

## Penn Bowl 2018

### Packet 14 (Finals 1)

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### Tossups

1. A poet with this *last* name was eulogized as “elegant as a Greek shepherd” “with his felt beret (“ber-AY”)” in Daudet’s (“doh-DAY’s”) “Letters from My Windmill.” Another poet with this name described God asking a crippled child “How shall I come down from the blue?” That author of “Those Who Do Not Dance” described a wish to be “united in one anguished knot / around [a man’s] bloody neck!” *Mirèio* was written by an Occitan poet, Frederic, with this name. He inspired the pseudonym of an poet who commanded “Beauty shall not be an opiate... but a strong wine that fires you to action” in (\*) “Decalogue of the Artist.” That author of “To See Him Again” wrote “I will lower you to the humble and sunny ground” to mourn the suicide of her lover Romelio Ureta. For 10 points, name the last name of a Chilean poet who wrote the collections *Desolación* and *Sonnets of Death*.

ANSWER: Gabriela Mistral [or Frederic Mistral; or Lucila Godoy Alcayaga]

<MT, World Literature>

2. Scholars believe that the Golden Gate, the namesake of the Golden Gate Bridge, was built by either one of two men with this name. A ruler of this name nicknamed “the Calligrapher” collected laws to form the basis for Justinian’s law code. Another emperor by this name bribed troops who attacked him from the rear in the Alps into joining him instead; that, as well as assistance from the “Bora” wind, occurred while he was fighting Arbogast and Eugenius in the Battle of the (\*) Frigid River. That emperor was aided by the general Stilicho and succeeded by his sons Arcadius and Honorius. An emperor of this name forbade the Greek Olympics, dissolved the Vestal Virgins, and made Christianity the state religion of the Roman empire. For 10 points, give the name of the last emperor to rule the entire Roman empire.

ANSWER: Theodosius [or Theodosius I; or Theodosius the Great; or Theodosius II]

<JC, European History>

3. The energy shaping method for closed-loop systems is sometimes called the “method of controlled [this quantity].” Douglas’ theorem states that this function exists if there exists a non-singular symmetric matrix satisfying the Helmholtz conditions; that theorem solves the “inverse problem” of this quantity. This quantity is invariant under local group transformations in the definition of a gauge theory. The time derivative of this quantity’s derivative with respect to the time derivative of a (\*) generalized coordinate equals the derivative of this quantity with respect to that coordinate. This quantity appears in an equation named for its creator and Euler, which is derived from Newton’s second law. The time-integral of this quantity is the action, and its Legendre transform is the Hamiltonian. For 10 points, name this quantity that is equal to kinetic minus potential energy.

ANSWER: Lagrangian

<JC, Physics>

4. *Description acceptable.* After dying in one of these events, one character looks like “she had choked a little in giving up... tremendous vitality” due to her ripped mouth. In another novel, Dr. Robert Vaughan plots the death of Elizabeth Taylor in one of these events. After his wife dies in one of these events, a character points out an expensive dog leash before saying “God sees everything!” Another character in that work claims “I

**hate careless people” before stating that “it takes two to make” one of these events. A novel about fetishes for these events is by J. G. (\*) Ballard. After one character’s husband finds out she is sleeping with Tom, she dies in this manner under the eyes of T. J. Eckleburg by Daisy Buchanan. Willy Loman dies in this way in *Death of a Salesman*. For 10 points, name this event which kills Myrtle in *The Great Gatsby*.**

ANSWER: **car crash** [or **car accident**; accept equivalents; prompt on **accident** or **murder** or **suicide**; prompt on **Crash**]

<JC, American Literature>

**5. In a modern depiction of this scene, one character is replaced by a shadowy young girl and another is replaced by Joseph Stalin. A depiction of this scene that shows one dark character praying in profile and notably leaves out another character was one of Goya’s *Black Paintings*. The focus is on the bare-breasted female character and the male character is barely visible in two versions of this scene painted by Klimt. The presence of a (\*) maid helps differentiate one character in this scene from Salome. In a version of this scene, the female character represents the artist and the male character represents her mentor, who assaulted her; that version is by Gentileschi. For 10 points, name this scene depicted by many artists, but most famously by Caravaggio, where a Biblical heroine seduces and kills an Assyrian general.**

