

Fall Open 2019

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Tossups

1. **The veracity of a poem written no more than ten years after this battle is supported by its accurate casualty lists, according to the second appendix of a “concise history” by Charles Ross. The proliferation of literary ballads in the aftermath of this battle is examined in an A. L. Rowse book titled for it and the war in which it took place. Geoffrey Elton argued that this battle *wasn't* waged on account of its victor’s ancestral heritage. A well from which this battle’s loser drank water was maintained by the “Fellowship of the (*) White Boar.”**

This battle, which was initially named for the “field of Redemore (“read-more”),” has been pinpointed by scholars to a site two miles southwest of Ambion Hill. This battle broke out two weeks after its losing army docked at the Welsh port of Milford Haven. In 2012, the remains of this battle’s most famous casualty were uncovered beneath the car park of Greyfriars Church. For 10 points, the Wars of the Roses ended with Richard III’s death at what battle?

ANSWER: Battle of **Bosworth** Field

<INB, European History (Commonwealth, Ancient, Historiography)>

2. **Dmitri Shostakovich’s first piece in this genre begins with a fast descending C major scale, which lands on an unexpected D-flat. In Shostakovich’s second piece in this genre, a C minor Andante second movement leads *attacca* into a Presto third movement that alternates 2/4 time and 7/8 time. In Sergei Prokofiev’s second piece in this genre, the first movement climaxes with markings such as *precipitato*, *colossale*, and *tumultuoso*. Prokofiev’s *third* piece in this genre begins with a (*) clarinet solo, and is in C major. Of Prokofiev’s five pieces in this genre, four were premiered with himself as the soloist, and one was written for the World War I veteran Paul Wittgenstein, who never performed it. Sergei Rachmaninoff’s *Rhapsody on a Theme of Paganini* is often considered to be in, for 10 points, what genre for orchestra and keyboard soloist?**

ANSWER: **piano concerto** [prompt on concerto; prompt on left-hand concerto by asking “What do they play?”]

<KL, Classical Music and Opera>

3. **William Empson dubbed this writer the “Space Man” in reference to his alleged desire to visit other planets. This writer’s work emerged from a period of obscurity in part due to Alexander Grosart’s edition of his *Complete Poems*, which was condemned as a “literary fiasco” by Charles Eliot Norton. This writer mentioned “flattering speeches” intended to “court God” in a poem which likens “devout fits [that] come and go away” to a “fantastique ague (“ag-YOO”).” This writer described reason as “your viceroy in me” and compared himself to a “usurped (*) town” in a poem which tells its addressee, “I... never shall be free, nor ever chaste, except you ravish me.” This writer conjured the image of Jesus bleeding “incorruptible blood” at the end of “Death’s Duel,” the last of 160 sermons he wrote as Dean of St. Paul’s after converting to Anglicanism in 1615. For 10 points, identify this English poet who included “Batter my heart, three person’d god” among his nineteen *Holy Sonnets*.**

ANSWER: John **Donne**

<INB, Non-epic Poetry>

4. **A figuralist interpretation of these things avoids the so-called “Bomb” of object fictionalism, according to the 2001 paper “Go Figure!” by Stephen Yablo. These things are not things at all, but rather placeholders, according to the *ante rem* structuralist Stewart Shapiro. The children Ernie and Johnny are taught conflicting definitions of these things in a thought experiment from Paul Benacerraf’s 1960 paper on what these things “Could Not Be.” An argument for their mind-independent existence appeals to the life cycle of the genus (*) *Magicalada* (“magic-cicada”). The Julius Caesar problem calls for a satisfactory definition of these objects. Kant’s *Critique of Pure Reason* argues that a statement about these objects is a synthetic *a priori* truth.**

These objects are recursively defined using the successor function in Peano (“pay-AH-no”) arithmetic. For 10 points, name these mathematical objects, which exist in sets such as the naturals, the integers, and the rationals. ANSWER: **numbers** [accept **ordinal** numbers or **prime** numbers; prompt on mathematical objects or abstract objects or Platonic objects] <KL, Philosophy>

5. In *E. coli* chemotaxis, the addition and removal of this group is self-catalyzed by the response regulatory protein *CheY*. A deficiency in an enzyme that removes this group occurs in Von Gierke’s disease. The removal of this group is catalyzed by *cdc25* to reverse the inhibitory action of Wee1 (“wee-one”) at the G-sub-two/M-phase checkpoint. During T cell activation, calcium binding enables the calmodulin-dependent enzyme calcineurin (“KAL-see-neurin”) to remove this group from the transcription factor NF-AT, which can then localize to the nucleus. The removal of this group from *both* domains of a regulatory “bifunctional enzyme” indirectly leads to the *increased* activity of (*) PFK-1. PP1 removes this group to activate glycogen synthase. In the final step of gluconeogenesis (“gluco-neo-genesis”), this group is removed from a glucose derivative. This group is removed by a class of hydrolytic enzymes to *reverse* the action of protein kinases. For 10 points, cellular reactions are driven by the energy released by the removal of what group from ATP?

