

## Cal's Mid-Spring Tournament 2018

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Tossups

1. Roberto Gargiani's 2014 book about this architect is partly titled for his use of the phrase "hollow stones" to refer to Buckminster Fuller's space frames. This architect got his start designing housing projects under his mentor George Howe. He grouped stairwells and elevators in opposition to the large spaces people occupy in his theory of "servant" and "served" spaces, using it for his Trenton Bath House. Wendy Lesser's biography of this proponent of "monumentality" is titled *You Say to Brick*, and he used red brick for the exterior of the (\*) Indian Institute of Management in Ahmedabad. Narrow slits let in natural light in a museum consisting of several barrel vaults this man designed in Fort Worth. Each office space has a view of the Pacific in a La Jolla ("luh HOY-uh") complex designed by this man. He used a triangular coffered concrete ceiling for a university art gallery, and created a national assembly building surrounded by an artificial lake in Dhaka. For 10 points, name this American architect who designed the Salk Institute, Yale University Art Gallery, and National Parliament House of Bangladesh.

ANSWER: Louis Kahn

<AK, Other Art (Architecture)>

2. This character describes another as someone "who tolerates, which is intolerable; who is kind, which is cruel; who understands, which is beyond comprehension" in a speech that repeats the phrase "sad, sad, sad." Another character describes this character as "108... years old" and "[weighing] somewhat more than that." In a monologue, this character explains that "we cry, and we take our tears, and we put 'em in the ice box... and then we put them in our drinks," before repeatedly exclaiming (\*) "CLINK!" while giggling. While surveying a living room, this character quotes Bette ("Betty") Davis by exclaiming "What a dump!" before repeatedly asking for that quotation's original source. After this character calls a man a "flop" in bed, she claims the only man who has ever made her happy is her husband, who promptly arrives with a bouquet of snapdragons. This woman is the title hostess of the party game "Hump the Hostess." After a faculty party, this character informs her husband that Nick and Honey will be arriving, before singing the play's title question. For 10 points, name this wife of George in *Who's Afraid of Virginia Woolf?*

ANSWER: Martha

<JX, Drama>

3. This man founded four monasteries called *peethams* ("PEE-tums"), establishing one for each cardinal direction. This man founded ten religious orders called Dashanamis, whose members take the order's name as their surname upon joining. This man is credited with inventing the panchayatana puja, the fivefold worship of Shiva, Vishnu, Devi, Surya, and Ganesh, which is central to the Smarta tradition. This man studied under Govinda, a guru who was taught by Gaudapada, the author of the *Mandukya-karika*. This Hindu theologian, who wrote the (\*) *Brahmasutra-bhasya*, summarized his teachings with his assertion that "Brahman is the only truth, the world is unreal, and there is ultimately no difference between Brahman and the individual self." For 10 points, name this Hindu theologian who propounded and formalized the monist philosophical school of Advaita Vedanta.

ANSWER: Adi Shankara [or Shankaracharya]

<WC, Religion>

4. A simile describing smoke spewing out into thin air compares this people during a siege to a swarm of bees being smoked out by a shepherd. The hair of one of these people caught fire in a ceremony that featured a cloud of bees settling atop a laurel tree, two events that were interpreted as foretelling war and future glory by an oracle in a grove near Albunea (“al-BYOO-nee-uh”). Mothers among these people ran to the mountains and became Bacchantes (“BACK-unts”) after one of them was (\*) driven mad by a snakebite caused by a Fury. Alecto steadied the hand of a man who killed a stag beloved by these people that belonged to Silvia. This people’s capital of Alba Longa was founded by Ascanius, who succeeded his father as their king. Their queen Amata wanted her daughter to marry the Rutulian king Turnus instead of the Trojan son of Anchises (“an-KY-seez”). For 10 points, name this tribe in the *Aeneid* (“ih-NEE-id”), which Aeneas (“ih-NEE-is”) allied the Trojans with by marrying Lavinia.

ANSWER: Latins [prompt on Romans or Roman women]

<JX, Legends>

5. The protagonist of this story has a “pull-over jersey blouse” that looks different depending on whether she’s at home or not, illustrating how “everything about her had two sides to it.” A character in this story calls the protagonist’s house “a cardboard box I can knock down any time.” In this story, a character draws an X in the air which he refers to as “my sign” and says “Gonna get you, baby” to a girl on a date with Eddie who’s jealous of her sister (\*) June. A character in this story who owns a transistor radio and has “the face of a forty-year-old baby” repeatedly threatens to pull the telephone line. After staying home from Aunt Tillie’s barbecue, the protagonist of this story sunbathes in her backyard and listens to Bobby King before being interrupted by the honking of a damaged gold convertible covered in writing. Ellie Oscar and Arnold Friend coax Connie out of her house in, for 10 points, what disturbing story by Joyce Carol Oates titled for a pair of questions?

ANSWER: “Where Are You Going, Where Have You Been?”