ANSWER: **Judith beheading Holofernes** [or **Judith with the Head of Holofernes**; or equivalents; prompt on **Judith and Holofernes**]

<MT, Painting>

**6. In addition to spin, electrons in this material have additional degrees of freedom called valley isospin and sublattice pseudospin. This material’s valence and conduction bands meet at two sets of non-equivalent conical intersections called *K* and *K*-prime. A DVD burner can be used to make supercapacitors of this material. This material shows plateaus at half-integer multiples of 4 times *e*-squared over *h* in its anomalous (\*) quantum Hall effect. This material was isolated, and characterized by Andre Geim (“GUY’m”) and Konstantin Novoselov who transferred it onto wafers using micromechanical cleavage. For 10 points, name this allotrope of carbon that can be assembled with Scotch tape, a single sheet of carbon atoms arranged hexagonally.**

ANSWER: **graphene**

<AP, Chemistry>

**7. Three vertical lines and a spiral represent the title figure in this artist’s *Portrait of James Joyce*. In another work, he depicted the moment of Leda’s transformation into a swan. He depicted a puffed-up, powerful bird from the mythology of his home country, and modeled one of his works on the head of Baroness Franchon. This creator of a sculpture of his friend Margit that was ridiculed at the Armory Show also created a war memorial that consists of seventeen-and-a-half stacked (\*) rhombuses and is located at Târgu Jiu. This man, who sculpted *Maiastra* and *Mademoiselle Pogany*, created a work that was detained in an airport because security officers did not believe it was art. That propeller-like piece is part of a 16-work series that shows the motion of the title animal. For 10 points, name this Romanian sculptor of *Sleeping Muse* and *Bird in Space*.**

ANSWER: Constantin **Brâncuși** (“brin-KOOSH”)

<MT, Other Arts (Sculpture)>

**8. Jonathan Sacks references the destruction of Sodom to argue that in Judaism, a concept named for this philosophical text “does not exist.” This is the first dialogue in which Socrates asks his interlocutor for the “paradigmatic” idea, or *eidōs*, of the concept being defined. One section of this text uses a passive–active distinction to compare a (\*) “carried thing” with the state of “being carried.” The title character of this dialogue names a concept that is often used to challenge divine command theory, and that character references Zeus’s actions toward Kronos to justify prosecuting his own father. Socrates asks the title character how to defend himself against**

Meletus's charges and demonstrates that the title concept cannot just be what is loved by the gods. For 10 points, name this Platonic dialogue set shortly before the *Apology* in which Socrates seeks the definition of piety.

ANSWER: Euthyphro [or "the Euthyphro dilemma"]

<NR, Philosophy>

9. Olin Downes said that a tone poem by this composer that also exists in an earlier single-movement "Yale" version was "the finest evocation of the sea ever produced in music." The planned last movement of one of this man's symphonies was intended to be a "Hellenic rondo"; earlier in that symphony, a solo trombone announces the main theme. This composer of *The Oceanides* wrote a symphony that begins with a (\*) syncoated C major scale and likely developed almost entirely from its planned second movement. Solo cello and viola answer an English horn's melody at the beginning of a tone poem by this composer, whose last symphony has only one movement and contains a theme named for his wife, Aino. For 10 points, name this composer of *The Swan of Tuonela* and *Finlandia*.

ANSWER: Jean Sibelius

<MT, Music>

10. Though promoted by Chhatrapati Shivaji ("CHUTH-ruh-puh-thee SHIV-uh-jee"), this deity's festival was revived as a public holiday by B. G. Tilak in 1892. Worshippers believe false accusations will result from looking at the moon on this deity's birthday, which falls on the day of Chaturti ("CHUH-thur-thee"). Wives celebrate Gauri Puja ("GOW-ree POO-jah") or Hartalika ("HAR-tha-LEE-ka") the day before this deity's festival, on which they bake 21 (\*) modaka ("MO-da-ka") sweets as an offering. Worshippers submerge clay idols of this deity in the nearest river on a festival which celebrates his creation out of turmeric paste to guard his mother Parvati during a bath. That led to his decapitation by Shiva for blocking his way, resulting in a notable part-animal feature in this god's depiction. For 10 points, name this Hindu god with an elephant head.

