

Regular Academic Fall Tournament III

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Packet 9

1T. **A generalized form of this quantity is tangent to a world line. In natural units, a formula for the addition of this quantity contains a term of one plus the dot product of two values of this quantity. A factor of one over the square root of one minus this quantity squared over c squared is named for Lorentz. Reference frames in which this quantity is constant are called (*) inertial.** Length contraction and time dilation occur as an object approaches a universal upper limit for this quantity. For 10 points, name this quantity that, in relativity, is upper-bounded by 300 million meters per second, equal to that of light.

ANSWER: **velocity** [or **speed**; accept four-**velocity**]

<Ye — Physics>

1B. In April 2016, Dennis Skinner was suspended from Parliament for refusing to stop derogatorily referring to the then-leader of this party as “dodgy Dave.” For 10 points each:

[M] Name this political party. The current leader of this party was succeeded in an earlier position by Sadiq Khan.

ANSWER: **Conservative** and Unionist Party [or the **Conservatives** or the **Tories** or **Tory** Party or **Cons**]

[E] Under the leadership of Boris Johnson, the Conservative Party officially completed the process of Brexit, in which the U.K. withdrew from this continental organization.

ANSWER: **European Union** [or the **EU**; accept **European Communities** or **European Committee** or **EC**]

[H] This Conservative MP and vehement Eurosceptic tweeted an image of a cardboard cutout of Margaret Thatcher when the UK left the European Union. In October 2021, this MP for Southend West was stabbed to death during a constituency meeting.

ANSWER: Sir David **Amess**

<Miles — Current Events>

2T. **This author uses a double displacement reaction as a metaphor for Otilie and the Captain’s visit to Eduard and Charlotte. In a play by this author of *Elective Affinities*, the protagonist has trouble translating the Gospel of John. That character’s personality is contrasted with that of his assistant Wagner’s, and he attempts to seduce (*) Gretchen.** One of this author’s novels follows a man who shoots himself after his unrequited love Lotte marries Albert. A play by this author features the title scholar who loses half of a wager to Mephistopheles [mef-ist-off-ill-eez]. For 10 points, name this German author of *The Sorrows of Young Werther* and *Faust*.

ANSWER: Johann Wolfgang von **Goethe**

<Wu — European Literature>

2B. “Creeping” occurs when these substances travel up the sides of surfaces, a phenomenon called the Onnes effect. For 10 points each:

[M] Name these extremely low-temperature substances that exhibit zero viscosity. Helium forms one of these substances when it is cooled below the lambda point.

ANSWER: **superfluids** [accept **superfluidity**]

[H] Arkady Migdal proposed that the interior of these astronomical objects exhibit superfluidity. Nucleons in these high density objects are thought to form Cooper pairs analogous to electrons in superconductors.

ANSWER: **neutron stars** [accept **pulsars**]

[E] Evidence for the superfluidity of neutron stars comes from observing this quantity for pulsars, which is constant for superfluids. Classically, this “energy of motion” is given by one-half times mass times velocity squared.

ANSWER: **kinetic** energy [accept rotational **kinetic** energy; accept **KE**] <Ye — Physics>

3T. **This man pushed to arrest all people whose writings indicated they were “partisans of tyranny” in the Law of Suspects. One political faction which this man was involved in took its name from the height of the benches that they sat on in the National Convention. This leader of the Mountain faction was ousted from power in the (*) Thermidorian Reaction.** This politician had his ally-turned-rival Georges Danton executed before taking control of the Committee of Public Safety. For 10 points, name this statesman who orchestrated the Reign of Terror during the French Revolution?

ANSWER: Maximilien **Robespierre** [or Maximilien François Marie Isidore de **Robespierre**]

<Fuhrer — European History>

3B. This artist’s most notable style of painting was directly influenced by Ukrainian artist Janet Sobel. For 10 points each:

[E] Name this husband of Lee Krasner who created works in a style of action painting known as “drip paintings.” Those paintings, such as *Full Fathom Five* and *Lavender Mist* earned the nickname “Jack the Dripper.”