<RK, Short Fiction>

6. This politician authored a document that stated his objectives as “the firm maintenance of established rights, the correction of proved abuses and the redress of real grievances.” His home secretary, James Graham, sponsored a bill that prevented women and children from working in factories for more than twelve hours or from working in mines. This leader’s first government was defeated after the opposition allied with the Irish Repeal Party in the Lichfield House Compact. This leader outlined his support of the (\*) Great Reform Act in the Tamworth Manifesto. His support of Irish Unionists and opposition to Catholic Emancipation earned him the nickname “Orange.” This leader’s establishment of the Metropolitan Police Force in London led to their nickname of “bobbies.” For 10 points, name this Conservative British Prime Minister whose term witnessed the Irish Potato Famine, during which he repealed the Corn Laws.

ANSWER: Robert Peel

<RD, European History>

7. The argument usually referred to as O when characterizing morphosyntactic alignment is alternatively indicated by this letter. The absence of a sound with this IPA symbol is an areal feature of the circum-Saharan zone, possibly influenced by the fact that Arabic lost that sound long ago. When preceded by the letter M, this letter refers to the abbreviation of a framework in syntactic theory introduced by Noam Chomsky in the mid-1990s. In reference to a reflex of the (\*) Proto-Celtic labiovelar \*kʷ (“kwuh”), the Gallo-Brittonic languages are sometimes referred to by this letter, in contrast to Q-Celtic. This letter is equivalent to a double bar in X-bar theory, where it indicates a maximal projection. In the IPA, this letter represents a voiceless bilabial stop, whose voiced counterpart is “b.” For 10 points, name this letter that, in the context of X-bar theory, can stand for either “preposition” or “phrase.”

ANSWER: P

<WN, Social Science>

8. A legendary character in this region has as many noses as days remaining in the year, and children are told to search for him on December 31st not realizing that he has only one nose left. Festival-goers in this region often run alongside people holding pitchforks who throw fireworks into the crowd, a tradition that evolved from this region's "devil's dances." This region's namesake donkey is often used to symbolize its cultural value of *seny* ("sen"), or level-headedness. Acrobats from this region wear a black sash called a (\*) *faixa* ("FY-shuh"), which acts as a foothold allowing them to build human towers up to ten stories high. A Christmas tradition in this region involves beating a log with a stick while commanding it to defecate gifts in the song *Caga tió*. The Three-Branched Pine is an important symbol for nationalists in this region, where fans created a flag called the *senyera* by forming yellow and red stripes in the Camp Nou ("kahm NO") to support their soccer team in a 2012 "El Clásico" game against Real Madrid. For 10 points, name this autonomous community in northeastern Spain that is home to FC Barcelona.

ANSWER: Catalonia [or Catalunya; or Catalonha; or Cataluña]

<EC, Geography>

9. In 1998, Nogales, Wolf, and Downing used electron crystallography to create the first detailed three-dimensional model of this protein. Post-translational modifications of this protein at its C-terminus include the addition of over thirty glycine residues, addition of up to six glutamate residues, and a detyrosination reversed by its namesake tyrosine ligase. Drugs that target this protein's activity can bind to a domain on RB3 called the stathmin-like domain. The acetylation of this protein at its K40 lysine is carried out by ATAT1 ("A-T-A-T-one"). FtsZ is the prokaryotic analogue of this protein. The PCM of one organelle contains a reticular lattice of interlocking rings of this protein and (\*) pericentrin. Nucleation of structures made of this protein is facilitated by namesake ring complexes of the gamma isoform of this protein, which forms rings of thirteen units. The polymerization of this protein is interrupted by colchicine and taxol, and the addition and removal of this protein from protofilaments through GDP hydrolysis is known as dynamic instability. For 10 points, name this protein with alpha and beta isoforms that dimerize to form microtubules.

ANSWER: tubulin [accept alpha-tubulin, beta-tubulin, gamma-tubulin]

<AK, Biology>

10. A 2005 book on the historiography of this region cites the emergence of the idea of this region's "civilization" in the works of Jacques Godechot ("god-uh-SHOW") as a foundational influence on the field. A 2000 book about this region argues that it was destabilized by a multiethnic "motley crew" who resisted oppression by those who viewed them as the "many-headed hydra"; that book challenges an argument by R. R. Palmer that ideas of "the people as constituent power" and of political rights characterized a set of "democratic" (\*) revolutions that took place in, and are often named for, this region. Marcus Rediker is known for applying Marxist approaches to the study of this region, and Bernard Bailyn is sometimes credited with pioneering the study of its namesake "world." Horses and tomatoes formed part of what Alfred Crosby identified as an "exchange" across this region, while molasses, manufactured goods, and slaves were major products of the legs of a trade across this region. For 10 points, identify this region, across which triangular trade and the Columbian Exchange took place, which connects Africa, Europe, and the Americas.

