

## Stevenson Memorial Tournament 2018

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### Packet 2

#### Tossups:

1. **An algorithm devised by this person uses Need, Allocated, and Available arrays to keep the system in a safe state when allocating resources. This scientist, Hoare, and Dahl authored the book *Structured Programming*, which promotes a paradigm that this man also discussed in a handwritten manuscript that popularized the phrase “considered harmful.” Like Prim’s algorithm, an algorithm by this person can achieve the optimal runtime of big-O of  $E$  plus  $V\log V$  using a (\*) Fibonacci heap. This man expanded on Dekker’s algorithm to propose a solution to the mutual exclusion problem using semaphores. The A-star algorithm uses heuristics to improve on an algorithm named for this person, which can fail with negative-weight edges. For 10 points, what computer scientist’s namesake algorithm is used to find the shortest path in a graph?**

ANSWER: Edsger Wybe Dijkstra [“DIKE-struh”]

<DM Computer Science>

2. **A design from this city consists of a window with a main panel and two narrow double-hung windows on both sides. The DeWitt-Chestnut Building in this city introduced the framed tube structure created by an architect best known for working in this city. Though not in Connecticut, a pair of apartment buildings in this city have façades with grids of steel and glass curtain walls and are called the “Glass House” buildings. (\*) Fazlur Khan worked primarily in this city and designed a building in this city that was the first to surpass the World Trade Center in height. The former Home Insurance Building in this city is considered the first skyscraper in the world. Mies van der Rohe [“meese van der roh”] headed an architectural school in this city. For 10 points, name this Midwest city home to the Willis Tower and the Robie House.**

ANSWER: Chicago

<YFL Other Arts (Architecture)>

3. **In 2016, this country slapped ExxonMobil with a fine five times larger than its GDP for not paying the correct royalties on oil drilled in it. In 2006, at least 100 elephants were slaughtered by poachers in a series of killings in this country’s Zakouma National Park. The east of this country primarily consists of the Ouaddaï [“wah-DYE”] region and it is the site of the Ennedi Plateau. This country’s highest point is (\*) Emi Koussi, and its largest body of water is located southwest of the Bodélé Depression. That body of water that shares its name with this country is primarily fed by the Chari River. This country fought one conflict with its northern neighbor over the Aozou [“OW-zoo”] Strip. The north of this country is home to the Tibesti Mountains. For 10 points, name this African country with its capital at N’Djamena.**

ANSWER: Republic of Chad

<GP Geography>

4. **This character meets a pimp who assures him that the word “sipa” is commonly spoken in the area. This character is the object of the suspicious question, “have you noticed / how he who walks behind moves what he touches?”, which is asked by the leader of a group that threatens him with arrows. He faints from sympathy after hearing about a love affair that started with two characters reading the story of Lancelot and Guinevere. This character finds himself “within a (\*) forest dark” when he is “midway upon the journey of life” on Good Friday. This character crosses paths with a lion, leopard, and she-wolf before seeing a gate that reads “Abandon all hope, ye who enter here.” This lover of Beatrice is guided through nine circles by Virgil. For 10 points, name this narrator and author of *The Divine Comedy*.**

ANSWER: **Dante** degli Alighieri

<OL European Literature>

5. **This man’s horse is the only one of a herd to swim back to land when this person and a strange old man drive horses into the river Busiltjörn. This man’s foster-father was denied a share of the gold given by the Aesir to repent for Ótr’s death. This man was tasked with beating a woman at javelin throwing, boulder tossing, and leaping over a boulder to win her for another man. This man owned a horse named Grani and a (\*) sword made from the pieces of a sword pulled from Barnstokkr that took its same name, Gram. This man was told by birds that Regin was plotting to kill him after killing a dragon and bathing in its blood to become invincible. This man tried to marry Kriemhild, the sister of Gunther, by winning back a woman who he rescued in a ring of fire, Brynhild. For 10 points, name this Norse and German hero, the son of Sigmund.**

ANSWER: **Sigurd** [accept **Siegfried**]

<YFL Mythology>

6. **The reduction in pathogen and parasite prevalence associated with this phenomenon is a type of “culling” named for it. Certain organisms classified as either catadromous or anadromous based on how they undergo this phenomenon throughout their life cycles. This behavior can be sex-biased, as shown by the fact that male juncos are less likely to perform it across altitudinal gradients. One assumption of the (\*) Hardy–Weinberg equilibrium is the absence of this behavior so that there is no allele transfer between populations. Monarch butterflies exhibit this behavior annually across North America. For 10 points, name this long-term behavior of animals in which they move from one place to another to live.**

