



**2023 PACE NSC**

**Edited by David Bass, Jordan Brownstein, Jaimie Carlson, Ganon Evans, Athena Kern, Joseph Krol,  
Young Lee, Adam Silverman, Chandler West  
Head Editor Ganon Evans**

**Round 08 - Tossups**

**1. A generalization of this function provides the foundation of the Lie (“lee”) group–Lie (“lee”) algebra correspondence. This function of negative  $r$  over a constant times the Bohr radius appears in the radial equation of the hydrogen atom. The sum of this function of beta times total energy over each microstate comprises the canonical partition function. The general solution to the time-independent (\*) Schrödinger equation includes this function’s “complex” form, which is also used to represent phase factors. The proportion of remaining particles at time  $t$  equals this function of  $t$  over tau, which is a function of half-life, in a model of decay named for this function. For 10 points, name this function that is the inverse of the natural logarithm.**

ANSWER: **exponential** function [accept **exponential** map or complex **exponential** or negative **exponential**; accept  **$e$  to the power of  $x$**  or  **$e$  to the power of  $i x$**  or  **$e$  to the power of negative  $x$** , with any variable in place of “ $x$ ”]

<Lalit Maharjan, Science - Physics> ~25006~ <Editor: David Bass>

**2. A performance of this piece at the 1925 Paris Exposition was choreographed by Loie Fuller and used a piece of fabric covering the ground for certain effects. Critic Pierre Lalo complained that he neither saw, nor heard, nor felt the title entity of this piece at its premiere. This piece’s subtitle calls it a set of three “symphonic sketches,” and its original published score included a (\*) Hokusai print on the cover. This piece’s last movement is titled for a “Dialogue of the wind and” its title subject. The usage of solo flute and harp harmonics in this piece has been compared to its composer’s earlier *Prelude to the Afternoon of a Faun*. For 10 points, “Play of the Waves” is the second movement of what nautical themed orchestral piece by Claude Debussy?**

ANSWER: ***La mer*** [or ***The sea, three symphonic sketches for orchestra***; or ***La mer, trois esquisses symphoniques pour orchestre***]

<Michael Bentley, Fine Arts - Music - 1900 to 1970> ~24812~ <Editor: Young Lee>

**3. Long-suppressed footage of schoolchildren playing following this event is included in James Jones’s documentary about its “Lost Tapes.” A Nobel Laureate’s book on this event describes how authorities were unable to find a pair of shoes that fit a dying firefighter. Following this event, so called “bio-robots” spent no more than 90 seconds shoveling debris off a roof, a prerequisite to building a (\*) “sarcophagus.”** Workers in Forsmark, Sweden alerted the IAEA of this event. A book by Svetlana Alexievich documents “liquidators” responding to this event, including helicopter crews that dropped large quantities of boron in an attempt to put out a fire. Following this event, Pripyat was evacuated. For 10 points, name this 1986 Soviet nuclear disaster.

ANSWER: **Chernobyl** nuclear disaster [or answers like **Chernobyl** meltdown; accept **Chernobyl: The Lost Tapes**]

<Michael Bentley, History - European - 1900+> ~22655~ <Editor: Michael Bentley>

**4. In this novel’s last section, the definition of a “maggot of extinct fly that once bred in mammoths” suggests a work has an alternate narrator. A girl who talks to spirits in a barn drowns in an icy lake in this novel after her blind date rejects her. Sybil is hostile towards this novel’s protagonist, who inspires his neighbor with stories about a gay king escaping his homeland and settling in (\*) New Wye. The assassin Jakob Gradus may have killed a poet in this novel due to mistaking him for the Zemblan king Charles. The line “I was the shadow of the waxwing slain” opens a poem in this novel that is erroneously commented on by Charles Kinbote. For 10 points, name this Vladimir Nabokov novel centering on the title John Shade poem.**

ANSWER: **Pale Fire**

<Yingzhi Nyang, Literature - American - Long Fiction> ~24787~ <Editor: Chandler West>

**5. The ATU 700 classification concerns characters with this quality, like Turkey’s Erkenek and France’s Poucet, who steals seven-league boots. A peasant with this quality is betrothed to Princess Huncamunca in a Henry Fielding play. That son of Thomas of the Mountain with this most notable quality is granted a hat of knowledge by the Queen of the Fairies, his godmother. That character travels to the court of King (\*) Arthur and lends his name to a P. T. Barnum performer. After an emperor’s son cuts his finger, people with this quality war over which end of an egg to crack. A race of people who tie down the protagonist of a 1726 satire on the beach has this quality, as do Thumbelina and Tom Thumb. For 10 points, give this quality of the Lilliputians in *Gulliver’s Travels*.**

ANSWER: **small** [accept synonyms like being **tiny** or **miniature** or **short** or being the size of a **thumb**; prompt on being a **child**; reject “dwarf” or “shrunk” or “shrunken” or “changing size”]