ANSWER: Atlantic Ocean [or Atlantic World]

<MC, Other History>

11. Variants of this reaction that produce an asymmetric product, such as one using acetic anhydride and triethylamine, were discovered by Schreiber et al. This reaction is used industrially to synthesize pelargonic acid and azelaic acid from oleic acid. This reaction produces the same products as using osmium tetroxide followed by periodic ("pur-eye-ODD-ic") acid. The chemist that discovered the mechanism of this reaction also names the rearrangement of a tertiary alcohol to a ketone through reaction with a peroxyacid. The central intermediate of this reaction forms through a (\*) retro-1,3-dipolar cycloaddition that is both preceded and succeeded by 1,3-dipolar cycloadditions. The mechanism of this reaction features a zwitterionic carbonyl oxide

intermediate named for Criegee. Reductive workup of the trioxolane produced by this reaction produces ketones or aldehydes. For 10 points, name this reaction in which alkenes are cleaved to carbonyls using a triatomic allotrope of oxygen.

ANSWER: ozonolysis

<AK, Chemistry>

12. **Queer readings of this character often highlight how he grieves for five hours over the body of a character whose death Oscar Wilde called “one of the great tragedies of my life” in “The Decay of Lying.” The letters “T” and “F” are found branded on this character’s shoulder by Bibi-Lupin, who has secretly administered a drug to knock him unconscious. The death of Esther drives (\*) Lucien to reveal this character’s assumed identity of a canon on a secret mission named Carlos Herrera. This man’s penchant for evading punishment earns him the nickname “Trompe-la-Mort” (“tromp-lah-MORE”). This man, who is based on Eugène François Vidocq (“vee-DOCK”), founder of the Sûreté (“soor-TAY”), champions the social climbing of Eugène de Rastignac (“ross-teen-YOCK”).** For 10 points, name this criminal mastermind who appears in the novels *A Harlot High and Low*, *Lost Illusions*, and *Father Goriot* by Honoré de Balzac.

ANSWER: Vautrin (“voh-TRAN”) [or either underlined portion of Jacques Collin; prompt on Carlos Herrera until read]

<JN, Long Fiction>

13. **In the second movement of this composer’s violin concerto, the soloist opens with a held rolled chord, followed by three loud, dissonant pizzicato chords also played by the cellos and basses. This composer almost completely eschewed dynamics from the “Rondoletto” third movement of a misleadingly-titled *Serenade in A*. The third and final movement of one of this composer’s symphonies uses triplets in the horns and piano to evoke a chariot and opens with a slow setting of the phrase (\*) “Alleluia. Laudate Dominum.”** An *Andantino* theme and variations follows the *Sinfonia* first movement of this composer’s 1923 *Octet* for wind instruments. Each movement of this composer’s violin concerto opens with the two-octave-spanning “passport” chord. For the fiftieth anniversary of the Boston Symphony Orchestra, Serge Koussevitzky commissioned this composer to write a three-movement Latin choral symphony. For 10 points, name this composer who wrote a *Symphony of Psalms* during his neoclassical period, which followed his Russian-period ballets *Petrushka* and *The Firebird*.

ANSWER: Igor Stravinsky [or Igor Fyodorovich Stravinsky]

<AK, Classical Music>

14. **In a 2013 paper, George Walkden argued that the beginning of this work has been consistently misinterpreted since the 1830s. An essay on this work mocks a critic for describing it as “only small beer,” arguing that “if beer at all, it is a drink dark and bitter.” Friedrich Panzer argued that this work was written as a reworking of a motif called the Bear’s Son Tale. W. P. Ker is best known for championing this work’s (\*) style over its story, an approach criticized in an essay which compares this poem to a tower pushed over by people trying to study the rock it was constructed with. The authoritative edition of this work was produced by Frederick Klaeber, who paired it with a fragment recounting the Fight at Finnsburg. This poem opens with the funeral of Scyld Scefing (“shild SHAY-fing”), the great-grandfather of a king who married Wealhtheow (“WALL-thay-oh”) and built Heorot (“HAIR-it”).** For 10 points, name this subject of J. R. R. Tolkien’s “The Monsters and the Critics,” an Old English epic whose title character kills Grendel.

ANSWER: Beowulf

<JK, Poetry>

15. **An article by Henry Adams about this event amusingly claims that one of its instigators often visited the opera to be supplied with “amusement,” while the opera troupe was his “permanent harem”; that man was shot and killed by his business associate and romantic rival Edward Stokes three years after this event when he had an affair with socialite Josie Mansfield. During this event, Assistant Treasurer Daniel Butterfield**

accepted a ten thousand dollar bribe that he later claimed was a “real estate loan” during testimony he gave to a Congressional committee chaired by James (\*) Garfield. During this event, Abel Corbin, president Ulysses S. Grant’s brother-in-law, was approached by a pair of speculators hoping to learn of upcoming government plans about selling a certain commodity. For 10 points, name this event in which James Fisk and Jay Gould tried to corner the gold market in 1869.