ANSWER: Ganesh [or Ganapati; or Vinayaka; or Pillaiyar]

<NR, Religion>

11. Some of the first shots of this battle were fired on the grounds of the Old Kennett Meetinghouse while its patrons were holding their midweek service. Three divisions under John Sullivan saved the right flank at this battle by holding the high ground at Birmingham Meetinghouse. During this battle, troops under Charles Cornwallis crossed Trimble's and Jeffries Ford to flank the American forces, who were engaged with a decoy force of (\*) Hessians under Wilhelm von Knyphausen at Chadds Ford. As a result of this battle and a defeat in a skirmish at Paoli, the Second Continental Congress evacuated Philadelphia for the second time. For 10 points, name this 1777 battle that saw William Howe defeat George Washington at a namesake tributary of the Christina River on the Pennsylvania border.

ANSWER: Battle of Brandywine Creek

<NR, American History>

12. With Euler, this man co-names a type of linear homogeneous ordinary differential equation that contains variable coefficients. An equation named for this scientist relates the time derivative of the fluid velocity with the divergence of the outer product of velocity and the velocity with the various forces acting on the fluid. That equation is this scientist's namesake (\*) momentum equation, which can be used to derive the Navier-Stokes equations. This mathematician's integral formula shows that the derivative of an analytic function is always analytic and that the path integral of a holomorphic function over a closed path is zero. For 10 points, name this mathematician who co-names a statement with Schwarz that holds that the magnitude of the dot product of two vectors is no greater than the product of their lengths.

ANSWER: Augustin-Louis Cauchy ("koh-SHEE")

<AP, Other Science (Math)>

13. **This kingdom introduced a unit for measuring an individual's social worth in terms of hypothetical crop fields, called the *sakdina*. A corvée system in this kingdom mandated that every male commoner register as a *phrai* in the service of a *nai*. A chief minister of this kingdom named Constantine Phaulkon was awarded the Order of St. Michael for engineering an alliance between Louis XVI and King Narai. This kingdom's King Naresuan ("nah-ray-SOO-un") supposedly slew Prince Mingyi Swa in an elephant duel in order to liberate it from the (\*) Taungoo Empire. A series of wars with the neighboring Konbaung Dynasty brought down this state, but after its fall Taksin the Great reunified its remnants into the short-lived Thonburi Kingdom. For 10 points, name this kingdom that ruled Siam from 1351 to 1767 and shares its name with the birthplace of Rama in the Thai national epic.**

ANSWER: Ayutthaya ("ah-yoo-tah-YAH") Kingdom [prompt on Siam or Thailand or Thai]

<NR, World History>

14. **"Long cave" is one possible meaning of the name of this fanged deity, who was often depicted with goggle eyes and serpent eyebrows. People who perished from edema or leprosy were buried with small pieces of wood in honor of this god. Cooking toads and a worm in a boiling spring were among the weird stuff found in the domain of this god, the fourth layer of the heavens. This owner of several powerful jugs was lord of the third sun, which he burned after his wife's death, and he remarried the jade-skirted (\*) Chalchiuhtlicue ("chal-CHEWT-lee-kway"). This Aztec deity may have been adapted from the the Mayan god Chaac, and children were sacrificed to him during the Atlcahualo ("AH-tull-ka-WAH-lo") festival. For 10 points, name this Aztec ruler of an underworld for the drowned, the god of earthly fertility and rain.**

ANSWER: Tlaloc

<LC, Mythology>

15. **Since it was too bloated for its coffin, the corpse of a member of this family was rolled up in a carpet and pummelled until it fit. This family's coat of arms shows an ox grazing, a symbol that was adopted by one of its members after he was consecrated as Bishop of Valencia. That member of this house ordered a posthumous retrial to vindicate Joan of Arc and purportedly excommunicated Halley's Comet during his service as Pope (\*) Callixtus III. Another Pope from this house formed the League of Venice against Charles VII in the First Italian War and issued *Inter Caetera* as part of the Bulls of Donation. One son from this house became the first in history to resign a cardinalate and succeeded his murdered brother as Papal Gonfalonier, actions that made him an inspiration for *The Prince*. For 10 points, name this family of Cesare and Lucrezia, the children of Pope Alexander VI.**