<Michael Bentley, RMP - World Mythology> ~23651~ <Editor: Jaimie Carlson>

**6. Fluorescent aptamers like FAST are used as genetic reporters in organisms that have this trait since GFP’s fluorophore cannot form in them. Biogasification relies on bacteria with this trait. Organisms with this trait live in the mud at the bottom of a Winogradsky column. A mass extinction of organisms with this trait 2.4 billion years ago coincided with the rise of cyanobacteria. Bacteria with this trait, like the (\*) methane producers that live inside ruminants, must be cultured inside a glovebox. Whereas *Clostridia* and sulfate-reducing bacteria have the obligate form of this trait, *Salmonella* have a facultative form of it, since they can switch away from fermentation. For 10 points, name this property of cells that live without oxygen.**

ANSWER: **anaerobic** [or **anaerobes**; or obligate **anaerobic**; or facultative **anaerobic**; prompt on **methanogenic** or **acetogenic** bacteria]

<Adam Silverman, Science - Biology> ~25329~ <Editor: Adam Silverman>

7. Women should form “Religious Retirements” to engage in this activity according to Mary Astell’s *Serious Proposal*. A treatise on this activity that claimed that women naturally enjoy playing with dolls was criticized by a philosopher whose first published work was a 1787 set of “Thoughts” on this activity for “Daughters.” The “Savoyard Priest” appears in a book on this activity that focuses on the title character’s bride-to-be (\*) Sophie in its Book V. This activity should create a “natural man” according to Jean-Jacques Rousseau’s treatise *Emile*. Mary Wollstonecraft’s *A Vindication of the Rights of Woman* argues that women should have access to this activity. For 10 points, name this activity conducted at institutions like Eton and Oxford.

ANSWER: **education** [accept **learning**, **schooling**, **studying**, **teaching**, **pedagogy**, or other clear knowledge equivalents]

<Jordan Brownstein, RMP - Philosophy> ~25026~ <Editor: Jordan Brownstein>

8. In this country, Big Billion Days was started by an e-commerce giant acquired by Walmart in 2018. This country now has the lowest mobile bandwidth costs in the world thanks to heavy subsidies from Jio, a subsidiary of Reliance Industries. Flipkart is based in this country whose SEEPZ campus was the first of its thousands of software hubs. In 2023, Hindenburg Research alleged widespread financial fraud at this country’s massive (\*) Adani Group. Tata Consultancy is an IT giant in this country. In 2020, this country’s government banned TikTok following an armed clash over a mountain border with China. A hoax claimed solar farms in this country were destroyed by BJP supporters. For 10 points, name this country whose local “Silicon Valley” is in Bangalore.

ANSWER: **India** [or Republic of **India**; or **Bhārat** Gaṇarājya]

<Michael Bentley, Current Events - World> ~25649~ <Editor: Ganon Evans>

9. Novels about characters in this profession were popularized with Erskine Childers’s *The Riddle of the Sands*. A “lamplighter” named Toby Esterhase (“es-ter-hay-zee”) features in a novel about a member of this profession who has retired from an organization nicknamed “the Circus.” A salesman who takes up this other profession plays an alcoholic game of checkers against Captain Segura and fools others with his sketches of (\*) vacuum cleaner parts. James Wormold gets this job in a Graham Greene novel set in Havana. A member of this profession named George Smiley appears in a novel about one of these people who “came in from the cold,” written by John Le Carré. For 10 points, name this profession of the most famous character created by Ian Fleming, James Bond.

ANSWER: **spy** [or a **secret** service **agent**; accept **double agent** or **MI6 agent**; accept British **spy**; accept *The Spy Who Came in from the Cold*; prompt on **agent**; prompt *Our Man in Havana* with “What is the profession he acquires?”]

<Michael Bentley, Literature - British - Long Fiction> ~23458~ <Editor: Michael Bentley>

10. This island was legendarily settled by a race of dwarfs who exhumed dead bodies and wrapped them in fresh cloth as part of the *famadihana* ceremony. According to a 1726 book by Charles Johnson, former slaves joined the pirate James Mission on this island to found the utopian community of Libertalia. This island’s epic poem *Ibonia* was transmitted via a language spoken by the Sakalava people that is the westernmost of the (\*) Austronesian language family. Exclusive mining rights on this island were granted to Joseph-François Lambert (“zhoh-SEFF fran-SWAH lahm-BERR”) by Radama II, the son of Queen Ranavalona. In the 1870s, France conquered this island’s Merina Kingdom and its Malagasy people. For 10 points, name this large island country off the coast of East Africa.

ANSWER: **Madagascar** [or **Madagasikara**] (The first clue refers to the Vazimba.)