ANSWER: **Black Friday** [accept equivalents mentioning **Gould’s** attempt to **corner the gold** market in 1869 until “Gould” is read]

<IJ, American History>

16. A late self-portrait by this man reproduces a tiny copy of one of his paintings in the bottom right, and depicts him against a beige background in anachronistic red Renaissance garb. His concept of “alogism” (“AY-luh-jiz-um”) informed two paintings in which a white fish obscures the image of a tuxedoed man, with one showing an ace of clubs held by the title *Aviator*. This aerial photography enthusiast developed plaster sculptures called *arkhitektons*. His stage design for a curtain was adapted into what he intended to be the “zero of form”; that painting was hung in the top corner of the (\*) 0,10 (“zero-ten”) Exhibition. He helped Marc Chagall (“shug-ALL”) and El Lissitzky found the Unovis group in Vitebsk, and earlier exhibited with the Jack of Diamonds and Donkey’s Tail groups. His early Cubo-Futurist phase informed his painting *The Knife Grinder* and the set design for the ballet *Victory Over the Sun*, while he later went through black and white phases of a non-objective geometric style that produced the painting *White on White*. For 10 points, name this artist of *Black Square*, the Russian founder of Suprematism (“sup-REM-uh-tiz-um”).

ANSWER: Kazimir **Malevich** (“mahl-YAY-vich”) [or Kazimir Severinovich **Malevich**] (The first clue is his 1933 self portrait, the unnamed painting in the second clue is *An Englishman in Moscow*, and *Black Square* is described in last clue of power.)

<AK, Painting/Sculpture>

17. For a special case of this phenomenon, light curves will show closed concave curves called fold caustics between points called cusp caustics. Research by Alcock et al. found a value of 1.2 times ten-to-the-negative-seven for a quantity characterizing this phenomenon. That quantity, which is the frequency of this phenomenon, is symbolized tau and is known as the optical depth. This phenomenon is modeled by the equation “ $u$ -squared plus two, all over  $u$  times the square root of  $u$ -squared plus four,” where  $u$  is the angular separation. That equation gives the amplification factor of this phenomenon. This phenomenon is used to (\*) detect exoplanets in Paczyński’s (“pa-CHIN-skee’s”) OGLE (“ogle”) experiment and the MOA (“M-O-A”) experiment, and it was used to find the first group of extragalactic planets in February 2018. Units of milli-arcseconds are usually used for the Einstein radius of this process. For 10 points, name this phenomenon predicted by general relativity, the low-mass case of a process in which gravity bends light around an occluding object.

ANSWER: gravitational **microlensing** [prompt on gravitational **lensing**; do not accept “weak lensing” or “strong lensing”]

<PS, Other Science (Astronomy)>

18. This thinker’s first book opens with a quotation from Hegel stating that “each consciousness seeks the death of the Other.” A book by this philosopher contrasts Steinbeck’s *In Dubious Battle* with Dos Passos’s *Adventures of a Young Man* in their handling of a narrative situation in which men have to die to advance a larger cause. That book distinguishes between “sub-men” and “serious men,” who deny their freedom in different ways, in its section “Personal Freedom and Others.” Another book by this philosopher argues that (\*) Engels’s historical account based on the discovery of bronze is not sufficient to explain the phenomenon of exclusion from the “human *Mitsein*” (“MITZ-ine”). That book argues that the title people are relegated to a state of immanence, rather than transcendence, and is divided into volumes called “Facts and Myths” and “Lived Experience.” In that book, this philosopher wrote that “one is not born, but rather becomes, a woman.” For 10 points, name this author of *The Ethics of Ambiguity* and *The Second Sex*.

ANSWER: Simone de Beauvoir [or Simone Lucie Ernestine Marie Bertrand de Beauvoir]  
<WN, Philosophy>

19. In this theory, volume integrals known as Woltjer (“WOLE-chur”) invariants ensure the topological invariance of certain structures. This theory breaks down at high values of a parameter named for Hartmann. In one kind of this theory, the cross-helicity is an invariant. In this theory, the Sweet–Parker model is inaccurate for high values of the Lundquist number and is unable to accurately model fast reconnection due to tearing modes. Whistlers can be modeled in this theory by augmenting its central equation with the (\*) Hall current term. In this theory, the sum of a tension force and pressure equals zero, and the ratio of the two components of that pressure term defines a parameter symbolized beta. This theory’s fundamental equation can be made inhomogeneous to model dissipative effects by adding a term proportional to diffusivity, preventing flux freezing. This theory, which assumes quasineutrality, can model transverse Alfvén (“all-VANE”) waves and models systems through their magnetic Reynolds number. For 10 points, name this theory that models plasmas by combining the Navier–Stokes and Maxwell’s equations.

ANSWER: magnetohydrodynamics [or MHD; or magnetofluid mechanics; or hydromagnetics; or ideal MHD; or resistive MHD]  
<AK, Physics>

20. A riot against this ethnic group began after four students, including one holding a sign that read “Lower the price of photocopies and perfume,” were shot at Trisakti University, which was founded by members of this ethnicity. This ethnic group is the focus of historian Charles Coppel, whose dissertation is titled “[this ethnicity] in Crisis.” During unrest due to low sugar prices, Adriaan Valckenier ordered a 1740 massacre of thousands of sugar mill workers of this ethnicity. The Ethical Policy undercut businesses owned by this ethnic group, who often found themselves at odds with indigenous people known as *pribumi*. This ethnicity was the primary target of violence during (\*) 1998 riots, which were partially caused by the failure of massive conglomerates owned by these people, such as the Lippo Group. Those riots prompted some wealthy members of this ethnicity to flee to the nearby country of Singapore, where they form a majority. For 10 points, name this ethnicity in Indonesia who speak languages like Hokkien (“HOCK-yen”), Cantonese, and Mandarin.