ANSWER: Borgia

<NR, European History>

16. **In one episode of this show, a character proclaims "I drink from the keg of glory, Donna. Bring me the finest muffins and bagels in all the land," after cutting an agreement with Lloyd Russell that infuriates Mandy Hampton. Two characters named Ed and Larry cannot be told apart because they always appear together in this show. One character curses God out in Latin and mourns the death of a secretary in the episode "Two Cathedrals," which features a controversy over that man concealing his (\*) multiple sclerosis. In one flashback, Sam Seaborn walks out of a meeting and heads to New Hampshire because Josh Lyman has "seen the real thing" in Jed Bartlet, played by Martin Sheen. For 10 points, name this "walk-and-talk" Aaron Sorkin show about the triumphs and travails of a White House administration.**

ANSWER: *The West Wing*

<NR, Trash (TV)>

17. **In this medium, The Talking Heads' David Byrne created the work *Envisioning Emotional Epistemological Information*. In a work in this medium, a girl declares "My job is to make people**

**uncomfortable” and recounts watching solar panels move in the desert with her dad. A writer created a sample of this medium as it might have been used in the novel *1984* or at the (\*) Gettysburg Address. Sasha Blake’s daughter conveys her brother Lincoln’s obsession with long pauses in rock music in an entire chapter of *A Visit from the Goon Squad* written in this medium. The “chartjunk” of its “cognitive style” was lambasted in an essay by Edward Tufte (“TUF-tee”). This medium was developed by Forethought, Inc., whose software allowed users to transition between this medium’s title objects grouped into “decks.” For 10 points, name this medium of PowerPoint.**

ANSWER: slideshows [or slide deck; accept PowerPoint until read; prompt on presentations]

<JC, Social Science (Sociology)>

**18. The narrator of a poem imagines one of these animals “with his crazy motions / Ridiculous, sublime, like a man in exile / Relentlessly gnawed by longing!” An author who described these animals “unwearied still, lover by lover” wrote about another one of them in a poem about “the strange heart beating where it lies.” That poem about this animal describes a (\*) “staggering” girl’s “terrified vague fingers.” A poem titled for this animal claims that “the form of a city changes more quickly than the human heart, alas!” and opens, “Andromache, I think of you!”; that poem is in *Les Fleurs du Mal*. The narrator of one poem says these birds’ hearts “have not grown old” and asks where 59 of them will “delight men’s eyes” when he awakes to find they have gone from their lake at Coole in a poem by Yeats. For 10 points, Yeats also wrote about Leda’s rape by what type of bird?**

ANSWER: swans [prompt on birds]

<JK, European Literature>

**19. Circular Binary Segmentation and Rank Segmentation are common methods of calculating this quantity, which in one test is normalized using Cep17. Jumps in the logR ratio or BAF in array CGH or SNP array experiments indicate variations in this quantity, which is also detected using PennCNV and CNVnator software. An increase in this quantity for N-myc and HER2/neu are poor prognostic factors for neuroblastoma and breast cancer, respectively. It’s not gene expression, but one method of measuring this quantity requires using an absolute standard curve when calculating the (\*) delta-delta-Ct ratio on an experiment using genomic DNA as a template. High-resolution FISH is used to measure this quantity, which can vary for a given region through deletion or duplication. For 10 points, name this quantity, the number of duplicates of a gene or region present in a genome.**

ANSWER: copy number variation [accept equivalents indicating the number of copies or duplicates]

<EM, Biology>

**20. A novel in a series about this character ends with the observation that “in tragedy, innocence is not enough” after this character is bound by a spangle. Earlier in that book, four children drag Meg off to hunt an animal that they end up hacking to pieces. That novel, *The Queen of Air and Darkness*, follows a book in which this figure is transformed into a wild goose and an ant. In that series of novels about this figure, he is called “the Wart” and is [emphasize] *advised by a man who owns the (\*) owl Archimedes* and lives through time backwards. That series of novels anachronistically mentions telegraphs and Hitler. Another work about this man was famously written in Newgate Prison. For 10 points, name this mythological figure who is the subject of T. H. White’s *The Once and Future King* and whose death titles a work by Thomas Malory.**

ANSWER: King Arthur [prompt on the Wart until read]

<MT, British Literature>

## Bonuses

1. Suspicion that this organization's employees were being used to campaign for Democrats led to the Hatch Act in 1939. For 10 points each:

[10] Name this New Deal agency that built projects like Midway International Airport and the Griffith Observatory. This agency and the CCC directly hired unemployed men, unlike the PWA.