<Hari Parameswaran, History - World - African> ~25817~ <Editor: Jordan Brownstein>

**11. These substances are regenerated by combustion after a layer of carbon inactivates or “cokes” them. In a packed bed, these substances are ground into pellets and immobilized on porous alumina or silica supports. The main unit operation at an oil refinery uses these substances to crack petroleum. Zeolites act as adsorbents and as these substances, which are powdered to increase their specific (\*) surface areas. Per gram, the most expensive chemicals in a reactor are usually these solids, especially noble metals like rhodium. Platinum acts as a heterogeneous example of these substances in the device that converts the CO in car exhaust to CO<sub>2</sub>. For 10 points, name these substances that reduce activation energy and speed up chemical reactions.**

ANSWER: **catalysts** [or heterogeneous **catalysts**; or **catalytic** converters; prompt on **zeolites** until read; reject “enzymes”]

<Adam Silverman, Science - Chemistry> ~25157~ <Editor: Adam Silverman>

**12. In a play by this author, a man chopping wood complains that he “studied to be a pastor of souls” before becoming a chaplain. A character created by this author gives a “silent scream” in an example of the *gestus* (“JEST-uss”) technique, and warns soldiers against complaining in the “Song of Great Capitulation.” While beating a drum on a roof, a (\*) girl is shot in a play by this author. This author used sparse scenery to induce the “alienation effect” in a play that includes the deaths of Eilif (“EYE-liff”) and Swiss Cheese. Anna Fierling (“FEE-uhr-ling”) operates a canteen wagon during the Thirty Years War in a play that exemplifies this author’s ideas of “epic theater.” For 10 points, name this German playwright who wrote *Mother Courage and Her Children*.**

ANSWER: Bertolt **Brecht** [or Eugen Berthold Friedrich **Brecht**]

<Halle Friedman, Literature - European - Drama> ~14364~ <Editor: Joseph Krol>

**13. After a rout in this state, Union officer Jefferson C. Davis murdered his superior William “Bull” Nelson. An acoustic shadow led to Don Carlos Buell’s troops arriving late to a battle in this state, leading to his replacement by William Rosecrans. Edmund Kirby Smith and Braxton Bragg feuded throughout an 1862 Confederate campaign in this state that turned back after the Battle of (\*) Perryville. A senator from this state proposed an “unalterable” westward extension of the Missouri Compromise line in the Crittenden Compromise. Illinois senator Stephen Douglas spearheaded the Compromise of 1850 with this state’s “Great Compromiser,” Henry Clay. For 10 points, name this state home to a log cabin where Abraham Lincoln was born.**

ANSWER: **Kentucky** [or Commonwealth of **Kentucky**; or **KY**]

<Joseph Krol, History - American - Pre-1865> ~25459~ <Editor: Michael Bentley>

**14. The Breslovers sect inaugurated a tradition on this holiday of making a pilgrimage to the Ukrainian city of Uman, which, since 2020, has been a national holiday in Ukraine. An artist known as Haggai is best-known for the images and light verses he created for greeting cards or “Tovas” sent on this holiday. Some celebrants of this holiday throw (\*) bread into water to cast away past sins in a process called *tashlich*. This holiday begins a period sometimes called the 10 Days of Awe. It is common to eat apples dipped in honey on this holiday. A *tekiah* and three *shevarim* are blown on the shofar on this holiday. For 10 points, name this first of the High Holy Days in Judaism, which marks the Jewish New Year.**

ANSWER: **Rosh Hashanah** [or **Yom Teruah**]

<Michael Bentley, RMP - Jewish Practice> ~25355~ <Editor: Athena Kern>

**15. In the Beverly sideboard, an emblematic piece of furniture from this country’s Memphis Group of designers, a lone red light bulb protrudes from a steel tube. A “Sportabout” version of the AMC Hornet was designed by a fashion house from this country known for its 2010s style of “postgender geek-chic.” “Women’s Tales” is a short film anthology series by a fashion brand from this country called (\*) Miu Miu. A designer from this country made a jungle green dress for Jennifer Lopez three years after her brother and fellow designer was murdered in Miami. The wasp-like form of the red MP5 inspired the name of an iconic brand of scooters from this country, the Vespa. For 10 points, name this country home to fashion houses such as Versace and Gucci.**

ANSWER: **Italy** [or **Italian** Republic; or the Republic of **Italy**; or **Italia**]  
<Michael Bentley, Fine Arts - Miscellaneous> ~26100~ <Editor: Young Lee>

**16. A parody church dedicated to a participant in this activity worships “D10S” and has a calendar beginning in 1960. An Andrew Lloyd Webber musical about Northern Irish teens is titled for a nickname for this activity attributed to Peter Doherty. Andrés Escobar was murdered due to a mistake made during this activity. The Hundred Hours War began with violent clashes during this activity and escalated into a full-scale invasion of (\*) Honduras by El Salvador. The Biafran War had a ceasefire during a visit of a Brazilian participant in this activity nicknamed “O Rei” who died in December 2022. A controversial moment in this activity considered revenge for the Falklands War has been dubbed the “hand of God.” For 10 points, name this sport whose stars include Diego Maradona and Pelé.**

ANSWER: **soccer** [or **football**; prompt on the beautiful game; reject “American football”]  
<Lalit Maharjan, Other - Other Academic and General Knowledge> ~24721~ <Editor: Canon Evans>

**17. In “The Rhodora” (“roh-DOR-uh”), Ralph Waldo Emerson stated that “beauty is its own excuse for” this specific action. The last stanza of Archibald MacLeish’s poem “Ars Poetica” claims that poems “should not mean, but” do this action. In “The Emperor of Ice Cream,” Wallace Stevens asks to allow this action to act as “finale of seem.” This verb occurs in the usual title of a passage that mentions “the (\*) undiscovered country, from whose bourn no traveller returns.” In that speech whose usual title contains this verb, the speaker wonders if keeping his “mortal coil” is worth suffering “the slings and arrows of outrageous fortune.” For 10 points, name this short verb which the protagonist ponders whether to do or not to do in *Hamlet*.**