ANSWER: Chinese Indonesians [prompt on Indonesians]  
<JS, World History>

## Bonuses

1. The yield of this process is increased by running at high pressures and using an iron catalyst. For 10 points each:  
[10] Name this industrial process, which reacts three equivalents of hydrogen with nitrogen to produce ammonia. It is estimated that around two percent of the world's energy supply is used for this process.

ANSWER: **Haber** process [or **Haber**-Bosch process]

[10] The reactant hydrogen is obtained from methane through this process, in which a nickel catalyst drives the conversion of methane to synthesis gas. This process is highly endothermic, so most plants run it at around one thousand degrees Celsius.

ANSWER: **steam reforming** [prompt on **reforming**]

[10] The ammonia reactor can be modeled as [read slowly] an ideal plug-flow reactor with reaction rate  $R$ , and inlet flow rate of nitrogen  $F$ . The derivative of the conversion of nitrogen with respect to volume will equal what function of  $R$  and  $F$ ?

ANSWER: **negative R over F** [or **-R/F**]

<RD, Chemistry>

2. Pierre Montet ("mon-TAY") discovered a famously intact one of these objects in Tanis belonging to the pharaoh Psusennes ("soo-SEN-ness") I. For 10 points each:

[10] Name these objects which include one found by Howard Carter in 1925 in the sarcophagus of Tutankhamun, which hosts a Uraeus ("yoo-REE-us") at the top and has a beard inlaid with lapis lazuli.

ANSWER: funeral **mask**s [accept burial **mask**s; accept death **mask**s; accept Tutankhamun's **mask**]

[10] Psusennes I reigned during the 21st dynasty, whose founder Smendes I features extensively in this ancient literary text. Discovered alongside the Tale of Woe and Onomasticon of Amenemope, this text details the journey of a priest of Amun to Phoenicia ("fuh-NEE-shuh") to acquire cedar wood to build a ship.

ANSWER: Story of **Wenamun**

[10] The Story of Wenamun is generally accepted to be set during the reign of a pharaoh of this name, the final pharaoh of the twentieth dynasty. An earlier pharaoh of this name was killed in the Harem Conspiracy plotted by one of his wives, Tiye.

ANSWER: **Ramesses** ("RAM-uh-seez") [or **Ramses**; accept **Ramesses** III or **Ramesses** XI]

<CP, World History>

3. This author wrote the book for Lin-Manuel Miranda's musical *In the Heights*. For 10 points each:

[10] Name this author of a play in which Odessa runs a chat room under the name HaikuMom to help recovering drug addicts. That Pulitzer-winning play is called *Water by the Spoonful*.

ANSWER: Quiara Alegria **Hudes** ("OOH-dace")

[10] *Water by the Spoonful* was inspired by Hudes's time in this state. Harmond Wilks tries to revitalize the Hill District in 2005's *Radio Golf*, the final work in an August Wilson cycle set in this state.

ANSWER: **Pennsylvania**

[10] Nilo Cruz, another recent Latin American playwright, is best known for a play in which Juan Julian reads cigar rollers a novel about this character that begins affecting their lives, titled [*This character*] *in the Tropics*.

ANSWER: **Anna Karenina** [accept either underlined portion; or **Anna** *in the Tropics*]

<RK, Drama>

4. This piece unusually divides the strings into four first violin sections, four second violin sections, two viola sections, and two cello sections, but only one double bass section. For 10 points each:

[10] Name this tone poem in A minor and 9/4 time initially written as a prelude for an unfinished opera, but later published as the second movement of a four-part suite.

ANSWER: *The **Swan of Tuonela*** [or **Tuonelan joutsen**]

[10] *The Swan of Tuonela* was written by this nationalistic composer of *Finlandia*.

ANSWER: Jean **Sibelius** [or Johan Julius Christian **Sibelius**]

[10] Sibelius's piece of this genre and number comprises a single lengthy movement. Beethoven's piece of this genre and number includes an A minor "*Allegretto*" that was used in the film *The King's Speech*.

ANSWER: **Symphony No. 7** [or **seventh symphony**; or obvious equivalents; prompt on partial answer]

<EK, Classical Music>

5. This structure has recently been reclassified as an organ after researchers at the University of Limerick showed that it is continuous rather than fragmented. For 10 points each:

[10] Name this double fold of peritoneum that attaches the intestines to the posterior abdominal wall. Superior and inferior veins named for this structure drain blood from the small and large intestines, respectively.

ANSWER: **mesentery** [accept **mesenteric** organ or superior **mesenteric** vein or inferior **mesenteric** vein]

[10] The root of the mesentery originates from the flexure between the jejunum and this first section of the small intestine.

ANSWER: **duodenum** [accept **duodenojejunal** flexure or **duodenojejunal** junction]

[10] This condition occurs when a part of the intestines, commonly the sigmoid colon or the cecum, twists around its mesentery, causing a bowel obstruction. This condition is often caused by intestinal malrotation and may lead to ischemia.