ANSWER: **phosphate** [accept **phosphoryl**; accept **PO4**; accept **PO4-3-minus**; accept **PO3**; accept **PO3-2-minus**; do **NOT** accept “phosphite”]
<INB, Biology>

6. This author created a character who can always tell that it’s summer if her tennis partner is reading *War and Peace*. The narrator of one of this author’s stories sprints up a hill and begs a bearded man dressed in a green Brooks Brother suit to speak English. In another story by this author, a boy instructs onlookers to kneel down, then jumps from the roof of a building onto a yellow net held out by firemen. A “jowly gentlemen” tries to check out a book of Paul Gauguin (“go-GAN”) paintings that mesmerize a (*) black child in this author’s novella about a young man who insists that his girlfriend get a diaphragm. This author wrote about Sheldon Grossbart attempts to manipulate Sergeant Nathan Marx in the story “Defender of the Faith,” and about Neil Klugman’s brief romance with the upper-class Brenda Patimkin in his first published novella, *Goodbye, Columbus*. For 10 points, name this Jewish author of *Portnoy’s Complaint*.

ANSWER: Philip **Roth** [or Philip Milton **Roth**]
<INB, Short Fiction>

7. The tendency of a player of this instrument to open songs with the four notes “D, D, B, D” led to remarks that he only had one song, “but you had the feeling that he really meant it.” This instrument partly names two 1923 Sylvester Weaver records containing some of the first known recordings of one technique. The “king” of a style of playing this instrument wrote a standard that tells listeners to “look at the tears roll down the street.” That writer of “The Sky is Crying” first gained fame with a cover of (*) “Dust My Broom” recorded without his knowledge. A critical technique for playing this instrument in country music is named for Maybelle Carter of the Carter Family. Joseph Kekuku was said to have invented a style of playing this instrument used by Elmore James by using a knife or rebar to fret instruments tuned in “slack-key.” For 10 points, name this instrument, often played in blues and country with a “bottleneck slide” by players like Robert Johnson.

ANSWER: **guitar** [accept **slide** guitar until mentioned; accept any more specific answers as long as “guitar” is mentioned] (Weaver’s records, though called “Guitar Rag” and “Guitar Blues,” are actually of him playing slide on a guitjo (a guitar-banjo hybrid); quote in the first sentence is Frank Zappa’s description of the riff described, which Elmore James used to open e.g. “The Sky is Crying”)
<JG, General Knowledge>

8. This adjective partly titles a 2016 book from TASCHEN’s SUMO series whose cover art is a painting of a vivid blue porch. To explain a painting partly titled for this adjective, its artist said, “When you photograph... you’re freezing a moment and it becomes something else.” The National Gallery of Australia

spent \$4 million on a multi-canvas work partly titled for this adjective depicting the Grand Canyon. This adjective partly titles a depiction of a blue- and green-roofed barn next to a grove of leafless trees set near the town of Warter. Five years after creating a painting partly titled for this adjective, its artist adopted a similar setting for a painting of (*) Peter Schlesinger peering down at a man in white shorts. A director's chair and a pair of palm trees appear in a painting partly titled for this adjective whose foreground features a yellow diving board. For 10 points, give this adjective which modifies the titles of many paintings by David Hockney, including one of a "splash."

ANSWER: **bigger** [accept A **Bigger** Splash or A **Bigger** Grand Canyon or **Bigger** Trees Near Warter]

<INB, Painting and Sculpture>

9. This leader's voracious appetite inspired a local TV show to insinuate that he ate entire sheep, in reference to his family's thousand-acre Sycamore Sheep Ranch. This man's political career was propelled by his successes in leading a nighttime assault on Um Qataf and as a tank commander during the capture of the "Chinese Farm" in Operation Gazelle. In 1953, this man created his country's Unit 101 guerrilla brigade, which later merged with the 890th Paratroop Battalion on the orders of (*) Moshe Dayan. This man spent the final eight years of his life in a vegetative coma following a stroke, which took place only months after he founded his country's centrist "Forward" party. As Defense Minister, this founder of Kadima earned the nickname "Butcher of Beirut" for his negligence in the lead-up to the Sabra and Shatila massacre. For 10 points, what successor of Ehud Barak served as Prime Minister of Israel from 2001 to 2006?

ANSWER: Ariel **Sharon** [or Ariel **Scheiner**]

<INB, Other History>

10. One process for techniques with this property can be done with the States-Haberkorn-Ruben method or time proportional phase incrementation. A DIPSI ("dipsy") sequence can be used to achieve isotropic mixing in one technique with this property that does not rely on phase cycling. Spectra for techniques with this property may display a double-dispersion or double-absorption lineshapes, and INADEQUATE is one technique with this property. (*) HSQC is a technique with this property that measures heteronuclear through-bond correlation, while a through-space technique with this property utilizes the Nuclear Overhauser effect. Techniques with this property display spin correlation through cross peaks, which correspond to off-diagonal figures on their spectrograms. For 10 points, NOESY ("nosy") and COSY ("cozy") are NMR techniques with what property, as they produce spectrograms with a second frequency axis?

ANSWER: **2D** [or **two-dimensional**; anti-prompt on **TOCSY**, **NOESY**, or **COSY** with "what general property does it have?"]