ANSWER: **migration**

<DM Biology>

7. **This man’s successor gave a televised address to diffuse a coup led by former supporters of this leader on February 23rd. Left and right political parties agreed to avoid dealing with the legacy of this man’s government via the Pact of Forgetting. This man allowed only one trade union in his country, the Vertical Syndicate. This leader, who sent the Blue Division to fight in World War II, came to power after his predecessor (\*) Manuel Azana fled the country, ending the Popular Front government. This man came to prominence by leading his nation’s foreign legion to defeat Abd el-Krim in the Rif War. This leader of the Falange Party led the Nationalists to defeat the Republicans in his country’s civil war. For 10 points, King Juan Carlos succeeded what dictator who ruled Spain from 1939 to 1975?**

ANSWER: Francisco **Franco**

<GP European History>

8. A character in this novel writes a poem called “Florida Dawn,” although earlier that character had told a woman that a poem is just a “piece of dust.” The protagonist of this novel hates Mr. Manzi’s physics class but is unable to finish a thesis on “twin-images” in *Finnegans Wake*. After reading a story about a nun and a Jewish man, a character in this novel envisions different life paths as figs on a tree. In this novel, (\*) Philomena Guinea funds the main character’s schooling and her visits to Doctor Nolan. The protagonist of this novel goes to a sanatorium to visit Buddy Willard and works for Ladies’ Day Magazine during the summer when the Rosenbergs are electrocuted. For 10 points, name this work chronicling Esther Greenwood’s encounter with mental illness, Sylvia Plath’s only novel.

ANSWER: *The **Bell Jar***

<OL American Literature>

9. The first movement of a piece of this kind ends with the first violins softly sustaining a long B-flat *attacca* into the E-flat Adagio movement. A composition of this type opens with a nearly unplayable thirteenth on top of a tenth, known as the “passport chord.” That piece of this type contains two Arias and opens with a (\*) Toccata, while another opens with a “Vorspiel” [“FOR-shpeel”] movement. In addition to those works by Igor Stravinsky and Max Bruch, Tchaikovsky’s D major composition of this type was premiered by Adolph Brodsky after being decreed “unplayable” by Leopold Auer. The most popular piece of this kind is Mendelssohn’s piece in E minor. For 10 points, name these orchestral pieces played by soloists such as Itzhak Perlman, Hilary Hahn, and Joshua Bell.

ANSWER: **violin concerto** [prompt on concerto]

<YFL Music and Opera>

10. Members of this group specifically targeted mixed-race locals who refused to obey their *talwa* laws during an attack on a stockade at Lake Tensaw. Members of this group’s police force, known as the Law Menders, burnt down the plantation of one of its leaders, William McIntosh, and shot him fifty times. The US army massacred the inhabitants of this people’s village of Tallushatchee after Peter McQueen led a group of them in an attack on Fort (\*) Mims. This tribe’s Red Stick faction lost the Battles of Burnt Corn and Horseshoe Bend, after which they were forced to cede 23 million acres of land in Alabama and Georgia. For 10 points, name this Native American tribe from the Southeast who fought a namesake war against the United States.

ANSWER: **Creek** [accept **Red Stick** Creek until “Red” is read; or **Muscogee**; do not accept “Lower Creek”]

<GP American History>

11. This compound is often used to selectively protect syn 1,2-diols in carbohydrate chemistry. This compound reacts with two equivalents of phenol to form the polycarbonate precursor bisphenol A. Chaim Weizmann [“KHA-eem VYTES-mon”] developed a process for producing (\*) butanol, ethanol, and this compound by fermentation of carbohydrates. This is the preferred solvent for the Jones oxidation. The reaction of molecular oxygen with isopropyl benzene generates phenol and this compound in the Hock process. This compound and dry ice are combined to make a bath at negative-78 degrees Celsius. It is frequently used to clean glassware. For 10 points, name this simplest ketone often used in nail polish remover.