ANSWER: **be** [or **being** or to **be**; accept “To **be** or not to **be**”; reject other word forms like "am" or "is" or "are"]  
<Chauncey Lo, Literature - World and Miscellaneous> ~21086~ <Editor: Joseph Krol>

**18. The specific gravity of this material can be calculated from the “oven-dry” and “green” forms of its weight. The relative orientations of layers of this material differentiate glulam from the “cross-laminated” form of this material. The indentation hardness of this material is measured with a steel ball in a test developed by Gabriel Janka (“JAN-kuh”). Mjøstårnet (“myur-STAR-nit”) exemplifies a recent trend to build (\*) skyscrapers from the “mass” form of this material. Oriented strand board and particle board exemplify the “engineered” type of this material. This material’s tensile strength is reduced at circular imperfections called knots that interrupt the direction of its grain. For 10 points, name this material exemplified by balsa and mahogany.**

ANSWER: **wood** [accept **timber** or cross-laminated **timber** or **hardwood** or mass **timber** or engineered **wood**; prompt on CLT]  
<Michael Bentley, Science - Engineering and Miscellaneous> ~24972~ <Editor: David Bass>

**19. August Mau named four periods of painting after this location, whose ornamental Fourth style is exemplified by dining room frescos patronized by the Vettius brothers. In an artwork from this location, a soldier stares at his reflection in a shield below an emperor reaching out from a chariot. A statue of a dancing faun names a (\*) house in this location that contained a mosaic depicting Alexander at the Battle of Issus. Abandoned domus at this location include the Villa of the Mysteries, whose walls depict the Dionysian mysteries. For 10 points, some of the best-preserved examples of Roman painting were found at the ruins of what city, which like Herculaneum, was destroyed by Mount Vesuvius?**

ANSWER: **Pompeii** [accept **Pompeiiian** Styles or **Pompeiiian** Periods; prompt on the Villa of the Mysteries or Villa dei Misteri or House of the Faun or House of the Vettii by asking “What larger site is that part of?”]  
<Ganon Evans, Fine Arts - Painting - European to 1600> ~25717~ <Editor: Chandler West>

**20. In the 17th century, one of these institutions bankrupted Crispina Peres, a woman from modern-day Guinea-Bissau. The Konkani population was a common target of one of these institutions established in Goa in 1560. Another of these institutions would sometimes bestow a paper *capirote* on people to humiliate them and employed a device called the *strappado*. Some of the 28 articles drafted by a leader of one of these institutions allowed for the use of torture against (\*) *Marranos*. Following a tribunal, these institutions might subject people to an ordeal called an *auto-da-fé*. The first head of one branch of this institution was Tomás de Torquemada. For 10 points, name these institutions, one of which in Spain sought to stamp out heretics.**

ANSWER: **Inquisition** [accept Spanish **Inquisition** or Portuguese **Inquisition** or Catholic **Inquisition**; accept Holy Office of the Portuguese **Inquisition** in Goa; accept General Council of the Holy Office of the **Inquisition**; prompt on the Catholic Church or Jesuits or Dominicans]  
<Michael Bentley, History - Cross, Historiography, and Miscellaneous> ~25414~ <Editor: Michael Bentley>

**21. A king leads his two sons-in-law to attack this place to obey a command to “yoke his daughters to a boar and a lion.” Since he bragged that not even Zeus could keep him from burning down this place, Capaneus is struck down by Zeus’ thunderbolt while scaling this place’s walls. A group including Adrastus and Tydeus attacked this place to restore (\*) Polynices. The Necklace of Harmonia brought misfortune to this city, which was besieged by the Sphinx. This city is founded where dragon teeth are planted and turn into warriors, after the abduction of Europa. Cadmus founded this city, which was ruled by Oedipus, and later fought by “seven against” this city. For 10 points, name this Greek city, which often warred with Sparta and Athens.**

ANSWER: **Thebes** [or **Thêbai**]  
<Jaimie Carlson, RMP - Greco-Roman Mythology> ~25800~ <Editor: Jaimie Carlson>

## NSC 2023 - Round 08 - Bonuses

1. Reggifestone (“reh-gee-feh-STONE-ay”) and reggistemma ornamentation traced back to Etruscan pottery depicted these figures holding garlands. For 10 points each:

[10m] Name these chubby, winged baby boys that appear in Renaissance paintings and are often conflated with depictions of Cupid.

ANSWER: **putti** [or **putto**; or **amorini**; or **amorino**; prompt on angels; prompt on cherubs]

[10h] An early Renaissance sculpture with putti was one of these artworks by Jacopo della Quercia that depicts Ilaria del Carretto. An Etruscan example of these artworks in terracotta depicts two spouses reclining on a couch.