<AK, Chemistry>

11. A model of this scenario extends Hotelling models to a "circular product space" to highlight the effect of "outside goods" on this scenario. That model of this scenario was created by Steven Salop. A common model of this scenario found that asymmetric "group utility" leads this scenario to bias high-elasticity products, but is usually used assuming constant elasticity of substitution. That Dixit-Stiglitz model of this scenario introduced the "love of variety" approach and attacked the common claim that a (*) "deadweight loss of excess capacity" results from this market structure. Joan Robinson and Edward Chamberlin independently created the first models of this market structure, often exemplified by the restaurant industry. Firms in this market structure profit in the short-run due to their limited market power, but low barriers to entry drive long-run profits to zero. For 10 points, name this market structure, in which a large number of firms produce similar but differentiated products.

ANSWER: **monopolistic competition** [accept **monopsonistic competition** but do not accept or prompt on "monopoly" or "monopsony"; prompt on **imperfect competition** and equivalent descriptions]

<JG, Economics>

12. In a story, a character entering this profession shrinks away from a painting littered with corpses titled *The Victims*. The narrator of a novel is called a “little fool” when he spots the Superior entering a chauffeured car with a character of this profession. The title artist decorates a young member of this profession with a spider “wreathed in flames” in the story “The Tattooer.” A blind masseuse who tells the time by feeling the hour and minute hands of her watch casually tells the narrator of a novel why another character chose this profession. That narrator feels the (*) Milky Way coursing through him as he observes a character with this profession anguishing over Yoko’s death during a warehouse fire. In *The Temple of the Golden Pavilion*, Mizoguchi visits Shinkyogoku and observes as Father Dosen hires one of these people. In a 1937 novel, Shimamura visits one of these people at a hot spring. For 10 points, Komako from *Snow Country* works as what sort of Japanese hostess? ANSWER: geishas [accept geiko or geigi] <INB, Miscellaneous Lit>

13. While on a trip to England, this man was convinced by a letter from Josh Billings to join James Redpath’s Lyceum Bureau, where he would give “chalk talks.” It’s not Mark Twain, but this man’s time in the Player’s Club introduced him to his biographer Albert Paine. Desperate for money, this man accepted an offer from John Hay for a position as a consul in Guayaquil (“gwah-yah-KEEL”), where he died of yellow fever. This man’s work for George William Curtis indirectly resulted in the extradition of one of his political rivals from Vigo, Spain. Abraham Lincoln called this man “our best recruiting sergeant.” This man compared the Catholic Church to the (*) “American River Ganges” and Tammany Hall to a Tiger in a medium influenced by John Tenniel’s work for *Punch*. This man popularized the modern image of Santa Claus and the animals representing the Democratic and Republican parties. For 10 points, name this illustrator for *Harper’s Weekly*, the “Father of the American Cartoon.” ANSWER: Thomas Nast (the political rival mentioned in the fourth clue is Boss Tweed) <AK, US History>

14. Given a suitable filter, a quantity named for this scientist can be obtained from the three terms of the subgrid tensor produced by Leonard decomposition. Using the momentum equations to derive a quantity named for this scientist leads to an infinite hierarchy of equations for higher-order correlations. The number of grid points must exceed the nine-fourths power of a quantity named for this scientist in direct numerical simulation. An increase in a quantity named for this scientist results in the increase of the range of wavenumbers for which the negative (*) five-thirds law holds. Density times the time-averaged velocity correlation defines a tensor named for this scientist that arises when averaging the Navier-Stokes equations. A quantity named for this scientist is equal to linear dimension times fluid velocity over the kinematic viscosity. For 10 points, turbulent flow occurs at the high values of the number named for what scientist? ANSWER: Osborne Reynolds [accept Reynolds stress or Reynolds stress tensor; accept Reynolds number] (The second clue refers to the closure problem.) <AK, Physics>

15. A cartoon depiction of this character appears at the center of a 3-by-5 panel illustrated by Tom Gauld, which was included on the inside flap of Richard Pevear’s translation of the non-Russian novel in which he appears. The chapter titled “A Vision” ends with a glimpse of this character hard at work on the manuscript of his five-act tragedy *Mirame* (“mee-RAHM”). To render this character’s supposed ability of “interrogating ashes” obsolete, Grimaud (“gree-MO”) swallows an incriminating letter and quaffs it down with red wine. Characters in this man’s (*) employ include the mysterious “Man from Meung” and a duplicitous woman whom he instructs to abscond with a pair of diamond studs. This character sends a spy branded with the *fleur-de-lis* to England to assassinate the Duke of Buckingham, who’s having an affair with Anne of Austria. For 10 points, name this powerful minister who competes with Louis XIII (“the-thirteenth”) for the loyalty of d’Artagnan (“dar-tah-n’YAN”) in *The Three Musketeers*. ANSWER: Cardinal Richelieu [prompt on Cardinal]