ANSWER: **acetone** [accept **propanone** or **dimethyl ketone**]

<DM Chemistry>

12. The question “Can there be a feminist [this concept]?” titles an essay by Helen Longino, who wrote a book discussing it as “social knowledge.” A book about this concept that ends by declaring that “anything goes” was originally intended to be paired with an opposing rationalist account of this concept by Imre Lakatos [“EEM-ray LAH-kah-tohsh”]. This concept is the subject of the epistemological anarchism of (\*) Paul Feyerabend [“FYE-er-AH-bint”]. The demarcation problem is the issue of distinguishing other domains from this topic, whose claims must be falsifiable according to Karl Popper. This concept’s development occurs via paradigm shifts according to a Thomas Kuhn book about the structure of its revolutions. For 10 points, name this domain in which induction is used to form hypotheses as part of its namesake method.

ANSWER: science [or scientific method until read; prompt on method]

<YFL Philosophy>

13. In one essay, this writer asserts that he is made of “a hundred bones and nine orifices” and in another he discusses who he “most resembles” in the “withering wind.” In one collection, this writer exclaimed “The summer moon – how hot it is!” That collection is titled after an object worn during a “winter downpour.” In a prose work accompanied by Sora’s Diary, this writer claimed that even a “thatched (\*) hut” can become a “doll house.” This writer lamented the growth of a “miscanthus bud” near his beloved banana tree. This writer of *Record of a Travel Worn Satchel* mixed prose and poetry in his travelogue *Narrow Road to the Deep North* and wrote a poem about a frog jumping into a pond. For 10 points, name this Edo period writer of haiku.

ANSWER: Matsuo Basho [accept either underlined part]

<OL World Literature>

14. Residents of the city of Scepis buried a group of items made of this substance in order to stop it from falling into the hands of a city whose king Eumenes II sponsored the invention of an alternative to this substance. The city of Byblos was a major exporter of this commodity. A massive collection of objects of this material was found in a rubbish dump at the site of Oxyrhynchus [“ox-ee-RINK-us”]. The city of (\*) Pergamon is credited with developing vellum as an alternative to this substance. Many artifacts made of this substance have been preserved by the dry climate of a country where scrolls made of it were kept in a collection at Alexandria. For 10 points, name this substance made from a wetland plant and used as a surface for writing in the ancient world.

ANSWER: papyrus [prompt on answers such as paper, scrolls, or writing materials]

<JB Euro/British History>

15. A painting by this artist, said to be based on the tradition of the Wandering Jew, shows a dog behind three men each holding walking sticks and hats. In another painting by this artist, a nude man makes a crucifixion pose in the shadowy background behind a skull resting on a newspaper. A painting by this artist that shows a chance meeting between this artist and his patron on the road was derided by critics who dubbed it “Bonjour, Monsieur [this artist].” This artist’s patron (\*) Alfred Bruyas [“brew-YAH”] is shown in a painting where a hat, a guitar, and a dagger are on the floor to the left of a sleeping cat and a boy looking up at a naked woman. A crucifix on a pole is at the top of a painting that shows this artist’s grand-uncle’s funeral. For 10 points, name this artist of *The Painter’s Studio* and *A Burial at Ornans*.

ANSWER: Jean Désiré Gustave Courbet

<YFL Painting and Sculpture>

16. **Decomposing the behaviour of one of these systems into “fast” and “slow” variables and introducing effective potentials allowed its analysis by Pyotr Kapitza. One of these systems is the basis for a tuning technique named for Schuler used for inertial navigation. The equation “3 cosine theta-one plus cosine theta-two equals 2” defines a region over which one of these systems will display (\*) predictable behaviour.** An equation describing a physical variant of this system contains a “square root of  $I$  over  $mgd$ ” term. The “double” variety of this system displays chaotic behaviour, whereas the mass of their “simple” variety is concentrated at a single point. For 10 points, name this oscillator consisting of a mass suspended from a pivot and used in clocks. ANSWER: **pendulums** [accept specific varieties of pendulums like **double pendulum** or **compound pendulum** or **Kapitza pendulum**; prompt on simple **harmonic oscillator**]

<DM Physics>

17. **A character in this novel needs an ether cylinder from a ship that he forgets to search for, and realizes that the book he’s reading is actually in Latin. A five-year-old in this novel is buried in the Garden of God, whose black gated entrance is marked “Silencio.” A young boy in this novel idolizes Padre José and not the saintly boy Juan. Another child in this novel brings chicken and beer to the protagonist, whom she (\*) hides in a barn. The protagonist of this novel encounters a girl who teaches him Morse Code named Coral Fellows and a man with two yellow teeth. That man, the mestizo, eventually betrays the protagonist to the Lieutenant.** For 10 points, name this book following the “whiskey priest,” a novel by Graham Greene.