ANSWER: **sarcophagus** [or **sarcophagi**; accept the *Sarcophagus of the Spouses*; prompt on coffins; prompt on caskets]

[10e] This Renaissance sculptor referred to putti as “spiritelli” in works like the *Cavalcanti Annunciation*. This sculptor’s bronze *David* was the first freestanding male nude since antiquity.

ANSWER: **Donatello** [or **Donato** di Niccolò di Betto Bardi]

<Ganon Evans, Fine Arts - Sculpture> ~20389~ <Editor: Chandler West>

2. Mary McLeod Bethune was part of this president’s informal “Black cabinet.” For 10 points each:

[10e] Name this president whose Executive Order 9066 targeted Americans of Japanese ancestry.

ANSWER: **Franklin Delano Roosevelt** [or **FDR**; prompt on Roosevelt]

[10h] Another member of FDR’s “Black cabinet,” Robert C. Weaver, became the first African American to hold an official cabinet post when Lyndon Johnson made him head of this Great Society agency. This agency’s HOPE VI program adhered to the idea of defensible space.

ANSWER: United States Department of **Housing and Urban Development** [or **HUD**]

[10m] Edgar G. Brown agitated for better treatment of Black people in this New Deal agency headed by Robert Fechner. This agency’s cadre of young workers built numerous fire lookout towers and dams.

ANSWER: **Civilian Conservation Corps** [or **CCC**]

<Ridge Ren, History - American - 1865-1945> ~16978~ <Editor: Michael Bentley>

3. A 1955 Ángel Flores (“AN-hel FLOR-ey”) essay argues that a literary style named for this adjective is of Hispanic origin. For 10 points each:

[10e] Name this adjective that exemplifies a style of Latin American “realism” which frequently depicts supernatural events in works such as the fiction of Gabriel García Márquez.

ANSWER: **magical** realism [or **magic** realism; or *realismo mágico*]

[10m] Among the precursors to magical realism cited by Flores is this German author of the 1817 story “The Sandman,” in which Nathanael falls in love with an automaton.

ANSWER: E. T. A. **Hoffmann** [or Ernst Theodor Amadeus **Hoffmann** or Ernst Theodor Wilhelm **Hoffmann**]

[10h] Flores’s essay notably makes no mention of this Cuban author’s 1949 novel *The Kingdom of This World*, despite its preface’s discussion of the similar concept of “the marvelous real.”

ANSWER: Alejo **Carpentier** (“ah-LAY-ho car-PEN-tee-ay”) [or Alejo **Carpentier** y Valmont]

<Joseph Krol, Literature - World and Miscellaneous> ~20378~ <Editor: Joseph Krol>

4. Whooshh Innovations developed a pressurized tube that shoots these fish over dams so they can travel upstream to reproduce. For 10 points each:

[10e] Name this fish common to rivers in the Pacific Northwest with pinkish-red meat.

ANSWER: **salmon** [accept the **salmon** cannon]

[10m] The largest Pacific species of salmon is named for this tribe native to the Lower Columbia River between Washington and Oregon. This tribe names Boeing's H-47 transportation helicopter as well as warm westerly winds.

ANSWER: **Chinook** [or the **Chinookan** people; or **Tsinuk**; or **Chinook** salmon; accept Boeing H-47 **Chinook**; accept **Chinook** winds]

[10h] This easternmost part of the Bering Sea hosts the largest salmon fishery in the world. The proposed Pebble Mine is near this bay north of the Alaska Peninsula.

ANSWER: **Bristol** Bay

<Ganon Evans, Geography - United States> ~20340~ <Editor: Ganon Evans>

5. Two phases form in a separatory funnel in the liquid–liquid form of this technique. For 10 points each:

[10m] Name this process that separates chemicals based on their solubility. Caffeine is purified out of coffee beans using this technique.

ANSWER: **extraction** [accept liquid–liquid **extraction**, **extracting**, or **LLE**; prompt on **leaching**]

[10e] The aqueous phase is easy to pour out the bottom of a separatory funnel since water's value for this quantity, 1 gram per milliliter, is greater than most organic solvents.

ANSWER: mass **density** [prompt on **rho**; prompt on **D**]

[10h] On the other hand, the top phase must be carefully removed using this technique of moving liquid upwards using negative pressure. The two steps of pipetting are this process and expulsion.

ANSWER: **aspiration** [or **aspirating**; or **aspirate**; prompt on **reverse pipetting**]

<Adam Silverman, Science - Chemistry> ~20993~ <Editor: Adam Silverman>

6. Naval innovations from this country include the first stern-mounted rudders and bulkhead partitions that allowed leaking ships to stay afloat. For 10 points each:

[10h] Name this modern-day country whose “tower ships” were used to pour fire onto enemies during naval warfare.

ANSWER: **China** [or **Zhōngguó**; or People's Republic of **China**; or **PRC**]

[10e] During naval battles, the Sòng dynasty used this technology to power “fire lances.” By the 14th century, this Chinese invention was being used in European firearms.

ANSWER: **gunpowder** [accept **black powder**; accept **huǒyào**; prompt on **powder**]

[10m] This Muslim mariner led a 1405 naval expedition to the “Western Oceans” that included stops in Sri Lanka and East Africa.