<INB, Long Fiction>

16. **Register-indirect and auto-decrement are two of the modes for calculating these values in ARM (“arm”). One of these values is split into three separate chunks in a format that also includes an available flag and a privilege level, that format is a segment descriptor. PAE (“P-A-E”) increases the number of these values by switching from a two-level hierarchy to a three-level hierarchy and doubling the length of a PTE. In the IF (“I-F”) stage of a typical datapath, a MUX (“mucks”) chooses between two of these values. The (*) translation lookaside buffer converts between these values, and the program counter holds one of these values. In C, variables that store these values are assigned by putting an ampersand before a variable and can be dereferenced by prepending them with an asterisk. The call stack begins at the highest available one of these values and goes downwards. For 10 points, name these values stored in pointers.**

ANSWER: memory addresses [accept pointers before “pointers”; accept physical addresses; accept page addresses; accept instruction addresses; accept addressing modes; accept references; prompt on PC or program counter with “what type of value is the program counter?”] (PAE is Physical Address Extension and PTE is Page Table Entry)

<AK, Computer Science>

17. **A photographer from this movement captured his wife as *Queen Semiramis* while holding a leaf and a glass of water. A photographer from this movement captured an upward angle of one of his characteristic doll sculptures attached to a tree. A self-portrait in front of a mirror wearing a high-collared checkered shirt was taken by a Jewish gender-nonconforming photographer from this movement. A torn screen looking out at a desert and self-portrait in a gas mask under an umbrella were captured by a photographer from this movement who also posed in (*) Hitler’s bathtub during her World War II correspondence for *Vogue*. That photographer from this movement discovered the “solarisation” technique used by her lover Man Ray. A Belgian artist from this movement captured himself covering his face with a checkerboard, echoing the pose of his best known painting. For 10 points, Lee Miller was a member of what movement that also included the photography of René Magritte (“mah-GREET”)?**

ANSWER: Surrealism [do not accept or prompt on “Dada”] (the first three clues refer to Rene Magritte, Hans Bellmer, and Claude Cahun respectively)

<AK, Photography>

18. **Scholars like Raymond E. Brown have argued that a figure of this name actually represents a “community” of authors. Veneration of St. Cyrus and a saint of this name termed “Wonderworking Unmercenarys” took over pagan sites in Aboukir. Rudolf Bultmann proposed that works attributed to a man of this name drew on a lost “signs source.” Two works attributed to a figure of this name address “the elect lady and her children, whom I love in the truth” and warn of the intransigent (*) Diotrefes (“dye-AW-truh-fee-z”). The likely interpolated phrase “the Father, the Word, and the Holy Ghost: and these three are one” is called a “Comma” named for a figure of this name. A book named for that figure contains the Bible’s shortest verse, “Jesus wept.” The gospel of this name is the only one to contain the story of the Wedding at Cana and is written by “The Disciple whom Jesus loved.” For 10 points, which name is shared by the only non-synoptic gospel and the man who baptized Jesus?**

ANSWER: John [or Johannine; or equivalents such as Yohanan, Ioannes, Giovanni, Youhanna]

<JG, Religion>

19. **A plot to kill this leader by the separatist group *Vola* failed when he outright Matrix-dodged Stepan Fedak’s bullets. This leader backed the failed Sejny (“SAY-nee”) Uprising and a false flag “mutiny” led by Lucian Zeligowsky to seize nearby territory. This leader, who was interned at Magdeburg in the Oath Crisis, robbed a mail train of about \$8 million worth of tax revenue in the Bezdany Raid while leading the “Old Faction” of the PPS. This leader forced the Treaty of Riga by winning the Battle of the Niemen (*) River**

against an enemy he opposed with the “Prometheist” strategy of backing ethnic separatism. The *endecja* (“en-DETS-yah”) movement and this leader’s ethnic chauvinist nemesis Roman Dmowski (“d’MOF-skee”) opposed this leader’s plan to unite Central Europe in an “Intermarium” federation. After a disastrous retreat from Kiev, this leader defeated Mikhail Tukachevsky at the “Miracle on the Vistula.” For 10 points, name this First Marshal and occasional dictator of interwar Poland.

ANSWER: Józef Pilsudski (“pee-ooH-SOOT-skee”) [or Józef Klemens Pilsudski]

<JG, European History (Continental)>

20. **This character compares her marriage to the uneven yoke of an ox in *Heroides IX* (“nine”). This woman declines to marry a god when he takes the form of a creepy ox-headed man. This woman’s eldest son leads a failed expedition when he misinterprets the Oracle of Delphi’s advice to wait “three fruits.” A fight over this woman ends when a character is chokeholded each time he transforms into a snake and then into a bull. In a myth that does not involve Zeus, a contest for this woman’s hand in marriage is the origin of the (*) cornucopia flower, when it is torn off of the river god Achelous (“ack-ee-LOW-us”). This woman is nearly assaulted by the ferryman that takes her across the flooding Evenus River. Fearing that her husband will elope with Iole (“AYE-oh-lee”), this sister of Meleager presents a gift that she believes to be a love potion, although it is actually a tunic infused with the poisonous blood of the centaur Nessus. For 10 points, name this woman who unwittingly kills her husband Heracles.**

ANSWER: Deianira

<KL, Mythology>

Bonuses

1. For 10 points each, answer these questions about PCR master mixes.

[10] In order to decrease PCR setup time, master mixes attempt to provide an optimal solution of this enzyme, dNTP's, and magnesium chloride. Before the discovery of this enzyme, fresh Klenow fragment had to be added after each thermal cycle.