ANSWER: *The **Power and the Glory***

<OL British Literature>

18. **This figure stopped visiting Rabbi Joshua ben Levi for three days after Joshua failed to pray hard enough to stop a nearby lion attack. A song to this figure is traditionally sung after a braided candle is extinguished at the end of the Havdalah ceremony. The *sandek* [“SAHN-duck”] sometimes sits in an ornamental chair designated for this figure at brit milah, since he is believed to come to every circumcision. Some liberal Jews place an object named for Miriam alongside an object (\*) intended for this man during a ritual in which he is welcomed in the front door. The fifth cup of the Seder is reserved for this person. A passage of the Book of Malachi inspired a Jewish tradition that holds that this man will return to herald the arrival of the Messiah.** For 10 points, name this prophet who was carried to heaven in a chariot of fire.

ANSWER: **Elijah** [or **Eliyahu**]

<JB Religion>

19. **One account claims that a ruler of this dynasty was unable to summon his lords during an attack because of his habit of lighting alarm beacons to amuse his mistress. During this dynasty, a feudalism-like social structure based around four occupations, the *fēngjiàn* [“fung-jee-EN”] system, was codified by a duke from its ruling family. The last ruler of the preceding dynasty, who tortured citizens to please his consort Daji, was defeated by this dynasty’s founder at the Battle of (\*) Muye [“moo-yeh”]. King Wu founded this dynasty, during which Mozi, Han Fei, Laozi, and Confucius lived. The partition of Jin ended the Spring and Autumn Periods and kicked off the Warring States period during this dynasty’s weak “Eastern” period.** For 10 points, the Shang was succeeded by what longest-reigning Chinese dynasty?

ANSWER: **Zhou** Dynasty [accept **Western Zhou** Dynasty until “Mozi” is read; do not prompt on or accept “Eastern Zhou Dynasty”]

<JB World History>

20. A “critical” ratio of emotions with this feature was put forth by Marcial Losada in a widely-cited paper criticized by Alan Sokal for misapplying fluid dynamics. Barbara Fredrickson developed a “broaden-and-build” theory of emotions of this sort. Traits of this sort are detailed in a book co-authored by Christopher Pederson that is called the CSV, in contrast to the DSM. The PERMA model is a foundational theory of a field known by this word’s (\*) adjective form, whose other ideas include Mihály Csíkszentmihályi’s [“mee-HYE CHEEK-sent-mee-HYE-ee’s”] concept of “flow.” A branch of psychology named for this quality was developed by Martin Seligman and investigates the strengths and virtues that create well-being. Carl Roger’s client-centered therapy advocates “unconditional” regard with this quality. For 10 points, optimism is a type of thinking described by what word?

ANSWER: positivity [or word forms such as positive or positiveness; prompt on related words such as good, virtuous, happy]

<JB Social Science>

21. In one myth, this figure wants to switch faces with his wife Rohe because she is beautiful and he is ugly. This figure’s father accidentally skipped some incantations during his baptism, leading to his death while trying to gain immortality from the Goddess of the Night. This Kupua took pity on men who were being constrained by the sky and, with his father Ru, pushed it higher. This figure was born prematurely, so his mother wrapped him in hair and threw him into the (\*) ocean. After his mother complained that the sun was moving too fast, this god restrained it with either a rope made of his sister’s hair or a fish’s jaw-bone. This figure wielded Manaiaakalani, a fish-hook baited with his wife Hina’s hair, which he used to raise the islands of Hawai‘i. For 10 points, name this trickster god from Polynesian myth.

ANSWER: Maui-tikitiki [accept either underlined part; or Ti’iti’i]

<JK Mythology>

**Bonuses:**

1. Answer the following about the famed powerhouse of the cell. For 10 points each:

[10] This mechanism, a series of protein complexes in the mitochondria, is responsible for carrying out oxidative phosphorylation in eukaryotes by generating a proton gradient across a membrane.