ANSWER: Jackson **Pollock**

[M] Jackson Pollock’s paintings helped develop this post-war movement. Mark Rothko pioneered the “color-field” subtype of this New York-based artistic movement.

ANSWER: **abstract expressionism** [accept word forms]

[H] One abstract expressionist with this surname painted her *Cave Walls* series after seeing the Lascaux and Altamira cave paintings. Her husband with this surname painted works like *Interchange* and the *Woman* series.

ANSWER: **de Kooning** [accept Willem **de Kooning** or Elaine **de Kooning**; do not accept or prompt on “Kooning”]

<Morales — Visual Fine Arts>

4T. **One work by this artist was inspired by part of Marcantonio Raimondi’s engraving of Raphael’s *The Judgement of Paris*. This artist echoed Goya’s *The Third of May, 1808* in several depictions of *The Execution of Emperor Maximilian*. This artist’s *The Balcony* depicts their sister-in law, the painter Berthe (*) Morisot. Victorine Meurent modeled for a painting by this artist in which a black woman brings flowers to the title prostitute, who lies on a bed looking at the viewer. In another painting, this artist depicted two clothed men having a picnic with a nude woman. For 10 points, name this French painter of *Olympia* and *Luncheon on the Grass*.**

ANSWER: Édouard **Manet** [do not accept or prompt on “Monet”]

<Carvell — Visual Fine Arts>

4B. A “Worshipful Company” of people who work with this good was founded in England in the 16th century. For 10 points each:

[E] Name this good, whose traders financed namesake churches in East Anglia. This good is obtained from shearing sheep.

ANSWER: **wool** [accept **wool** churches or Worship Company of **Woolmen**; prompt on cloth; prompt on textiles]

[H] The development of the wool trade in England was one of the major catalysts for this movement, which involved the privatization of common land. Tenant rents on land exploded upward after the passage of an act towards this end in 1773.

ANSWER: **enclosure** movement [accept **Enclosure** Act]

[M] English wool was often sent to this region to be made into cloth. This northernmost Belgian region’s city of Bruges became a major wool market in the 12th century. A cloth hall in Ypres, a city in this region, was destroyed in World War I.

ANSWER: **Flanders** [or **Vlaanderen**]

<Kulkarni — Other History>

5T. **Michael Gottfredson and Travis Hirschi posited a “self-control” theory of this phenomenon. Cesare Lombroso is often called “the father of” studying this phenomenon, and he founded the Italian school of studying it. It’s not suicide, but this phenomenon results from Emile Durkheim’s idea of *anomie* according to Robert Merton’s strain theory. George Kelling and James Wilson posited that urban blight causes this behavior in their (*) “broken windows” theory of this phenomenon. Fraud, embezzlement, and insider trading are examples of the “white-collar” type of this phenomenon. For 10 points, name this behavior in which people break the law.**

ANSWER: **crime** [accept **criminology**; prompt by asking “what broader class of activity do those things belong to?” on specific types like murder or vandalism]

<Morales — Social Science>

5B. One character with this profession has a daughter named Brigida and avoids arrest until the mestizo betrays him to the Lieutenant. For 10 points each:

[E] Name this profession of the protagonist of *The Power and the Glory*. In *The Heart of the Matter*, Father Rank and Father Clay both hold this religious profession.

ANSWER: **priest** [accept the whiskey **priest**]

[M] This British author included *The Power and the Glory* and *The Heart of the Matter* in a set of four “Catholic novels.” This author created the vacuum cleaner salesman James Wormold who becomes a spy in *Our Man in Havana*.

ANSWER: Graham **Greene**

[H] This author created the priest and detective Father Brown. This author wrote about Gabriel Syme joining an anarchist council in the novel *The Man Who Was Thursday*.