ANSWER: **Taq** (“tack”) DNA **polymerase** [prompt on DNA **polymerase**; do **NOT** accept or prompt on “*Taq* RNA polymerase” or “RNA polymerase”]

[10] Betaine and DMSO are added to master mixes to improve the amplification of template DNA rich in these *two* nucleobases. DNA base pairs consist of either adenine and thymine or these *two* nucleobases.

ANSWER: **G** and **C** [accept in either order; accept **guanine** and **cytosine**; accept **guanosine** for guanine; accept **cytidine** for cytosine]

[10] Adding DMSO to master mixes is also recommended for preventing the formation of these structures. Hot-start PCR reduces these unwanted by-products that run as less than 100 base pair bands near the bottom of the lane.

ANSWER: **primer dimers** [prompt on **dimers** with “What reagent is forming the dimers?”]

<JS, Biology>

2. This novel’s preface refutes Ortega y Gasset’s (“or-TEH-gah ee gah-SET’s”) assertion that compelling adventure stories can no longer be written because of the modern reader’s “superior sensibilities.” For 10 points each:

[10] Identify this novel. Its narrator follows the instructions of the rug merchant Dalmacio Ombrellieri to reach its remote setting, where he discovers a “museum” whose aquarium is filled with hundreds of dead fish.

ANSWER: *The **Invention of Morel***

[10] Jorge Luis Borges (“BOR-hayz”) wrote the preface to this fellow Argentine author’s novel *The Invention of Morel*.

ANSWER: Adolfo **Bioy Casares** (“b’YO-ee cah-SAH-rez”)

[10] Bioy Casares (“b’YO-ee cah-SAH-rez”) set *The Invention of Morel* on one of these geographic locations. The novel makes allusions to another of these locations created by H. G. Wells that’s inhabited by Doctor Moreau (“moh-ROH”).

ANSWER: **islands**

<INB, Long Fiction>

3. This musician’s album *Free Jazz: A Collective Improvisation* is a single lengthy impromptu recording that pioneered the genre. For 10 points each:

[10] Name this alto saxophonist of the 1959 standard “Lonely Woman.”

ANSWER: Ornette **Coleman** [or Randolph Denard Ornette **Coleman**]

[10] This Horace Silver album concludes with an unrelated song titled “Lonely Woman.” Many of its songs, including the title track and “The Natives are Restless Tonight,” use near-identical bass lines.

ANSWER: **Song for My Father**

[10] This saxophonist’s first wife became a lonely woman when he left her in 1963, three years after writing a song for her on *Giant Steps*.

ANSWER: John **Coltrane** [or John William **Coltrane**]

<KL, Jazz>

4. In the Gandavyūha (“gun-duh-v’YOO-huh”) Sūtra, a bodhisattva representing this concept sends Sudhana to learn from 53 teachers, of which that bodhisattva is the penultimate and which inspired the 53 stations of the Tōkaidō. For 10 points each:

[10] Name this concept embodied by Mañjuśrī (“MAHN-joo-sh’ree”). The mantra “gone, gone, all gone to the Other Shore, what insight” and the statement “form is empty, and emptiness is form” appear in a sūtra partly titled for this concept.

ANSWER: (the perfection of) **wisdom** [or **Prajñā**pāramitā; prompt on **heart** or **hrdaya** with “heart of what other concept?”] (all translations here are based on Thich Nhat Hanh’s)

[10] The Gandavyūha Sūtra ends this sūtra, which describes the interpenetration of all things with the images of “untold lands” in “one atom” and of the Cosmic Buddha Vairocana’s (“VYE-roh-chuh-nuh’s”) body. The Huayan School is based mainly on this sūtra, which contains the Ten Stages Sūtra.

ANSWER: **Flower Garland** Sutra [accept the **Avatamsaka** Sūtra; accept any answer that uses translations like “**ornament**” or “**decoration**” in place of “garland”; prompt on partial answer]

[10] The second part of the Flower Garland Sūtra concerns this set of principles created by Siddhārtha Gautama, which explain the sources and nature of *dukkha* or “suffering” and posits the “Eightfold Path” as a solution.

ANSWER: The **Four Noble Truths** [accept the **Four Truths of the Arhats** or the **Cattāri Ariyasaccāni**; prompt on partial answers]

<JG, Religion>

5. This man was assisted by Epifany Slavinetsky in revising several service-books that were previously modified by Joasaphus I. For 10 points each:

[10] Name this patriarch who was condemned by a synod called by Tsar Alexis. His reforms to church rituals caused the Raskol, in which the Old Believers broke away from the Russian Orthodox Church.

ANSWER: **Nikon** [or Nikita **Minin**]

[10] Nikon was part of the Zealots of Piety that formed during this tumultuous period of Russian history. During this period, the boyars responded to False Dmitry I’s conversion to Catholicism by launching his ashes out of a cannon.