ANSWER: **Zhèng Hé** (“jung huh”) [or **Ma He**; or **Cheng Ho**; or **Ma Sanbao**; prompt on **Zheng**]

<Michael Bentley, History - World - Asian> ~20595~ <Editor: Jordan Brownstein>



7. Paul Samuelson's revealed preference theory argues that observing these peoples' purchases was an accurate indicator of their utility functions. For 10 points each:

[10e] Name these people, the purchasers of a good or service for personal use, like similarly named customers.

ANSWER: **consumers**

[10h] Samuelson and Nordhaus's textbook *Economics* followed this British economist's *Principles of Economics*, which introduced the idea of consumer surplus. He taught John Maynard Keynes.

ANSWER: Alfred **Marshall**

[10m] Consumer choice theory explains the backward-bending supply curve as workers engage in this practice more as pay increases. Conspicuous consumption is criticized in Thorstein Veblen's book on the "Theory" of a class defined by this behavior.

ANSWER: **leisure** [accept **free time**; accept **not working** or other descriptions; accept *The Theory of the Leisure Class*]

<Ganon Evans, Social Science - Economics> ~20873~ <Editor: Athena Kern>

8. This poet wrote "Who can the Nymph's confusion guess?" when Lisander fails to seduce the nymph Cloris in this author's poem "The Disappointment." For 10 points each:

[10h] Name this Restoration poet. This poet also wrote a novel about an enslaved prince separated from his lover Imoinda.

ANSWER: Aphra **Behn** (The novel is *Oroonoko*.)

[10m] A nymph comments "If all the world and love were young...these pretty pleasures might me move" while rejecting a suitor in this author's poem "The Nymph's Reply to the Shepherd."

ANSWER: Walter **Raleigh**

[10e] The narrator reminisces about the courtship of Elizabeth and Leicester and laments that "The nymphs are departed" while walking along the Thames in this author's poem "The Waste Land."

ANSWER: T. S. **Eliot**

<Jaimie Carlson, Literature - British - Long Fiction> ~20699~ <Editor: Jaimie Carlson>

9. *Description acceptable.* This result was achieved with the most notable use of Katie Bouman et al.'s CHIRP algorithm for deconvolution. For 10 points each:

[10m] Describe this 2019 result achieved by processing EHT radio wave observations. This result was published in the fourth of a series of six papers whose fifth entry describes its "asymmetric ring."

ANSWER: first **image** of a **black hole** [accept equivalents; accept answers describing the **image** of the supermassive **black hole** at the center of **Messier 87** or the **image** of **M87\*** ("M-87-star")]

[10h] The dark spot in the center of the image of M87\* ("M-87-star") contains this region of space in which light orbits the black hole. There are no stable free-fall orbits that cross this region whose radius is three-halves the Schwarzschild radius.

ANSWER: **photon sphere** [or **photon circle** or **last photon orbit**]

[10e] The Schwarzschild radius is the radius of this "horizon," the boundary beyond which light cannot escape a black hole.

ANSWER: **event** horizon

<Michael Bentley, Science - Astronomy> ~18084~ <Editor: David Bass>

10. In order to obtain *grazia*, these people are advised to learn a “certain nonchalance” that disguises the fact that they are performing difficult tasks. For 10 points each:

[10h] Name these people who should demonstrate *Sprezzatura* according to a book titled for them by Baldassare Castiglione.

ANSWER: **courtiers** [accept *Book of the Courtier* or *Il Cortegiano*]

[10e] Castiglione desired for courtiers to have mastery over both Latin and this other Classical language spoken by Aristotle.

ANSWER: Ancient **Greek**

[10m] Ancient courtiers may have had titles like “Master of Squires” or this position that Sargon the Great held under Ur-Zababa. In Greek myth, a boy kidnapped by an eagle from Mount Ida replaced Hebe in this position.

ANSWER: **cup-bearer** [prompt on non-specific answers such as a waiter or servant] (The boy is Ganymede.)

<Michael Bentley, Other - Other Academic and General Knowledge> ~20521~ <Editor: Ganon Evans>

11. Labyrinthitis causes motion sickness because it inflames the bony canals that transmit perilymph through this structure. For 10 points each:

[10m] Name this section of a larger body organ, the home of the body’s vestibular system. Motion sickness occurs when the eyes and this structure pass contradictory signals to the brain.

ANSWER: **inner ear** [or **internal ear**; or **auris interna**; prompt on ear by asking, “Can you be more specific?”; prompt on cochlea by asking, “What larger body organ is that a part of?”]

[10e] The vestibular system and the eyes synchronize with one of these involuntary motions. Gagging is another example of these rapid responses to stimuli that do not require brain involvement.

ANSWER: **reflexes** [or vestibulo-ocular **reflex**; or gag **reflex**]

[10h] Antiemetics treat motion sickness by antagonizing this compound’s receptors. Fluoxetine prevents this compound from being reabsorbed by presynaptic neurons.