ANSWER: **electron transport chain** [or **ETC**]

[10] Electrons between complexes III and IV of the ETC are transported by this hemoprotein, whose release into the cytosol can trigger a positive feedback loop leading to apoptosis.

ANSWER: **cytochrome C**

[10] This uncoupling protein found in the mitochondria of brown fat helps generate heat by severing the connection between mitochondrial respiration and ATP production.

ANSWER: **thermogenin** [or **uncoupling protein 1**; or **UCP1**]

<DM Biology>

2. After this task was done, fully armed warriors grew from the ground and were killed by a thrown boulder. For 10 points each:

[10] Name this task that a hero completed after yoking fire-breathing bulls. This was the second task performed to retrieve an object owned by King Aeëtes [“ay-EE-teez”].

ANSWER: **sowing dragon teeth** [accept anything mentioning **planting** or **sowing dragon teeth**; prompt on partial answers]

[10] Jason sowed the teeth of a dragon in order to obtain this object, which came from a ram that carried Phrixus to Colchis.

ANSWER: **golden fleece**

[10] After taking the golden fleece, Jason and Medea were able to escape because Medea distracted Aeëtes by killing this man, her brother, and tossing pieces of his body into the ocean.

ANSWER: **Absyrtus** [or **Apsyrtus**]

<YFL Mythology>

3. This problem, first posed by Johann Bernoulli, contributed to the calculus of variations. For 10 points each:

[10] Name this problem involving finding the path between two points that would take the least amount of time to solve, whose solution was proven to be a cycloid.

ANSWER: **brachistochrone** [“bruh-KISS-tuh-crone”] problem

[10] The Lagrangian of a system is the difference between two kinds of this quantity. One form of this quantity is expressed as one-half  $m v$ -squared and is zero for stationary objects.

ANSWER: **energy** [accept **kinetic energy**]

[10] The brachistochrone problem can be solved straightforwardly with this simplified version of the Euler–Lagrange equations, which sets the functional equal to a partial of that functional with respect to  $y$ -prime times  $y$ -prime.

ANSWER: **Beltrami** identity

<DM Physics>

4. A *Current Affairs* article about this company's founder is titled "A Repellent Musk." For 10 points each:  
[10] Name this electric car company founded by Elon Musk. In February, a SpaceX rocket sent one of this company's cars into orbit, where it will blast "Space Oddity" at top volume.

ANSWER: **Tesla** Motors

[10] "A Repellent Musk" declares that "Sooner or later," Elon Musk and this man will go to war. This "real-life comic-book supervillain" and venture capitalist co-founded Paypal.

ANSWER: Peter **Thiel** ["teel"]

[10] The Thiel Foundation has invested in research that works toward this hypothetical event. Transhumanists like Thiel believe in the benefits of this term for technological superintelligence drastically changing human life.

ANSWER: **singularity** [or technological **singularity**]

<JK Current Events>

5. This event's namesake leader was elected governor along with Samuel Ward King prior to it. For 10 points each:  
[10] Name this 1841 to 1842 rebellion in Rhode Island that aimed to win universal male suffrage.

ANSWER: **Dorr**'s Rebellion

[10] This president made the decision to not send troops in against Dorr's rebellion, but sent observers to monitor it. This man ascended to the presidency after the death of William Henry Harrison.

ANSWER: John **Tyler**

[10] This Supreme Court case found matters involving the Guarantee Clause of the Fourth Amendment to be a "political question," making the court unable to rule against the legitimacy of the Rhode Island government.

ANSWER: **Luther v. Borden** [accept either underlined name]

<GP American History>

6. The protagonist of this novel falls in love with the waitress Mildred and author Norah. For 10 points each:

[10] Name this William Somerset Maugham ["mawm"] novel about the clubfooted Philip Carey, who eventually gets engaged to Sally Athelny.

ANSWER: ***Of Human Bondage***

[10] The character of Cranshaw in *Of Human Bondage* is from this city, where Maugham's novel *The Magician* is set. In the part of his novel *The Moon and Sixpence* set in this city, the mediocre Dirk Stroeve finds himself unable to destroy an image of his wife after her suicide.

ANSWER: **Paris**

[10] Maugham's *The Moon and Sixpence* follows the stockbroker Charles Strickland, who takes up this profession and moves to Tahiti. Strickland is a fictionalized version of Paul Gauguin ["go-GAN"], a man of this occupation.