ANSWER: **Time of Troubles** [or **Smutnoye Vremya**]

[10] This other religious position was held by Philip II, who was canonized by Nikon nearly a century after his murder on the orders of Ivan the Terrible. In 1589, this position was transformed into the Patriarchate with the help of Boris Godunov.

ANSWER: **Metropolitan** of Moscow

<KS, European History (Continental)>

6. Answer some questions about the various uses of alkoxides (“alk-oxides”), for 10 points each.

[10] Alkoxides are nucleophiles (“nucleo-philes”), meaning they donate electrons and thus satisfy the Lewis definition of these species. In Brønsted-Lowry theory, these species accept protons.

ANSWER: **bases**

[10] Eliminations that use tert-butoxide (“turt-b’yoot-oxide”) favor the less substituted product named for this chemist. A rearrangement discovered by this chemist produces primary amines from primary amides, bromine, and a strong base.

ANSWER: August Wilhelm von **Hofmann**

[10] Outside of organic chemistry, metal alkoxides are used as precursors in this low-temperature process used to synthesize nanoparticles, glass fibers, and thin films. If the drying stage of this process is done under supercritical conditions, the colloid network structure is retained and the product is very porous.

ANSWER: **sol-gel** process

<JS, Chemistry>

7. In a 1797 sketch, this curly-haired person wears a lapel inscribed with his name. For 10 points each:

[10] Identify this person who is shown feverish and being coerced into drinking his medicine by Dr. Arrieta in an 1820 painting.

ANSWER: Francisco **Goya** [or Francisco José de **Goya** y Lucientes]

[10] As a court painter, Goya produced this massive 1801 painting, whose layout and inclusion of the artist himself was inspired by *Las Meninas*. The only person in this painting turned away from the viewer is Fernando VII’s (“the-seventh’s”) future wife.

ANSWER: **Charles IV** of Spain and his **Family** [accept answers indicating that it's a group portrait of **Charles IV** and his **family**]

[10] During his stay in Madrid's *Quinta del Sordo*, Goya produced portraits of a pair of women laughing and Leocadia Weiss, as well as a depiction of Saturn devouring his son, in a series of fourteen paintings named for this color.

ANSWER: **black** [accept *The **Black** Paintings* or *Pinturas **negras***]
<INB, Painting and Sculpture>

8. An appendix intended to clear up "the question of [this author's] blinding" contains 21 numbered points, the first of which states, "Either [this writer] was a blind man or he was not." For 10 points each:

[10] Identify this author. A later writer modified Gertrude Stein's quip about Picasso to answer the question, "What difference did [this author] make?" with the answer, "This [author] was making adjectives."

ANSWER: **Stesichorus** ("steh-SICK-uh-russ")

[10] The surviving fragments of Stesichorus's *Geryoneis* ("gary-on-AY-is") inspired this 1998 verse novel by Anne Carson.

ANSWER: **Autobiography of Red**

[10] Carson's translation of the thirteenth fragment of Stesichorus describes a "little red" one of these animals which Heracles killed with his club. Heracles captured one of these animals with three heads that guards Hades.

ANSWER: **dogs**

<INB, Miscellaneous Lit>

9. The first wave of immigration from this country to Latin America resulted from an 1860 civil war that led to the fall of the Christian stronghold of Zahlé and subsequent French intervention. For 10 points each:

[10] Name this country whose immigrants developed tacos *al pastor* in Mexico and introduced images of Saint Charbel to Mexican churches. Mexican billionaire Carlos Slim descends from immigrants from this country.

ANSWER: **Lebanon** [or **Lebanese Republic**]

[10] A plaza in Veracruz, Mexico dedicated to the "Lebanese Migrant" includes concrete blocks that form the shape of this tree, a national symbol of Lebanon.

ANSWER: Lebanese **cedar** [or **Cedrus libani**]

[10] Lebanese Muslims established Mexico's first mosque, the Mezquita Suraya, in this capital of Coahuila ("KOH-ah-WEE-lah"). This city also contains the Cristo de las Noas, Latin America's third-tallest statue of Jesus.

ANSWER: **Torreón**

<KS, Geography>

10. The Marathi deity Vitthoba, usually identified with Krishna under the name Sri Vitthal, is typically depicted standing on one of these objects provided for him in legend by his follower Pundalik. For 10 points each:

[10] Name this object, which Pundalik in some stories left Krishna standing on eternally after forgetting about the latter's visit. The Egyptian goddess Meskhenet is often depicted simply as one of these objects with a human head.

ANSWER: a **brick**

[10] Meskhenet's depiction as a brick references the Egyptians' use of namesake bricks to aid this process. The deity Taweret governed this process, which Isis was nearly prevented from undergoing by the loss of Osiris's genitals.

ANSWER: giving **birth** [accept obvious equivalents; prompt on getting **pregnant** or having **sex** and equivalents]

[10] Another Egyptian tutelary childbirth deity, the frog goddess Heqet, was the consort of this deity, who formed the Elephantine Triad with Satis and Anuket and controlled the Nile flood through the caves under Elephantine.