ANSWER: **serotonin** [or **5-hydroxytryptamine** or **5-HT**]

<Victor Prieto, Science - Biology> ~19162~ <Editor: Adam Silverman>

12. In this passage, Jesus gives the parable “Can the blind lead the blind? Shall they not both fall into the ditch?” to warn against the dangers of an ignorant teacher. For 10 points each:

[10m] Name this passage in Luke 6 (“chapter 6”) in which Jesus gives four beatitudes. It is often compared in theme to the Sermon on the Mount, though it is given in a different location.

ANSWER: Sermon on the **Plain**

[10e] Jesus instructs in the Sermon on the Plain “And unto him that smiteth thee on [one of these body parts] offer also the other,” thus beginning the Christian doctrine of “turning the other” one of these body parts.

ANSWER: **cheeks** [accept turning the other **cheek**; prompt on face]

[10h] After delivering the Sermon on the Plain, Jesus traveled to this city where Matthew was a tax collector. According to Mark, Jesus healed a paralyzed man in this home city of Peter.

ANSWER: **Capernaum**

<Benjamin Chapman, RMP - New Testament> ~21174~ <Editor: Ganon Evans>

13. This novel sold half a million copies in France following its publication, possibly tipping elections against the Communist Party. For 10 points each:

[10h] Name this 1940 novel that for years was only known through an imperfect English translation from German by Daphne Hardy. In this novel, the imprisoned protagonist declares “You and I can make mistakes—but not the party.”

ANSWER: **Darkness at Noon** [or **Sonnenfinsternis**]

[10m] *Darkness at Noon* was written by this Hungarian-born author of *The Gladiators*.

ANSWER: Arthur **Koestler** (“KESS-ler”) [or **Köszler** Artúr]

[10e] Other prisoners in *Darkness at Noon* include this elderly revolutionary who has been subjected to solitary confinement for 20 years. He shares his name with a Washington Irving character who sleeps through the American Revolution.

ANSWER: Rip **Van Winkle** [or **Rip** Van Winkle]

<Michael Bentley, Literature - European - Long Fiction> ~20497~ <Editor: Joseph Krol>

14. In this scientist’s “picture,” operators, but not state vectors, are time-dependent. For 10 points each:

[10e] Name this physicist whose “uncertainty principle” describes simultaneous measurement of position and momentum.

ANSWER: Werner **Heisenberg** [or Werner Karl **Heisenberg**; accept **Heisenberg** picture **Heisenberg** uncertainty principle]

[10m] There exists an uncertainty principle for each pair of variables with this relationship, like position and momentum. Two variables with this relationship are dual under the Fourier transform.

ANSWER: **conjugate** variables [accept canonically **conjugate** variables; prompt on **complementary** variables]

[10h] In general, uncertainty principles bound the product of the standard deviations of two operators below by one-half the magnitude of this quantity for their commutator. This quantity for an Hermitian (“heir-ME-shin”) operator  $A$  is calculated by placing  $A$  between a bra and a ket.

ANSWER: **expectation value** [reject “expectation”]

<Benjamin Chapman, Science - Physics> ~21055~ <Editor: David Bass>

15. The overture to *Ruslan and Ludmila* introduces a descending theme on this scale to represent the sorcerer Chernomor. For 10 points each:

[10m] Name this hexatonic scale with no leading tone that is also used to open the orchestral suite *Scheherazade*. Starting on C, the notes in this scale are C, D, E, F-sharp, G-sharp, A-sharp.

ANSWER: **whole-tone** scale

[10e] *Scheherazade* is by this member of the Mighty Five, whose other compositions include “Flight of the Bumblebee.”

ANSWER: Nikolai **Rimsky-Korsakov** [or Nikolai Andreyevich **Rimsky-Korsakov**]

[10h] The trombones introduce a whole-tone theme to contrast with the pentatonic main theme of the finale of a symphony by this other Russian composer. The second movement of that B minor 2nd symphony by this composer is written in an extremely fast 1/1 time signature.

ANSWER: Alexander **Borodin** [or Alexander Porfiryevich **Borodin**]

<Ethan Ashbrook, Fine Arts - Music - Romantic> ~20962~ <Editor: Young Lee>

16. Frank Chin argued that this genre was a “literary descendant of the confession” and does not exist in Chinese literature. For 10 points each:

[10e] Name this genre of books like Le Ly Hayslip’s *When Heaven and Earth Changed Places*. Contemporary books in this genre include *I Am Malala* and *Dreams from My Father*.

ANSWER: **autobiography** [accept word forms such as **autobiographical** writing; accept **memoirs**; prompt on **biography**]

[10h] In a letter to Chin, Maxine Hong Kingston admitted that her publisher threatened to turn this 1976 book in which her mother is represented by the lady scholar Brave Orchid into a more traditional memoir.

ANSWER: *The **Woman Warrior**: Memoirs of a Girlhood Among Ghosts*

[10m] Kingston imagines herself as Fa Mu Lan training on a mountain filled with these animals in the second chapter of *The Woman Warrior*. Amy Chua described her strict parenting in a 2011 “Battle Hymn” titled for this animal.