ANSWER: **volvulus** [or sigmoid **volvulus**; or cecal **volvulus**]

<EC, Biology>

6. Unlike the tight-binding model, the technique named after this expression only describes edge structure. For 10 points each:

[10] Name this expression, the product of a quantity of the electron with an operator. It is multiplied by  $\hbar$  over  $m$  in a term in the Hamiltonian and varied in a second order perturbative technique that can be used to find the effective mass.

ANSWER:  **$k$ -dot- $p$**  [accept any answers that mention  **$k$** , the **dot** product, and  **$p$** ; accept **wave vector dotted with momentum**]

[10] The derivation of  $k$ -dot- $p$  perturbation theory relies on this theorem, which states that electron wavefunctions in a lattice are equal to a complex exponential times a periodic function.

ANSWER: **Bloch**'s theorem

[10]  $k$ -dot- $p$  perturbation theory is used to model these things, which are the ranges of energies possessed by electrons in solid substances. A "gap" named for them can lie between two of these things termed the "valence" and "conduction" ones.

ANSWER: energy **bands**

<AK, Physics>

7. Fred Kaplan argued that Air Force Intelligence claimed this problem was more serious than the CIA did because it would prompt the Air Force to receive a larger portion of the defense budget. For 10 points each:

[10] Name this term used by John F. Kennedy during his presidential campaign to describe the fictional relative inferiority of the American ICBM arsenal compared to the Soviet one. Kennedy used this claim to campaign for president despite having been briefed on the classified truth.

ANSWER: **missile gap**

[10] Like the fictional missile gap, belief in the "bomber gap" during the Eisenhower administration led to an increased production of this long-range bomber. This aircraft was designed to carry nuclear bombs, two of which rained down upon North Carolina in a 1961 accident that nearly led to nuclear disaster.

ANSWER: Boeing **B-52 Stratofortress** [accept either underlined part]

[10] B-52s were put on full alert after events on this island caused the Strategic Air Command to be put on DEFCON 2. Kennedy ordered a naval quarantine of this island after U-2 surveillance showed missiles being installed here.



ANSWER: **Cuba** [accept Republic of **Cuba** or *República de Cuba*]  
<JK, American History>

8. The speaker asks, “Hath not the morning dawned with added light?” in the poem “Ethnogenesis,” which celebrates this country. For 10 points each:

[10] Name this country, whose fallen are told to “sleep sweetly in your humble graves” in a Henry Timrod ode. The speaker of another poem memorializing this country’s soldiers declares, “Autumn is desolation in the plot,” as he observes rows of headstones.

ANSWER: **Confederate States** of America [or **Confederacy**; or **CSA**]

[10] The speaker says of the title object, “Furl it, fold it,—it is best” and “Treat it gently—it is holy, for it droops above the dead” in the poem “The Conquered Banner” by this “Poet-Priest of the South.”

ANSWER: Abram Joseph **Ryan**

[10] Ryan and Timrod have both been called unofficial holders of this position for the Confederacy. The poet of “Ode to the Confederate Dead,” Allen Tate, held this kind of national office from 1943 to 1944.

ANSWER: **poet laureate** [accept United States **Poet Laureate**; accept **Poet Laureate** Consultant in Poetry to the Library of Congress]

<JN, Poetry>

9. A 1961 UN Convention aimed primarily at preventing individuals from receiving this status. For 10 points each:

[10] Identify this status. Fridtjof (“FRID-choff”) Nansen is best known for his work with individuals of this status, developing a type of documentation which influenced successors that are issued under a 1954 UN convention.

ANSWER: **statelessness** [prompt on **refugee**]

[10] Members of the Rohingya ethnic group, who are primarily natives of this country, are often stateless due to a 1982 law that restricts their citizenship. The recent persecution of the Rohingya in this country has led to widespread criticism of Aung San Suu Kyi (“chee”), its most powerful politician.

ANSWER: Republic of the Union of **Myanmar** [or *Pyidaunzu Thanmăda Myăma Nainngandaw*; or **Burma**]

[10] In a bizarre series of events, this politician became stateless in 2017. He lost citizenship in his home country when he became a Ukrainian to accept an appointment as Governor of the Odessa oblast, and then had that Ukrainian citizenship revoked. Before that, he lived for a time as a hipster in Williamsburg, Brooklyn.

ANSWER: Mikheil **Saakashvili**

<MC, Current Events>

10. The first of these texts, misleadingly named for Brahma, includes some chapters on cosmology but details the geography of the state of Odisha for most of its length. For 10 points each:

[10] Give the name of these texts. Including the *Bhagavatam*, the core eighteen of these ancient texts are divided among six each for each of the *trimurti* and *gunas*, and collectively those eighteen are over four times longer than the *Mahabharata*.

ANSWER: **Puranas** [or *Bhagavata Purana*]

[10] The compilation of both the *Puranas* and the *Vedas* is attributed to Vyasa, who dictated the *Mahabharata* to this elephant-headed god and “remover of obstacles.”