ANSWER: **Khnum** [accept **Khnemu** or **Khnoubis**]

<JG, Mythology>

11. According to Suetonius, Dolabella insultingly called one of these two people "the inner partner of the royal couch" belonging to the other. For 10 points each:

[10] Identify *both* of these men, whose alleged homosexual relationship led to one of them being mocked as the “Queen” of the other’s Anatolian kingdom.

ANSWER: Gaius Julius **Caesar** AND **Nicomedes IV** (“the-fourth”) of Bithynia [prompt on partial answers]

[10] After Nicomedes IV bequeathed Bithynia (“bith-IN-ia”) to Rome, Pompey combined it with this other kingdom’s western half. A ruler of this kingdom supposedly built up an immunity to poison by consuming small doses every day.

ANSWER: Kingdom of **Pontus** [accept Bithynia et **Pontus**] (That ruler was Mithridates VI.)

[10] Caesar’s own soldiers teased him for his dalliance with Nicomedes during one of these events held after the Gallic Wars. The Carthaginian noblewoman Sophonisba consumed poison to avoid humiliation during one of these Roman ceremonial parades.

ANSWER: Roman **triumphs** [or **triumphus**]

<INB, European History (Commonwealth, Ancient, Historiography)>

12. In “A Poem for My Father,” this poet wrote of how she distracted herself with “long wars between short sighted trojans & greeks” as her father “slapped some wide hips in [his] pvt dungeon” in the next room. For 10 points each:

[10] Identify this poet, whose selected poems were published in the book *Shake Loose My Skin*. She wrote about an “un real roasting” in “On Seeing a Pacifist Burn,” which she included in *Homegirls and Handgrenades*.

ANSWER: Sonia **Sanchez** [or Wilsonia Benita **Driver**]

[10] In a poem written for this “sister,” Sonia Sanchez described her as a “holy one / restraining her words / from city to city.” This Chicago-based poet of *A Street in Bronzeville* wrote “We Real Cool.”

ANSWER: Gwendolyn **Brooks** [or Gwendolyn Elizabeth **Brooks**]

[10] Both Sanchez and Brooks were influential contributors to the Black Arts Movement, which was co-founded by this former Poet Laureate of New Jersey and author of the collection *Preface to a Twenty Volume Suicide Note*.

ANSWER: Amiri **Baraka** [or LeRoi **Jones**]

<INB, Non-epic Poetry>

13. Lagrange multipliers are used to represent these forces in the equations of motion. For 10 points each:

[10] Name these forces used to account for things like the length of a pendulum.

ANSWER: **constraint** forces [or forces of **constraint**; accept **constraints**]

[10] Rolling without slipping is expressed as a constraint with this property. Often ignored in introductory mechanics, systems with this type of constraint are studied with versions of Hamilton’s principle that do not correspond to the principle of stationary action.

ANSWER: **nonholonomic** (“non-holo-nomic”)

[10] On the other hand, holonomic (“holo-nomic”) constraints are easily expressed as a function of the generalized coordinates set equal to this number. This is the value of the net force on a particle moving at constant velocity.

ANSWER: **zero** [accept **zero** N or **zero** Newtons]

<JS, Physics>

14. This term is often used interchangeably with *epistēmē* (“epis-TEE-mee”) in later Platonic dialogues like *Statesman* and *Theatetus*, and the central question of the *Gorgias* is whether this term applies to rhetoric. For 10 points each:

[10] Give this Greek term, which in Plato tends to describe practices with valuable effects on other things. When asking whether it applies to something, Plato/Socrates often uses the analogies of medicine producing health and horse-grooming producing equine quality.

ANSWER: **tekhnē** (“tek-NEE” or “tek-NAY”)

[10] In this dialogue, Socrates uses the grooming analogy to ask who would have such effects on humans. Socrates asks for “free meals” from accusers like Meletus when convicted of “corrupting the youth” during this dialogue.

ANSWER: **Apology** [or **Apologia Socratous**]

[10] In *Gorgias*, Socrates argues that rhetoric is not a *tekhnē* but one of these concepts relative to the true “political *tekhnē*.” Socrates uses cookery as an example of how these concepts pretend to be actual *tekhnai* like medicine.

ANSWER: **empeiriai** [accept translations like **knack**, **sham**, or **flattery**]

<JG, Philosophy>

15. This geometric object can be immersed in three-dimensional space. For 10 points each:

[10] Name this object that is the result of taking the quotient of a unit square by the following relation: (read slowly) “ $x\text{-comma-}1 \text{ equals } x\text{-comma-}0$,” and “ $0\text{-comma-}y \text{ equals } 1\text{-comma-}y\text{-minus-}1$,” for each x and y between 0 and 1.

ANSWER: **Klein bottle**

[10] Another topological object named for a German is the Hilbert one of these figures. This figure is a Platonic solid with six square faces.

ANSWER: **cube**

[10] This map from the 3-sphere to the 2-sphere, in which the pre-image of a point on the 2-sphere is a great circle of the 3-sphere, was also discovered by a German mathematician. This map is an example of a fiber bundle.