ANSWER: G. K. **Chesterton** [or Gilbert Keith **Chesterton**]

<Kala — British Literature>

6T. **This man’s great-great-granddaughter, Lynne Jackson, received a formal apology while lines from the play “A Man of His Name” were read. This man was backed financially by the Blow children and was represented in court by future Postmaster General Montgomery Blair. A court case involving this man was merged with one concerning Harriet (*) Robinson.** John Emerson took this man to Wisconsin, forming the basis for his later legal argument. Roger Taney’s ludicrous interpretation of the constitution led to the decision that this man was incapable of being a free citizen because of his race. For 10 points, name this enslaved African-American man whose freedom suit against Sandford was denied in 1857 by the Supreme Court.

ANSWER: Dred **Scott** [accept Dred **Scott** v Sandford]

<Wang—American History>

6B. While the main religions in Vietnam are considered to be Buddhism and Catholicism, many practice belief in its folk traditions which were first codified during this dynasty’s reign. For 10 points each:

[H] Name this longest reigning Vietnamese dynasty, whose legendary founder Loi received a sword called Heaven’s Will.

ANSWER: **Lê** dynasty

[M] Liễu Hạnh, Sơn Tinh and two gods thought to be avatars of Liễu Hạnh make up a group of four of these beings in Vietnamese folklore. Eight of these undying beings in Chinese culture are revered by Taoists.

ANSWER: **immortals**

[E] Thánh Gióng is one of these beings who defeated northern invaders according to Vietnamese folklore. These large beings include figures like Ymir in Norse mythology and Goliath in the Bible.

ANSWER: **giants**

<Morales — Religion>

7T. **This novel’s preface describes the reaction to realism as “the rage of Caliban seeing his own face in a glass” and ends by stating that “All art is quite useless.” In this novel, the sailor James is accidentally shot by a hunter after pursuing a character he heard referred to as “Prince Charming” in an opium den. After witnessing a mediocre performance of *Romeo and Juliet*, this protagonist cruelly spurns the actress Sibyl (*) Vane, leading to her death. Lord Henry Wotton corrupts this novel’s titular character, who murders the painter Basil Hallward before stabbing the title object, killing himself in the process.** For 10 points, name this novel in which the painting of the titular young man ages instead of its hedonistic subject, written by Oscar Wilde.

ANSWER: *The **Picture of Dorian Gray***

<F. Wang / Rynearson — British Literature>

7B. A Latimer diagram describes this quantity as an element increases in oxidation state. For 10 points each:

[M] Name this quantity that represents the tendency of a species to gain electrons. This quantity can be calculated using the Nernst equation.

ANSWER: **reduction potential** [or **redox potential** or **oxidation-reduction potential** or **ORP**; prompt on **E**; prompt on **reduction** or **redox** or **potential**]

[H] Reduction potentials are measured relative to this half cell, which is defined to have a potential of zero. This half cell consists of a certain element being reduced on a platinum surface.

ANSWER: **standard hydrogen electrode** [or **SHE**]

[E] The standard hydrogen electrode is also defined to be independent of this quantity, which is multiplied by the ideal gas constant in the numerator of the Nernst equation. This quantity is measured in degrees Celsius.

ANSWER: **temperature** [or absolute **temperature**]

<Ye — Chemistry>

8T. **Growth patterns in these locations are predicted by Foster’s rule, which is sometimes named for these locations. Silversword alliances and honeycreepers occur at a set of these locations. The biodiversity of these locations is predicted by a model comparing rates of immigration to extinction and is named for MacArthur and Wilson. Due to allopatric speciation resulting from (*) isolation, these ecosystems typically possess numerous endemic species. Adaptive radiation in one of these ecosystems located near South America was the basis for Charles Darwin’s study of finches. For 10 points, name these pieces of land that are completely surrounded by water.**

ANSWER: **islands** [accept **isles** or **archipelagos**; accept **Hawaiian** islands or **Galápagos** Islands; prompt on **habitats** or **biomes**; prompt on **ecosystems** before mentioned]

<Xie — Biology>

8B. Pierre Paul Royer-Collard led a group of constitutional monarchists called the Doctrinaires during this period. For 10 points each: [M] Name this period that was briefly interrupted by Napoleon’s return from Elba and the Hundred Days. Louis XVIII and his brother Charles X ruled successively as kings during this 16 year period.