ANSWER: **painters** [or **artists**]

<OL British Literature>



7. On one of its islands, this country built but a gigantic beach resort complex named Prora but never used it. For 10 points each:

[10] Name this country where Robert Ley planned leisure activities for the masses as part of the Strength Through Joy program, which also sponsored the development of a “People’s Car.”

ANSWER: Nazi **Germany** [or **Deutschland**]

[10] The Strength Through Joy program was promoted by the Nazi ministry named for this concept. Joseph Goebbels was the Nazi minister of this type of information that is disseminated with the intent to persuade.

ANSWER: **propaganda**

[10] This ship, named after an assassinated Nazi leader from Switzerland, was built as the flagship of the Strength Through Joy cruise fleet. The most deadly shipwreck in history occurred when this ship was sunk by a Soviet submarine while evacuating German civilians.

ANSWER: *MV Wilhelm* **Gustloff**

<JB Euro/British History>

8. This instrument has a prominent solo in the first Alborada of *Capriccio Espagnol* that repeats the melodies of the strings. For 10 points each:

[10] Name this instrument that is accompanied by strings and harp in Copland’s concerto for it. Another composer wrote a concerto and a quintet for Anton Stadler, a player of this instrument.

ANSWER: **clarinet** [accept **B-flat clarinet** or **A clarinet**; **DO NOT** reveal alternate answerlines; prompt on **basset horn** by asking, “What modern-day instrument?”]

[10] This composer wrote a clarinet concerto for Anton Stadler, as well as serenades such as *Eine Kleine Nachtmusik*.

ANSWER: Wolfgang Amadeus **Mozart**

[10] Mozart’s Clarinet Concerto is in this note’s major key and is played on a clarinet pitched in this note’s key. The Aeolian [“ay-OH-lee-in”] mode starting on this note has no sharps or flats.

ANSWER: **A**

<YFL Music and Opera>

9. Another character says that this character looks “pretty... good. You look pretty good” after she puts on a pink dress and blonde wig belonging to Nancy Wheeler. For 10 points each:

[10] Name this character. In the second season of a TV show, this character takes a bus to Pittsburgh to find Kali after visiting her catatonic mother, Terry Ives.

ANSWER: **Eleven** [accept **Jane** Ives]

[10] Eleven is a main character on this Netflix show, created by the Duffer Brothers. In this show, Mike and his friends Lucas, Will, and Dustin encounter the Upside Down in Hawkins Lab.

ANSWER: **Stranger Things 2**

[10] Dustin is disappointed to find that MADMAX has broken his record on this thematically-appropriate arcade game during the first episode of *Stranger Things 2*. This game also titles the second season’s fifth episode.

ANSWER: **Dig Dug**

<OL Trash>

10. Residents of this country speak Ursprache, a language without nouns. For 10 points each:

[10] Name this fictional country where duplicates of lost items in this country are called *hrönir*, a fact that Herbert Ashe included in his encyclopedia about it. Adolfo Bioy Casares helps the narrator research this country in a short story.

ANSWER: **Tlön**

[10] Tlön was created by this Argentinian author of “Tlön, Uqbar, Orbis Tertius,” which he included in his collection *Ficciones* alongside “The Garden of Forking Paths.”

ANSWER: Jorge Luis **Borges**

[10] Borges wrote a story about a lottery held in this place. An F. Scott Fitzgerald story named for this place “revisited” sees Charlie Wales deemed an unfit father for Honoria, and Stephen Benét wrote a story titled for the waters of it.

ANSWER: **Babylon** [or “The **Babylon** Lottery”; or “**Babylon** Revisited”; or “By the Waters of **Babylon**”]  
<OL World Literature>

11. A sculpture in this building has bees on the bases of its columns in reference to the Barberini family coat of arms. For 10 points each:

[10] Name this building home to a sculpted bronze canopy with helical solomonic columns, its baldacchino [“ball-da-KEE-no”].

ANSWER: **St. Peter**’s Basilica [or Basilica **Sancti Petri**]

[10] The baldacchino for St. Peter’s Basilica was designed by this Baroque sculptor who created *The Fountain of the Four Rivers* and *The Ecstasy of Saint Theresa*.

ANSWER: Gian Lorenzo **Bernini** [or Giovanni Lorenzo **Bernini**]

[10] Bernini allegedly created this unfinished sculpture to respond to criticism of his unfinished efforts to build two towers for St. Peter’s Basilica. A naked woman is holding the sun and has one foot on the earth in this sculpture.