ANSWER: **Hopf fibration**

<SK, Math>

16. Tom Stoppard’s *Travesties* reimagines the story of Henry Carr, who played this character in a small-time production managed by James Joyce. For 10 points each:

[10] Name this witty bachelor. In an attempt to distract the equally witty Lady Bracknell, he explains that the issue with music is that “if one plays good music, people don’t listen, and if one plays bad music, people don’t talk.”

ANSWER: **Algernon Moncrieff** [accept either part]

[10] This author quipped that, “in creating man, [God] somewhat overestimated his ability.” He wrote about Algernon Moncrieff’s Bunburying ways in *The Importance of Being Earnest*.

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

[10] As she interrogates Jack Worthing, Lady Bracknell states that she doesn’t “approve of anything that tampers with” this quality, which she defines as “like a delicate exotic fruit; touch it and the bloom is gone.”

ANSWER: **ignorance**

<INB, Drama>

17. Megasthenes (“meh-GAS-thuh-NEEZ”) said that a mile-and-a-half-wide and nine-mile long palisade with 470 towers protected this city, and Laurence Waddell identified a well in it called the Agan Kuan with a ruler’s namesake “Hell.” For 10 points each:

[10] Name this city, which came to prominence when Shishunāga (“shih-shoo-NAH-guh”) moved his capital to this city from Rājagriha (“RAH-juh-grih-huh”). This city was home to Āryabhata and served as capital of the Magadha (“MUH-gudd-huh”), Maurya, and Gupta empires.

ANSWER: **Pātaliputra** [accept **Patna**, **Azimabad**, or **Pātalibothra**]

[10] This ruler ran a torture chamber called his “Hell” in Pātaliputra until he converted to Buddhism. This ruler of the Maurya at their peak described his alleged newfound pacifism in his namesake “Pillars” and “Rock Edicts.”

ANSWER: **Ashoka** the Great [or **Asoka** or **Ashok** or **Asok**]

[10] This ruler moved his capital from Pātaliputra to Kannauj (“KUNN-naw’j”) while leading a brief reunification of northern India after the Guptas’ collapse. Xuanzang (“sh’wen-tsang”) visited this ruler, whose death triggered the “Tripartite Competition” period.

ANSWER: **Harsh** or **Harsha** [or **Harshavardhana**]

<JG, Other History>

18. This composer wrote the difficult violin piece *Thème Original Varié*, or Variations on an Original Theme. For 10 points each:

[10] Name this virtuoso composer whose Violin Concerto No. 2 in D minor concludes with an Allegro con fuoco cadenza, followed by a rondo movement played “*a la Zingara*” (“tseen-GAH-rah”).

ANSWER: Henryk **Wieniawski** (“v’yen-YAHF-skee”)

[10] Pablo de Sarasate’s violin showpiece *Zigeunerweisen* (“tsih-GOY-nurr-VYE-zen”) quotes a theme from one of this virtuoso pianist’s *Hungarian Rhapsodies*.

ANSWER: Franz **Liszt** [or Franz Ritter von **Liszt**; or **Liszt** Ferenc]

[10] This French composer’s *Tzigane* (“tsee-GAHN”) is a rhapsody for solo violin, accompanied by a piano that has been modified to sound like the cimbalom (“TSIM-bah-lom”).

ANSWER: Maurice **Ravel** [or Joseph-Maurice **Ravel**]

<KL, Classical Music and Opera>

19. Answer some questions about anthropology case studies that later proved controversial in some respect, for 10 points each:

[10] Derek Freeman argued that this study’s author was “fatefully hoaxed” by subjects feeding her sexual fantasies. This Margaret Mead work described what she saw as the title island’s free and healthy psychosexual development.

ANSWER: ***Coming of Age in Samoa***

[10] This discredited work by Patrick Tierney alleged that Napoleon Chagnon (“SHA-nyin”) and Jacques Lizot (“lee-ZOH”) spread violence and measles among and sexually abused the Yanomami. Studies of the Yanomami still remain controversial.

ANSWER: ***Darkness in El Dorado***

[10] Robert Redfield’s depiction of this Mexican village’s social harmony was savaged by Oscar Lewis, who found rampant alcoholism and social conflict in a “re-study” that partly inspired Lewis’s “culture of poverty” thesis.

ANSWER: **Tepoztlan** (“teh-POS-t’lan”)

<JG, Anthropology>

20. Answer some questions about “tri-racial isolates,” enclaves of usually rural populations with significant European, Native American, and African ancestry found throughout the U.S. For 10 points each:

[10] Tri-racial isolates were often targeted by this movement, as in Charles Davenport’s “study” of Nam Hollow, as possessing heritable indolence and criminality. This movement pioneered by Francis Galton often tried to prevent the “unfit” from reproducing.

ANSWER: **eugenics** movement

[10] This blanket term denotes tri-racial isolates throughout the Appalachian region. This term was originally a slur, but it and the associated identity have undergone a reclamation and resurgence among modern Appalachians.

ANSWER: **Melungeons** (“muh-LUN-junz”)

[10] Significant mixed ancestry has often impeded federal recognition of tribes like New York’s Montauk Indians and this state’s Lumbee Indians, who shut down KKK targeting them in the late fifties at the Battle of Hayes Pond.

ANSWER: **North Carolina**

<JG, US History>