ANSWER: **Bourbon Restoration** [accept First **Bourbon Restoration** or Second **Bourbon Restoration**; prompt on **Restoration** alone]

[E] In response to domestic troubles, Charles X began the French invasion of this large North African country. The French continued their colonial occupation of this country until the signing of the Evian Accords in 1962 in the aftermath of a bloody war.

ANSWER: (People’s Democratic Republic of) **Algeria**

[H] The Bourbon Restoration was ended by this uprising, after which Louis Philippe took the throne. Many street lamps were destroyed and thousands of barricades were erected during this three-day uprising.

ANSWER: **July Revolution** [accept French **Revolution of 1830**; accept **Second French Revolution**; accept **Trois Glorieuses**; accept **Three Glorious Days**; do NOT accept or prompt on “French Revolution”]

<Delot-Vilain — European History>

9T. **Lahpet is a fermented variant of this substance originating in Myanmar. The “gunpowder” version of this substance is popular in the Maghreb, where mint is often added to this substance. The word for this substance in a given language tends to vary depending on whether this substance was introduced through land or sea routes. Butter and salt are added in the traditional (*) Nepalese method of preparing this substance. Assam and Darjeeling are prominent producers of this substance. A popular contemporary variety of this beverage adds milk and tapioca pearls and is the “bubble” variety of this drink. For 10 points, what drink comes in caffeinated black and green varieties?**

ANSWER: **tea** [or **cha** or **chai**; accept specific types such as green **tea**]

<Yu — Geography>

9B. This game received both the Best Multiplayer and Best Mobile game awards at the 2020 Game Awards. For 10 points each:

[E] Name this social deduction game developed by InnerSloth in which the crewmates try to identify murderous Imposters.

ANSWER: **Among Us**

[H] This Twitch streamer, who often streams *Among Us* with others like Corpse Husband and Disguised Toast, was awarded the Content Creator of the Year award at the Game Awards. She surpassed Pokimane as the most-viewed female streamer during 2020.

ANSWER: **Valkyrae** [or Rachel **Hofstetter**]

[M] Before becoming a Twitch streamer, Hofstetter worked at one of this company’s stores. This company’s stock rose astronomically in early 2021 after a hedge fund attempted to short this retail company.

ANSWER: **GameStop**

<Casey — Other Pop Culture>

10T. **One étude by a composer from this country gradually crescendos from *pianissimo* to *fffff* [six Fs] and is titled “Devil’s Staircase.” Another composer from this country used their characteristic “night music” in the slow movement of orchestral works, such as in *Music for Strings, Percussion, and Celesta*. That composer from this country also included several duets in the “Game of Pairs” movement in their (*) *Concerto for Orchestra*, and worked with Zoltán [ZHOL-tahn] Kodály [KOH-dye] to collect folk music from this country. For 10 points, name this country where Kodály and Béla Bartók studied and taught at the Franz Liszt Academy of Music in its capital of Budapest.**

ANSWER: **Hungary** [Editor’s Note: the composer in the first line is György Ligeti]

<Rao — Auditory Fine Arts>

10B. Excessive DNA winding can form different supercoiled shapes, which can result in torsional strain. For 10 points each, answer these questions about supercoiling:

[E] DNA can form supercoils during this cellular process as a response to topological stress. This process, which occurs during the S phase of the cell cycle, creates a new copy of DNA using polymerase.

ANSWER: DNA **replication** [or DNA **synthesis**]

[H] Supercoiling and other structural issues of DNA replication are regulated by this group of enzymes that work ahead of the replication fork to untangle DNA strands.