ANSWER: ***Truth Unveiled by Time***

<YFL Painting and Sculpture>

12. Guy and Edna Ballard founded a religious movement named for these two words that believes in beings called “Ascended Masters.” For 10 points each:

[10] Name these two words. They are the second and third words in the English translation of a Hebrew word used to respond to the divine in several places in the Old Testament, such as when Moses answers the call from the burning bush.

ANSWER: **I am** [accept “here **I am**”; accept “**I Am**” Movement; prompt on *hineni*]

[10] The “I Am” Movement takes its name from *Soham*, a Hindu phrase of this type that means “I am that.” The *om* syllable is a popular example of these sacred utterances that are repeated during meditation.

ANSWER: **mantras**

[10] Shiva instructs Maitreya to pray with the thought “I am he” in the Maitreya one of these sacred Hindu texts. Another one of these texts repeats the refrain “tat tvam asi,” meaning “thou art that.”

ANSWER: **Upanishads**

<JB Religion>

13. Name some things about paradoxes in math, for 10 points each.

[10] In this paradox, a ball is decomposed into smaller subsets, which can then be rearranged to form two balls identical to the original.

ANSWER: **Banach–Tarski** paradox [prompt on partial answers]

[10] In this mathematician’s namesake paradox, a completely occupied hotel has an infinite number of rooms and infinitely many guests. In 1900, this man proposed 23 problems that heavily influenced 20th-century mathematics.

ANSWER: David **Hilbert**

[10] In this paradox, you are offered two boxes A and B by a predictor who can see the future, and you can choose to take only B, or both A and B. Box A always has one thousand dollars, while box B has no money if the predictor sees that you will pick both boxes, but one million dollars if he sees that you will take only B.

ANSWER: **Newcomb**’s paradox

<DM Math>

14. A flaw in a definition of this quality is exposed by a character pointing out that something is carried by virtue of being carried. For 10 points each:

[10] Name this quality, defined in one dialogue as a species of the genus “justice.” That dialogue’s dilemma over the source of this quality is a major problem for Divine Command Theory.

ANSWER: **piety** [or word forms such as **piousness**; or **hosios**; or **hosion**; prompt on **holiness**, **goodness**, and other related words]

[10] Euthyphro discusses the definition of piety in a dialogue with Socrates written by this student of Socrates known for his theory of forms.

ANSWER: **Plato**

[10] Narratively, the *Euthyphro* immediately precedes this other Socratic dialogue. In this dialogue, Socrates describes how his “divine sign” warns him against mistakes and compares himself to a gadfly.

ANSWER: **Apology** of Socrates

<YFL Philosophy>

15. In one ballet, four dancers dressed as these animals dance a *pas de quatre* [**“pah duh CAT”**] in a line with cross-linked hands. For 10 points each:

[10] Name these animals portrayed in a ballet where they are hunted by the protagonist with a crossbow after a “Dance of the Goblets.” A dancer portraying one of these animals performs 32 fouetté [**“fwet-TAY”**] turns in one ballet.

ANSWER: **swans**

[10] The ballet *Swan Lake* is by this composer who wrote music for *The Nutcracker* and *Sleeping Beauty*.

ANSWER: Pyotr Ilyich **Tchaikovsky** [or Peter Ilich **Tchaikovsky**]

[10] This character’s variation in *Sleeping Beauty* is the only variation out of the six that is a waltz. Marie Petipa premiered this character, who puts Princess Aurora into a 100-year sleep to save her from the curse of Carabosse.

ANSWER: **Lilac Fairy**

<YFL Other Arts (Ballet)>

16. J. A. Hobson lambasted the imperialist rhetoric common to entertainment in these places. For 10 points each:  
[10] Name these theater venues, popular in Britain from the Victorian era until the '60s, that served up vaudeville-like variety entertainment. They promoted World War I via songs like "It's a Long Way to Tipperary."

ANSWER: **music halls**

[10] Music hall star G. H. MacDermott popularized a song that states "We don't want to fight but by [this word] if we do / We've got the ships, we've got the men, we've got the money too," making this word the root of a term for aggressive foreign policy.