ANSWER: **Works Progress Administration** [or **WPA**]

[10] This man founded the Works Progress Administration. This former Secretary of Commerce acted as a messenger between FDR and Winston Churchill.

ANSWER: Harry **Hopkins**

[10] Hopkins feuded with this rival head of the Public Works Administration, who criticized "make-work" work relief. When Marian Anderson was blocked from performing at DAR Constitution Hall, this Secretary of the Interior allowed her to perform at the Lincoln Memorial.

ANSWER: Harold L. **Ickes** ("ICK-iss") [do not accept "Harold M. Ickes"]

<AJ, American History>

2. A character in this short story collection, Man-Man, stages his own crucifixion, while another character, B. Wordsworth, intends to write the greatest poem ever but never got past the first line. For 10 points each:

[10] Name this collection of short stories about the residents of the title road, including Bogart, Popo, Hat, and Bigfoot, told by a narrator who eventually leaves to study in London.

ANSWER: **Miguel Street**

[10] This Trinidadian author of *Miguel Street* and *A House for Mr. Biswas* wrote "The world is what it is" to begin a novel featuring Salim and the Big Man, *A Bend in the River*.

ANSWER: V. S. **Naipaul**

[10] This Booker-winning Naipaul novel is a collection of three short stories including "One out of Many" and "Tell Me Who to Kill." Its title story relates a road trip taken by Bobby and Linda during a coup by the President.

ANSWER: **In A Free State**

<JC, World Literature>

3. The interior minister of this country sparked outrage when he suggested a curfew for "little ethnic shops," suggesting that they were "meeting places for hellraisers." For 10 points each:

[10] Name this country where Matteo Salvini serves as both interior minister and deputy prime minister. Matteo Renzi and the Democratic Party suffered huge losses in this country's March elections.

ANSWER: **Italy**

[10] Salvini's stance on immigration and refugees led him to declare "victory" in June when Spain agreed to take the 629 refugees aboard this rescue ship after Italy refused them entry.

ANSWER: MS **Aquarius**

[10] The other deputy prime minister of Italy is Luigi Di Maio, who succeeded comedian Beppe Grillo as leader of this anti-establishment political party.

ANSWER: **Five Star Movement** [or **Movimento 5 Stelle**; or **M5S**; prompt on **Five Star**]

<GA, Current Events>

4. Immunoprecipitation, a method for isolating antibodies, is similar to the affinity form of this technique, which often uses a polyhistidine tag. For 10 points each:

[10] Name this family of laboratory techniques that uses mobile and stationary phases to separate a mixture. This lab technique comes in gas, liquid, thin-layer, and paper varieties, the last of which is commonly applied to ink.

ANSWER: **chromatography**

[10] In affinity chromatography, this procedure is carried out after washing, to remove the target protein after it is completely adsorbed to the stationary phase. It's usually carried out using imidazole.

ANSWER: **elution** [do not accept "dilution"]

[10] Another common affinity chromatography uses this compound's namesake "S-transferase" as a tag. N-acetylcysteine is used to regenerate this compound during a Tylenol overdose.

ANSWER: **glutathione**

<AP, Chemistry>

5. This regiment was named for their habit of idling their engines near a destination, then gliding to it silently, making an eerie sound. For 10 points each:

[10] Give the nickname of this all-female aviation regiment led by Yevdokia Bershanskaya, which fought along the Eastern Front at the Battle of the Caucasus.

ANSWER: "**Night Witches**" [or **Nachthexen**; or **Nochnye vedny**; or **588th Night Bomber Regiment**; or **46th "Taman" Guards Night Bomber Aviation Regiment**]

[10] The Night Witches hailed from this country, which was invaded by Nazi Germany in Operation Barbarossa and defeated them in the extremely bloody Battle of Stalingrad during World War II.