ANSWER: **topoisomerases** [or DNA **topoisomerases**; accept Type I **topoisomerase** or Type II **topoisomerase**]

[M] Type I and II topoisomerases, which utilize different mechanisms to regulate supercoiling, can be differentiated by their use of this reaction, where a water molecule is used to cleave ATP into ADP and a phosphate group.

ANSWER: ATP **hydrolysis**

<Xie — Biology>

11T. **A character in this novel is disappointed when he doesn't have any ketchup to go with his baked beans. The primary antagonist of this novel wears a glove filled with vaseline to keep his hand soft. This novel's ending is foreshadowed when Carlson convinces the elderly Candy to allow him to shoot his old dog. While (*) Curley is distracted playing horseshoes, one of the protagonists of this novel accidentally strangles his wife. That character, who had always wanted to pet rabbits and "live off the fatta the lan," is shot by his best friend to prevent him from being lynched at the end of this novel. For 10 points, name this novella about the farm workers George and Lennie, written by John Steinbeck.**

ANSWER: ***Of Mice and Men***

<Gedajlovic/Ryneason — American Literature>

11B. The Maritime Silk Road stretched across this ocean and two of its major inlets. For 10 points each:

[E] Name this ocean. Goods from inland African states travelled to coastal cities before being traded across this ocean to Southeast Asia and China.

ANSWER: **Indian** Ocean

[M] Swahili city-states that participated in Indian Ocean trade largely collapsed after the discovery of a sea route to India by this Portuguese explorer. This explorer first arrived in the Indian city of Calicut in 1498.

ANSWER: Vasco **da Gama**

[H] Among the largest city-states which collapsed was this non-Zanzibar island, part of modern-day Tanzania. Ibn Battuta somewhat inaccurately described the dome of this city's Great Mosque, which was constructed by Sultan al-Hasan ibn Sulaiman.

ANSWER: **Kilwa** Kisiwani [or **Kilwa** Island]

<Rao — World History>

12T. **A certain type of these people can be "redeemed" by a payment of silver coins in the ceremony of *pidyon haben*. A mohel performs the brit milah ceremony on one of these people. During Passover, these people search for a hidden piece of matza called the *afikomen*. The Haggadah gives four types of these people, including the wise, the simple, and the (*) one who does not know how to ask and calls for one of these people to read the four questions. These people are not required to fast until they undergo a ceremony that involves publicly reading from the Torah for the first time. For 10 points, name these people who become adults after a bar or bat mitzvah.**

ANSWER: Jewish **children** [accept obvious equivalents; accept youngest **children** or **baby** or firstborn **sons** or **daughters**; prompt on **Jews**]

<Morales — Religion>

12B. A vessel with this name has the motto "Mobilis in mobili," which Pierre Aronnax translates as "Moving within a moving element." For 10 points each:

[H] A vessel with this name is attacked by a group of giant squid. A creature with this name is described by Oliver Wendell Holmes as a "ship of pearl" and a "[c]hild of the wandering sea."

ANSWER: **Nautilus** [accept "The Chambered **Nautilus**"]

[M] This character, who later changes his name to Prince Dakkar, is the captain of the *Nautilus*. Pierre Arronax hears this character yell "O almighty God! Enough! Enough!" before abandoning him and driving the *Nautilus* into the maelstrom.

ANSWER: Captain **Nemo**

[E] Captain Nemo and the *Nautilus* appear in *Twenty Thousand Leagues Under the Sea*, a novel by this author. This author described Phileas Fogg's attempt to circumnavigate the globe in *Around the World in Eighty Days*.

ANSWER: Jules Verne
<Ezriev — European Literature>

13T. **In a speech, a leader of this city asked its residents to “fix [their] eyes upon the greatness of [this city]” and “become filled with the love” of this city. It’s not Rome, but the legendary founder of this city was paired with Romulus in Plutarch’s *Parallel Lives*. Cimon was named the first leader of a maritime confederation that was led by this city. (*)** Cleisthenes successfully reformed the constitution of this city approximately a century after Solon attempted to do the same. Themistocles, who built up this city’s navy, was banished from this Greek city by a voting method known as ostracism. For 10 points, name this modern-day capital of Greece, considered the birthplace of democracy.