ANSWER: **Ganesh** [or **Ganesh**]

[10] Both the *Bhagavata Purana* and this text, also attributed to Vyasa, provide most of the material for accounts of Krishna’s childhood. The three *parvas*, or chapters, of this text supplement the eighteen of the *Mahabharata*.

ANSWER: **Harivamsa** [or **Harivamsha**]

<AK, Legends>

11. This man was executed by his third son, Abdal-Latif Mirza, after he made him governor of Herat, thereby passing Mirza up for kingship. For 10 points each:

[10] Identify this fifteenth-century ruler who built a namesake *madrassa* at Registan square. He may be better known for patronizing astronomers, who compiled a star catalogue called the *Zij-i Sultani*.

ANSWER: **Ulugh Beg** [or Mīrzā Muhammad Tārāghay **bin Shāhrukh**; prompt on **Beg**; prompt on **Ulugh**]

[10] Ulugh Beg's observatory is located in this Central Asian city, a Silk Road hub that contained the world's first non-Chinese paper mill. The Gur-e Amir mausoleum in this city contains Ulugh Beg's body.

ANSWER: **Samarkand**

[10] The Gur-e Amir was originally built as a tomb for this grandfather of Ulugh Beg. This ruler, who once conquered the Golden Horde, was nicknamed for his limping gait.

ANSWER: **Timur** [or **Tamerlane**]

<IJ, World History>

12. For these animals to be considered kosher, they must have fins and scales that can be removed without tearing their skin. For 10 points each:

[10] Name these animals that are customarily eaten during Sabbath dinners, often served ground and mixed with onion, eggs, and matzo meal in a dish called gefilte ("guh-FILL-tuh") [this animal].

ANSWER: **fish** [accept gefilte **fish**]

[10] Gefilte fish is often eaten during Sabbath dinners because it circumvents a Sabbath restriction against separating inedible parts like bones from edible food, an action that has this Hebrew name.

ANSWER: **borer** ("boh-RAIR")

[10] Because fish in the sea are covered by water and thus protected from the evil eye, fish are common symbols in these hand-shaped talismans sometimes used by Sephardic Jews to ward off the evil eye.

ANSWER: **hamsa** [or **khamsa**]

<WC, Religion>

13. Answer some things about the intersection of modern ballet and the works of J. S. Bach, for 10 points each:

[10] This Georgian choreographer used Bach's Double Violin Concerto for his *Concerto Barocco*, which premiered alongside *Orpheus*, one of his collaborations with Igor Stravinsky and Isamu Noguchi. He is better known for co-founding the New York City Ballet with Lincoln Kirstein.

ANSWER: George **Balanchine** ("BAL-un-cheen") [or Giorgi Melitonovich **Balanchivadze**]

[10] William Walton orchestrated some Bach cantatas for *The Wise Virgins*, a ballet by this Brit who also choreographed Walton's *Façade*, a 1948 version of *Cinderella*, and the film *The Tales of Beatrix Potter*.

ANSWER: Frederick **Ashton** [or Frederick William Mallandaine **Ashton**]

[10] Two Bach violin concertos are featured in this man's *Esplanade*. Known for a New York company that once included Twyla Tharp, this choreographer first turned to classical music in *Aureole*, which sets the work of Handel.

ANSWER: Paul **Taylor**

<RK, Other Art (Dance)>

14. Sailors in this city published the Petropavlovsk resolution, calling for the release of political prisoners and new elections as part of its fifteen points. For 10 points each:

[10] Name this city on Kotlin Island that was constructed in 1704 as a port for St. Petersburg. It was the site of a 1921 mutiny against the Soviet Union that was responsible for the end of War Communism.

ANSWER: **Kronstadt** ("krohn-SHTAHT")

[10] The Kronstadt revolt was suppressed by Mikhail Tukhachevsky on the orders of this Commissar of the Red Army. After his exile from the Soviet Union, this man founded the Fourth International in 1938 and was assassinated by ice-pick in Mexico City in 1940.

ANSWER: Leon **Trotsky** [or Lev Davidovich **Bronstein**]

[10] Soviet leadership condemned the Kronstadt revolt as being a plot of this tsarist organization despite it having been officially dissolved in 1918. This xenophobic far-right group assassinated several prominent Jewish politicians, including Mikhail Herzenstein.

ANSWER: the **Black Hundreds**

<JM, European History>

15. These statistical models are often drawn as a trellis diagram, and the most likely path taken through these models can be found using the Viterbi algorithm. For 10 points each:

[10] Name these memoryless statistical models that can be used to perform speech or handwriting recognition. They consist of a series of unobserved and observed states, and the associated transition and emission probabilities.

ANSWER: **hidden Markov** models [or **HMMs**; prompt on **Markov** chains]

[10] In hidden Markov models, future and past states have this property with respect to each other given the present. This means that the joint probability of hidden states A, B, C can be calculated as the probability of the A-to-B transition times the probability of the B-to-C transition, since the probability of events A and B is P-of-A times P-of-B.

ANSWER: **independence** [or they're **independent**]

[10] This generically named algorithm recursively calculates the joint probability of a hidden state  $h$ -sub- $t$  and observed states  $y$ -sub-one through  $y$ -sub- $t$ . It is combined with an oppositely named algorithm in a method to calculate the probability of a hidden state given observed states.