ANSWER: **USSR** [or **Soviet Union**; or **Union of Soviet Socialist Republics**; or **CCCP**; prompt on **Russia**]

[10] Lydia Litvyak, the first female fighter pilot to shoot down an enemy plane, was killed in this battle. The Germans brought Tiger and Panther tanks but were forced to withdraw in this largest tank battle in history.

ANSWER: Battle of **Kursk** [anti-prompt on Battle of **Prokhorovka**]

<JC, European History>

6. One of this man's many paintings of his primary subject shows him riding a white horse through an arch to come inside a building. For 10 points each:

[10] Name this Flemish Baroque artist, the court painter for Charles I, who depicted him "at the Hunt."

ANSWER: Anthony **van Dyck**

[10] Van Dyck painted this Italian Renaissance artist when she was 92. She is known for painting her baby brother crying after he was bitten by a crawfish as well as a self-portrait in which her teacher Bernardino Campi paints her.

ANSWER: Sofonisba **Anguissola**

[10] Anguissola depicted her sisters Lucia and Minerva performing this activity in a garden as a much younger sister Europa looks on gleefully with an elderly servant in the background.

ANSWER: playing **chess**

<JC, Painting>

7. This vector quantity has units of volts per meter. For 10 points each:

[10] Identify this quantity equal to the force on a point charge divided by the charge, which can be calculated by employing Gauss's law.

ANSWER: **electric field** [or **E-field**; prompt on **E**]

[10] The electric field is symmetric under this transformation. This symmetry is also preserved by surface states of a topological insulator, and when multiplied by CP symmetry, it gives an invariant for all physical phenomena.

ANSWER: **T**-symmetry [or **time-reversal** symmetry]

[10] The surface of a topological insulator also preserves this quantity, which is conjugate to the chemical potential.

ANSWER: **particle number** [accept equivalents like "**number of particles**"; prompt on **number** or ***n***]

<AP, Physics>

8. The term for this system derives from the Spanish verb meaning "to entrust." For 10 points each:

[10] Name this New World labor system that entrusted natives to Spaniards to protect and convert, though in practice it was simply slave labor. It was based on the *adelantado* system of the *Reconquista*.

ANSWER: ***encomienda*** system

[10] Emperor Charles V attempted to reform the *encomienda* system with these decrees that unsuccessfully provided for its humane regulation and gradual abolition.

ANSWER: **New Laws** [or ***Leyes Nuevas***]

[10] The Dominican friar Bartolomé de las Casas lobbied for the New Laws and argued for the rights of natives in a debate against Juan de Sepulveda in this city.

ANSWER: **Valladolid** (“vah-yah-doh-LEED”)

<NR, World History>

9. Adding pipelining to computer architecture increases throughput but complicates execution. For 10 points each:

[10] These problems come in structural and control varieties. The data variety of these events occur when an instruction depends on the result of a previous instruction that hasn't finished computing.

ANSWER: **hazards** [accept data **hazards** or structural **hazards** or control **hazards** or branch **hazards**]

[10] In order to resolve a hazard, a processor can cause a pipeline stall, creating a “bubble” by repeatedly feeding this idle assembly-language instruction to the execution stage. Its namesake “slide” may be used in hacking to allow access to protected areas of the stack, and its equivalent in C is the “null statement.”

ANSWER: **no-op** [or **no operation**; or **NOP**]

[10] In the classic RISC pipeline, the typical second step involves fetching values from these small, fast units of memory, and the fifth step involves writing values back from them. They are often labeled R0 to R7 in toy systems.

ANSWER: **registers**

<JC, Other Science (Computer Science)>

10. This philosopher posited a kind of mental scoreboard that tracks things like presuppositions and permissibility. For 10 points each:

[10] Name this philosopher who identified rules of accommodation as the difference between baseball and conversation in “Scorekeeping in a Language Game.” He believes that other possible worlds really exist.

ANSWER: David Kellogg **Lewis**

[10] Lewis was building on the work of this author of *Tractatus Logico-Philosophicus*, who explored language games in his posthumously-published *Philosophical Investigations*.

ANSWER: Ludwig **Wittgenstein**

[10] Rae Langton and Caroline West analyzed scorekeeping in this kind of language game. Langton and philosophers like Jennifer Hornby have analyzed this kind of content through J. L. Austin's speech-act framework.