ANSWER: **jingo** [prompt on **jingoism**]

[10] Hobson's *Psychology of Jingoism* attacks the music hall promotion of this war, fought against a namesake group of Dutch settlers of South Africa.

ANSWER: Second **Boer** War

<JB Euro/British History>

17. During a "Grand March" on this country, a journalist is killed and an American actress is scolded by a linguistics professor for hoarding publicity. For 10 points each:

[10] Name this country. Franz participates in a protest march towards this country that is intended to pressure it into opening its borders to doctors because he believes that Sabina will be proud of him.

ANSWER: **Cambodia**

[10] Franz and Sabina are characters in this novel that opens with an exploration of the Nietzschean idea of eternal recurrence. In the last section of this novel, the dog Karenin dies of cancer.

ANSWER: *The **Unbearable Lightness of Being***

[10] *The Unbearable Lightness of Being* was written by this Czech-born French author of *The Joke* and *The Book of Laughter and Forgetting*.

ANSWER: Milan **Kundera**

<YFL European Literature>

18. Answer the following about the Meselson–Stahl experiment. For 10 points each:

[10] The experiment gave evidence to this property of DNA replication. This property was observed when a double-helix DNA molecule undergoing replication led to two double-stranded DNA molecules, each with one strand of parent DNA and one newly synthesized.

ANSWER: **semiconservative**

[10] *E. coli* was first grown in a medium consisting of this element's 15 isotope, and later in a medium with its 14 isotope. This element forms namesake bases in DNA abbreviated A, T, C, and G.

ANSWER: **nitrogen** [or **N**]

[10] Meselson and Stahl separated their DNA bands by ultracentrifugation in a solution of the chloride of this element. This element's radioactive 137 isotope is frequently used in the treatment of cervical cancer.

ANSWER: **caesium** [or **Cs**]

<DM Bio>

19. The daughter of this member of the House of Braganza, Maria II, became queen of Portugal. For 10 points each:  
[10] Name this first emperor of his country, whose independence he declared in a speech called the Cry of Ipiranga.

ANSWER: Dom **Pedro I** [prompt on Pedro]

[10] Under Pedro I, Brazil fought the Cisplatine War over the “banda,” or “bank” of this name, a region that became Uruguay after the war. The oath sworn by thirty-three leaders of that province of this name is a foundational myth of Uruguayan history.

ANSWER: Banda **Oriental** [or Provincia **Oriental**; or the **Eastern** Bank; or the **Eastern** Province]

[10] Pedro I’s granddaughter, Isabella, ended this practice in Brazil by signing the Golden Law. The Law of Free Birth was an earlier step in the Brazilian abolition of this practice, which had been ended six years earlier in the US by the 13th Amendment.

ANSWER: **slavery**

<GP World History>

20. This character takes over a position held by Mr. Garner. For 10 points each:

[10] Name this character who goes with his nephew, a sheriff, and a slavecatcher to retrieve a former slave. In an event narrated by this character, Stamp Paid and Baby Suggs attend to a dead and a bloody infant.

ANSWER: **Schoolteacher**

[10] Schoolteacher is a sadistic slave owner in this novel, in which his arrival at 124 Bluestone Road leads the protagonist to take her children to a woodshed behind the house.

ANSWER: **Beloved**

[10] *Beloved* is a novel by this African-American Nobel laureate who also wrote *The Bluest Eye*.

ANSWER: Toni **Morrison** [or Chloe Ardelia **Wofford**]

<YFL American Literature>

21. This enzyme replaced the Klenow fragment in a commonly-used lab procedure. For 10 points each:

[10] Name this DNA polymerase found in the bacterium *Thermus aquaticus*. Because *T. aquaticus* is found in hot springs, this enzyme is able to withstand high temperatures without becoming denatured.

ANSWER: **Taq** polymerase [or **Taq** Pol]

[10] *Taq* is widely used in this lab procedure invented by Kary Mullis. It can produce up to millions of copies of a DNA sequence, and uses dNTPs to assemble new strands.

ANSWER: **polymerase chain reaction** [or **PCR**]

[10] Primers are often chosen to reach a certain level for this number, which refers to the composition of the base pairs within a region of DNA. Primers with high levels for this statistic require a higher annealing temperature.

ANSWER: **G–C** content [accept descriptive answers like **how much guanine and cytosine there is**; prompt on incomplete answers that do not mention both bases]

<JK Biology>