ANSWER: **forward** algorithm [or **filtering**]

<AK, Computer Science>

16. Michael Gottfredson and Travis Hirschi emphasized the role of self-control in predicting this behavior in their book *A General Theory of [this behavior]*. For 10 points each:

[10] Name this behavior that is facilitated by community apathy according to the broken windows theory. Important statistics in the study of this behavior include the recidivism rate and the homicide rate.

ANSWER: **crime** [or **deviance**]

[10] Edwin Sutherland drew on social learning theory to posit that the “differential” type of this process leads to crime. It’s not bias, but an online Harvard test of the “implicit” form of this process asks the user to sort images of black and white men and positive or negative words.

ANSWER: differential **association** [or implicit **association** test; prompt on **IAT**]

[10] This framework models crime as the convergence of a motivated offender, a suitable target, and the lack of a guardian or oversight. It was developed by Marcus Felson and Lawrence Cohen.

ANSWER: **routine activity** theory [or **routine activities** theory; prompt on crime **opportunity** theory]

<AK, Social Science>

17. A poem from this country warned against the rise of Nazism with the line “You must not tolerate so very well the injustice that does not affect yourself!” For 10 points each:

[10] Name this country where “Dare not to sleep” was written. Another poem from this country tells of a sailor who rescues an English nobleman who had earlier captured him for smuggling food to try to save his family.

ANSWER: Kingdom of **Norway** [or *Kongeriket **Norge***; or *Kongeriket **Noreg***]

[10] That poem, titled “Terje Vigen” (“TAIR-yuh VEE-gun”), was written by this author better known for plays like *Ghosts* and *An Enemy of the People*.

ANSWER: Henrik **Ibsen** [or Henrik Johan **Ibsen**]

[10] Unlike Arnulf Øverland (“OH-vur-lahn”), the leftist author of “Dare not to sleep,” this Norwegian author collaborated with Nazi Germany and notoriously wrote an obituary for Hitler calling him a “warrior for mankind.” He wrote a novel chronicling Isak and Inger’s development of their farm.

ANSWER: Knut **Hamsun**

<EC, Misc Literature>

18. This philosopher collaborated with David Sloan Wilson on a book about the evolution of unselfish behavior called *Unto Others*. For 10 points each:

[10] Name this philosopher who helped establish the philosophy of biology as a subfield with his book *The Nature of Selection: Evolutionary Theory in Philosophical Focus*.

ANSWER: Elliott **Sober**

[10] Sober's most recent book is a "user's manual" for this metaphorical object, which is another name for the law of parsimony.

ANSWER: **Occam's razor**

[10] The philosophy of biology is sometimes traced back to this biologist who wrote *Toward a New Philosophy of Biology* and defined a species as a group of individuals which can only breed among themselves.

ANSWER: Ernst (Walter) **Mavr** ("MY-ur")

<WN, Philosophy>

19. An essay about this painting argues that once the subtle difference in hue between the title figure's hair and the silkscreen behind her is seen, the "whole disposition" changes, "but in 1865 it was not seen." For 10 points each:

[10] Name this painting, the subject of a T. J. Clark essay about its subject's "Choice." The essay discusses several contemporary caricatures of this painting, such as one in *Le Charivari* ("luh shah-ree-vah-REE"), that exaggeratedly depict a bouquet of flowers.

ANSWER: **Olympia** [accept "**Olympia**'s Choice"]

[10] In Clark's analysis, he says that *Olympia* "stated its derivation from" this painting depicting a reclining nude by Titian.

ANSWER: **Venus of Urbino**

[10] Françoise Cachin ("fron-SWAHZ kah-SHAN") responded to another T. J. Clark essay on *Olympia* published in this journal, which was founded by Rosalind Krauss and Annette Michelson after they left *Artforum*. This journal was an important force behind the import of French critical theory into American art history in the late 1970s.

ANSWER: **October** [or **Octoberists**; or **October** school]

<AK, Painting/Sculpture>

20. This author's son Nigel documented her relationship with the bisexual Harold Nicolson in the 1973 book *Portrait of a Marriage*. For 10 points each:

[10] Name this author whose childhood in Knole ("nole") informed a book-length poem beginning "I sing the cycle of my country's year," *The Land*. Her novels *All Passion Spent* and *The Edwardians* were published by the Hogarth Press.

ANSWER: Vita **Sackville-West** [or Victoria Mary **Sackville-West**, Lady Nicolson]

[10] Sackville-West was the inspiration for this Virginia Woolf novel subtitled *A Biography*, whose title character changes sex and lives for centuries. Nigel Nicolson called it "the longest and most charming love letter in literature."

ANSWER: **Orlando: A Biography**

[10] Despite also writing autobiographical novels and corresponding with Evelyn Waugh, Vita's cousin Edward is likely best known for his biography of this writer. This man recalls reading *Phaedrus*, *Macbeth*, and *Arabian Nights* in the chapter "Infant Literature" of his 1853 *Autobiographic Sketches*.

ANSWER: Thomas **de Quincey**

<RK, Long Fiction>