ANSWER: **pornography** [accept “Scorekeeping in a **Pornographic** Language Game”]

<NR, Philosophy>

11. Severed fingers are apparently a prominent motif in literature. For 10 points each:

[10] Esteban Trueba cuts off three fingers from his daughter Blanca's lover Pedro Tercero in *The House of the Spirits*, a novel by this author.

ANSWER: Isabel **Allende**

[10] The title character of this John Irving novel, who speaks in all capitals, cuts off his friend's finger with a headstone-cutting tool to get him out of service in the Vietnam War and saves orphans from a hand grenade.

ANSWER: *A **Prayer for Owen Meany***

[10] In *The Tin Drum*, Oskar Matzerath is falsely convicted for killing this nun, whose severed ring finger he finds in a field. When he bumps into her in the middle of the night, he tells her he is Satan, making her faint.

ANSWER: Sister **Dorothea**

<JC, European Literature>

12. This holiday begins on Dhanteras and ends on Bhai Dooj. For 10 points each:

[10] Name this Hindu holiday that is often described as the “festival of lights” since it is celebrated with the lighting of many *diyas*.

ANSWER: **Diwali** [or **Divali**; or **Deepavali**]

[10] On the first day of Diwali, Hindus perform a puja to honor this goddess, the goddess of wealth. This goddess is the wife of Vishnu.

ANSWER: **Lakshmi** [or **Laxmi**]

[10] These floor designs depicting geometric shapes, deities, or flowers, are often made during Diwali. They are made using a base of dry or wet powdered rice or flour combined with natural colors such as sindoor and haldi.

ANSWER: **rangoli**

<AP, Religion>

13. Some causes of this condition include having access to natural resources that are restricted to competitors or having highly skilled labor. For 10 points each:

[10] Name this condition in which a company is able to outperform its rivals by providing goods of equal value for a lower price.

ANSWER: competitive **advantage**

[10] This Harvard Business School professor created a five-component model for determining the intensity of competition in an industry. Its components include threat of new entrants and bargaining power of suppliers.

ANSWER: David **Porter** [accept Porter’s **five forces** analysis]

[10] Another of Porter’s five forces refers to the threat posed by these things. An effect named for these types of goods is often contrasted with the income effect.

ANSWER: **substitutes** [or **substitute** goods; accept **substitution** effect]

<AJ, Social Science (Economics)>

14. R. E. Witt claims that this goddess’s epithet “queen of heaven” and images of her nursing her child influenced early Christian iconography of the Virgin Mary. For 10 points each:

[10] Name this goddess, who sent a snake to bite another deity in order to discover his secret name. Along with Cybele, the Romans worshipped this goddess during Hilaria.

ANSWER: **Isis**

[10] Isis was the mother of Horus and wife of this other Egyptian deity. This green-skinned god was known as the “Foremost of the Westerners,” reflecting his role as lord of the underworld.

ANSWER: **Osiris**

[10] Description acceptable. Isis tried to perform this action in order to make an infant prince immortal, but was stopped by the child’s nursemaid. A similar story describes Demeter attempting to do this to Demophon, prince of Eleusis.

ANSWER: **placing** the child in the **fire** [accept equivalents like “**burning** the child” or “**roasting** the child”]

<LC, Mythology>

15. One character in this play defines “carnal embrace” and Fermat’s Last Theorem in quick succession, to the disgust of a thirteen-year-old. For 10 points each:

[10] Name this play, in which a character notes that you cannot reverse entropy by stirring jam and pudding apart again. It ends with one set of characters looking at a diagram of heat exchange while others in an earlier time waltz.

ANSWER: **Arcadia**

[10] In this David Auburn play, the mathematician Catherine writes a theorem on prime numbers that is mistaken for her mentally ill father Robert’s last work.

ANSWER: **Proof**

[10] Simon McBurney’s play *A Disappearing Number* is about the collaboration of Srinivasa Ramanujan and a professor of this last name. An author with this last name wrote *Jude the Obscure* and *Tess of the d’Urbervilles*.