ANSWER: **tiger** [accept White **Tigers** or *Battle Hymn of the **Tiger** Mother*; accept **tiger** mother or **tiger** mom or **tiger** parenting]

<Ganon Evans, Literature - American - Misc> ~21040~ <Editor: Chandler West>

17. For 10 points each, answer the following about conflicts between Christian and Pagan thought in the Roman Empire.

[10m] This fourth-century CE emperor earned his epithet by converting from Christianity to Neoplatonism. This emperor died at the Battle of Samarra while invading the Sassanid Empire.

ANSWER: **Julian** the Apostate [or Flavius Claudius **Julianus**]

[10e] This emperor’s closure of the Platonic academy is often seen as the end of Neoplatonism. Procopius’s *Secret History* is an important source on this Byzantine emperor and lawgiver, who is known as “the Great.”

ANSWER: **Justinian** I [or **Justinian** the Great]

[10h] In Alexandria, this Pagan philosopher died at the hands of an angry Christian mob after being accused of bewitching Orontes. This polymath may have edited parts of Ptolemy’s *Almagest*.

ANSWER: **Hypatia** of Alexandria

<Joel Miles, History - European - Classical> ~19945~ <Editor: Michael Bentley>

18. A popular touring production of this opera in 1952 had a cast including Cab Calloway and Maya Angelou. For 10 points each:

[10e] Name this George Gershwin opera set on Catfish Row which features arias such as “Summertime.”

ANSWER: ***Porgy and Bess***

[10m] This artist refused to play Porgy in Otto Preminger’s film version of *Porgy and Bess* because he refused to spend the entire movie on his knees. This artist of “The Banana Boat Song” helped popularize an entire genre with his million-selling 1956 album *Calypso*.

ANSWER: Harry **Belafonte** [or Harold George **Bellanfanti** Jr.]

[10h] This composer fumed, “Gershwin does not even know what an opera is” after seeing *Porgy*. This American composer’s own operas include *Four Saints in Three Acts*, with libretto by Gertrude Stein.

ANSWER: Virgil **Thomson**

<Michael Bentley, Fine Arts - Opera> ~20428~ <Editor: Young Lee>

19. George Wilson Pierson called an idea about this place “a Pandora’s box of trouble to historians.” For 10 points each:

[10m] Name this place that titles a “thesis” put forth by Frederick Jackson Turner that argued American values emerged from a pioneer culture of westward expansion.

ANSWER: the American **frontier** [accept **frontier** thesis]

[10e] American frontierism evolved from this earlier two-word idea coined by John O’Sullivan that Americans had the right to spread their society across the West.

ANSWER: **manifest destiny**

[10h] A historian from this country formulated the Metropolitan-Hinterland Thesis as an explanation of this country’s expansion. The book *In the Skin of a Lion* explores the “Garrison Mentality” that dominates this country’s literature.

ANSWER: **Canada** (*In the Skin of a Lion* is by Michael Ondaatje.)

<Ganon Evans, History - Cross, Historiography, and Miscellaneous> ~21002~ <Editor: Michael Bentley>

20. As a boy, this adept farmer is given 10 apple trees, 13 pear trees, 40 fig trees, and 50 vine rows by his father. For 10 points each:

[10e] Name this hero who wins an archery contest against a group of suitors after returning home to Ithaka.

ANSWER: **Odysseus** [or **Ulysses**; or **Ulixes**]

[10m] Odysseus won a footrace against this other Greek hero when Athena made him trip. This warrior is often referred to as the “Locrian” holder of his name, to distinguish him from another of the Achaeans.

ANSWER: **Ajax the Lesser** [or **Ajax the son of Oileus**; accept **Aias** for “Ajax”; prompt on Locrian **Ajax**; do not accept or prompt on “Ajax the Greater” or “Telamonian Ajax”]

[10h] Odysseus wins a discus-throwing contest on this fictional island, which is often equated with Corfu. Odysseus recounts his wanderings at a banquet held by Alcinous on this home of Nausicaa.

ANSWER: **Phaeacia** [or **Skheria** or **Scherie**]

<Michael Bentley, RMP - Greco-Roman Mythology> ~13649~ <Editor: Matthew Bollinger>

21. A pentapeptide found in this fluid in humans acts as a stronger natural opioid than morphine. For 10 points each:

[10m] Name this protein-rich fluid that contains most of the body’s amylase.

ANSWER: **saliva** [prompt on **spittle**]

[10e] Saliva is also rich in the glycoproteins that constitute this gel-like substance which lubricates membranes in the digestive and respiratory system.

ANSWER: **mucus** [or **mucins** or **mucus** membranes; prompt on **phlegm**; prompt on **snot**]

[10h] Another glycoprotein in human saliva, haptocorrin, binds tightly to this compound to protect it from digestion. As this compound cannot be biosynthesized, it is the “extrinsic” factor that is transferred to a glycoprotein called the “intrinsic” factor in the stomach.

ANSWER: vitamin **B12** [or **cobalamin**; or **cyanocobalamin** or **adenosylcobalamin** or **methylcobalamin**]

<Adam Silverman, Science - Biology> ~20897~ <Editor: Adam Silverman>