoroaster** [or **Zarathustra** Spitama; or Ashu **Zarathustra**; accept **Zoroastrianism** or **Zarathustrism**]

[M] Haoma is used in the Ab-Zohr ritual, which concludes a ceremony known by this name. The 72 threads of the Kushti girdle worn by Zoroastrians represent the 72 chapters of a text with this name.

ANSWER: **Yasna**

<Kulkarni, Religion>

15. *Original-language term required.* Bohuslav Martinů’s four piano pieces in this form include “Contemplation” and “Elegy.” For 10 points each:

[H] Name this thoughtful type of song. In one piece, a movement named for this form begins with a solemn F-sharp minor theme in 2/4 that repeatedly alternates with lighter, faster, major-key themes.

ANSWER: **dumka** [or **dumky**] (The piece is Dvořák’s Piano Quintet No. 2.)

[E] Six *dumky* appear throughout Dvořák’s (“d-VOR-zhak’s”) fourth piece for this ensemble, which is also nicknamed *Dumky*. These ensembles are made up of a cello, a violin, and a namesake keyboard instrument.

ANSWER: **piano trio** [reject partial answers]

[M] Dvořák incorporated the *dumka* into his piano trio and quintet after it was popularized by Mykola Lysenko, a composer descended from these people. Another composer turned a piano étude named for a leader of these people into a tone poem with sections named for his “ride” and “march.”

ANSWER: **Cossacks** [or **Kazaki**; prompt on **Ukrainians**] (The tone poem is *Mazeppa*. Lysenko was reputedly a descendant of the Cossack Vovgura Lys.)

<Egol, Classical Music>

16. This ability is more common in native speakers of tonal languages like Vietnamese than in others. For 10 points each:

[H] Name this ability that causes an auditory version of the Stroop effect. When tested for this ability, people who possess it show dorsolateral prefrontal cortex activation, suggesting that this ability is a labeling ability, not a perceptual difference.

ANSWER: **perfect pitch** [or **absolute pitch**; prompt on **AP**]

[M] If perfect pitch was purely perceptual, then people with it would have a lower value for this threshold for pitch than others. However, this value for people with or without perfect pitch is around one-tenth of a musical half-step.

ANSWER: **just-noticeable difference** [or **JND**]

[E] Some explanations of perfect pitch have compared labeling it to labeling this other property. However, the cochlea's arrangement codes pitch on a continuum while this property is discretized into categories by the three kinds of cones in the retina.

ANSWER: **color** (Color and pitch perception are thus phenomenologically different experiences.)

<Karim, Social Science>

17. A set of 2020 leaks named after this country's capital outlined corruption within its state diamond company. For 10 points each:

[E] Which African country's UNITA and MPLA parties fought a decades-long civil war after independence from Portugal?

ANSWER: **Angola** [or Republic of **Angola**]

[M] The Fowler Report prompted the UN to create a "process" named after this city that would monitor ethical diamond sales. This South African city is home to a gigantic diamond mine known as the Big Hole.

ANSWER: **Kimberley**

[H] In 2021, miners may have discovered the world's new third-largest diamond in this country's Jwaneng mines. Seretse Khama was the first president of this country, which is the world's largest diamond producer.

ANSWER: **Botswana** [or Republic of **Botswana**]

<Parameswaran, World History>

18. Answer the following about optical lens design, for 10 points each.

[E] Although sophisticated software helps later on in the process, a design often starts by tracing these objects through thin lenses with pencil and paper. These lines with one endpoint represent light in geometrical optics.

ANSWER: **rays**

[H] One of the most important specifications for a lens is its encircled energy, which measures the fraction of energy of this function that lies within a certain radius in the plane of observation. This function's Fourier ("FOOR-ee-ay") transform is the optical transfer function.

ANSWER: **point spread** function [or **PSF**]

[M] Lens design must consider the type of detector, which is often one of these devices used for digital image capture. Similar to CMOS ("C-moss") sensors, these devices read out voltage generated by light striking MOS ("moss") capacitors.

ANSWER: **CCDs** [or **charge-coupled devices**]

<Settle, Physics>

19. Environmental groups have lobbied for returning to an acreage cap of 37 million in this legislation's Conservation Reserve Program. For 10 points each:

[M] Name this upcoming 2023 omnibus legislation, the five-year continuance of a 2018 bill that notably created a hemp regulatory system under then-Secretary Sonny Perdue.

ANSWER: 2023 **Farm** Bill

[H] Passage of the 2023 Farm Bill is dependent on the support of a coalition of Southern peanut and rice farmers and farmers of this crop concentrated in Iowa and Illinois. The first Chinese response to Donald Trump's trade war was a 25-percent tariff on exports of this crop and other industrial products.

ANSWER: **soy**beans [or **soya** beans]

[E] As part of the Farm Bill, nutrition advocates have proposed removing sugar-sweetened beverages from the SNAP program, which was formerly known by the name of these coupons. These coupons can provide a nutritional safety net for low-income families.

ANSWER: **food stamps** [accept **Food Stamp** Program]

<Evans, Current Events>

20. Before this essay's central event, its narrator reflects that his job has allowed him to "see the dirty work of Empire at close quarters" via sights that "oppressed [him] with an intolerable sense of guilt." For 10 points each:

[M] Name this essay whose narrator describes performing the title action "solely to avoid looking a fool" while stationed as a police officer.

ANSWER: "**Shooting an Elephant**" (by George Orwell)

[E] To appear tough, Azar blows up Ted Lavender's adopted puppy as a prank in "Spin," a story from this Vietnam War collection by Tim O'Brien.

ANSWER: *The **Things They Carried***

[H] In a story by this author, a meek officer gains the respect of some Cossack soldiers but becomes racked with guilt after killing a goose. A boy learns that his grandfather has been killed in a pogrom before a crippled man crushes his pigeon in another story by this author.

ANSWER: Isaac **Babel** [or Isaac Emmanuilovich **Babel**] (Those stories are "My First Goose" and "The Story of My Dovecote.")

<Morrison, Short Fiction>