ANSWER: **Hardy** [accept G. H. **Hardy** or Thomas **Hardy**]  
<JC, British Literature>

16. In 2011, Valery Gergiev (“vuh-LAIR-ee GAIRG-yiff”) pushed for a complete overhaul of a music competition named for this composer, including replacing academic judges and allowing performances to be streamed. For 10 points each:

[10] That music competition held in Moscow is named for this composer of Piano Concerto No. 1 in B-flat minor. American pianist Van Cliburn made history by winning that inaugural competition at the height of the Cold War.

ANSWER: Pyotr Ilyich **Tchaikovsky** [or International **Tchaikovsky** Competition; prompt on **Tchaik**]

[10] Alongside Tchaikovsky’s Piano Concerto No. 1, Van Cliburn performed the Piano Concerto No. 3 by this composer to a thunderous applause. That piano concerto is the most performed piece by this composer alongside its C minor predecessor.

ANSWER: Sergei **Rachmaninov** [prompt on **Rach**]

[10] This rising star pianist from Russia won the 2011 Tchaikovsky competition. This pianist led the Perspective Series for Carnegie Hall’s recent season and performed on a floating platform in the Moscow River for the opening ceremony of World Cup 2018.

ANSWER: Daniil **Trifonov** [prompt on **Trifo**]

<PL, Music>

17. This author wrote a work that exalts Northumbria over Mercia and describes the conflict over the correct date of Easter. For 10 points each:

[10] Name this “Venerable” man who is known as “the father of English history” for his *An Ecclesiastical History of the British People*, written in 732 AD.

ANSWER: Venerable **Bede**

[10] This Welsh monk wrote a biography of Alfred the Great and helped the king in his translation of Boethius.

ANSWER: **Asser**

[10] Alfred’s palace school was modeled on Charlemagne’s, which was led by this English scholar from York.

ANSWER: **Alcuin** of York [or **Ealhwine**; or **Alhwin**; or **Alchoin**]

<JC, European History>

18. Dancers dressed in white carry a cloth and a tree branch in “Take Me to the Water,” a section of a ballet by this man, which includes the song “Sinner Man.” For 10 points each:

[10] Name this African-American choreographer of *Revelations*.

ANSWER: Alvin **Ailey**

[10] This African-American modern dancer and ex-anthropologist choreographed *The Emperor Jones* and *Windy City*. She also appeared with her dance company in the musicals *Cabin in the Sky* and “Stormy Weather.”

ANSWER: Katherine **Dunham**

[10] Dunham danced as the title woman who fights conjurers and is rescued from a wasps’ nest by Remus in this composer’s opera *Treemonisha*. He composed “The Maple Leaf Rag” and “The Entertainer.”

ANSWER: Scott **Joplin**

<JC, Other Arts (Dance)>

19. Henry Louis Gates wrote about “The Trials of” this author and the appraisal of her poetry, which freed her from slavery. For 10 points each:

[10] Name this author of *Poems on Various Subjects, Religious and Moral*, who addressed a poem beginning “Celestial choir! Enthron’d in realms of light” to “His Excellency General Washington.”

ANSWER: Phillis **Wheatley**

[10] In “On Being Brought from Africa to America,” Wheatley claims that this quality “brought me from my Pagan land” and taught her soul to understand that there’s a God. Shakespeare claims that this quality “is not strained.”

ANSWER: mercy

[10] This first African-American poet to be published wrote “An Address to Miss Phillis Wheatley” in which he praised her as “you pious youth!” and delivered an address about heaven to “the Negroes of the State of New York.”

ANSWER: Jupiter Hammon

<JC, American Literature>

20. This set of proteins transfers energy to plastoquinone, and is evolutionarily related to the reaction center of purple bacteria. For 10 points each:

[10] Name this protein complex in the thylakoids, the first one involved in the light reactions. It’s also known as water-plastoquinone oxidoreductase.

ANSWER: photosystem II [or PSII; do not accept or prompt on “photosystem I”]

[10] The photosystem II complex also includes a complex that splits water to produce this gas, the second most abundant gas in the atmosphere.

ANSWER: oxygen gas [accept O<sub>2</sub>]

[10] The oxygen-evolving complex that conducts photosynthetic water splitting has five main redox states known by this collective term. These states can be viewed on diagrams named for Dolai.

ANSWER: S-states [or S<sub>0</sub> through S<sub>4</sub>]

<AP, Biology>