ANSWER: Athens [or Athína or Athêna]
<Rao — Other History>

13B. The toccata from Charles-Marie Widor’s fifth symphony for this instrument is often played at wedding ceremonies. For 10 points each:

[H] Name this instrument for which Widor wrote ten symphonies in total. Dietrich [dee-trick] Buxtehude [books-tay-oo-dah] was a Danish Baroque virtuoso of this instrument.

ANSWER: pipe organ

[E] This composer’s *Symphony No. 3* is often called the “Organ Symphony,” though only two of its four sections feature the organ. This composer also musically depicted various animals, including “The Tortoises” and “The Pianists,” in *The Carnival of the Animals*.

ANSWER: (Charles-)Camille Saint-Saëns

[M] Saint-Saëns dedicated his *Symphony No. 3* to this composer, whose own organ works include their *Prelude and Fugue on B-A-C-H*. This composer depicted a bell with repeated high E’s in one of their *Grandes Etudes de Paganini*.

ANSWER: Franz Liszt
<Morales — Auditory Fine Arts>

14T. **One process that occurs in these substances is characterized by the Krafft temperature. The process of peptization forms one of these substances by mixing a precipitate with an electrolyte. Ruby-red gold nanoparticles form one of these substances in water. These substances reflect blue light in the (*)** Tyndall effect. Adding a clarifying agent to these substances causes particles within them to aggregate during flocculation. Micelles form inside these substances when surfactants are added. Gels and emulsions are examples of these substances. For 10 points, name these mixtures in which particles are homogeneously distributed but not dissolved, such as in milk and fog.

ANSWER: colloids [accept colloidal gold; prompt on dispersion]
<Ye — Chemistry>

14B. The “Kingdom of Ends” is a thought experiment based on this moral concept. For 10 points each:

[H] Name this concept that an 18th-century German philosopher contrasted with a hypothetical one. This idea, introduced in *Groundwork of the Metaphysics of Morals*, is often expressed as a maxim that must be followed universally..

ANSWER: categorical imperative

[E] The a priori type of this concept is demonstrated by the statement $7 + 5 = 12$ in one book and is contrasted with its a posteriori type. Epistemology is the study of this concept, which is simply defined as having understanding of something.

ANSWER: knowledge [accept a priori knowledge or a posteriori knowledge]

[M] This German metaphysical philosopher authored his ideas about a priori and a posteriori knowledge in his *Critique of Pure Reason*.

ANSWER: Immanuel Kant
<Morales — Philosophy>

15T. **This man’s wife was cursed by Aphrodite to fall in love with his son Hippolytus. Along with Pirithous, this man was trapped in the Chair of Forgetfulness as punishment for trying to kidnap Persephone. This man killed the bandit Procrustes, who used an adjustable (*)** bed to torture travelers. This man’s father Aegeus threw himself into the sea after this man forgot to change the color of his sails, leading this man to becoming king of Athens. This man was aided in his most famous quest by Ariadne, who provided him with a magical ball of yarn to navigate through the Labyrinth. For 10 points, name this Greek hero who slew the Minotaur.

ANSWER: Theseus
<Morales — Mythology>

15B. A playwright from this country translated José Rizal's poem "Mi Ultimo Adios" as "Land That I Love, Farewell!" For 10 points each:

[E] Name this Asian country home to Nick Joaquin, who wrote a narrative titled *Manila, My Manila* about its history.

ANSWER: **Philippines** [or Republic of the **Philippines** or Republika ng **Pilipinas**]

[H] This novel inspired the title of a play by Nick Joaquin in which Candida and Paula attempt to take care of their father Don Lorenzo. In this novel, Father Arnall's sermon on hell reminds the protagonist of his time at Clongowes Wood College.

ANSWER: ***A Portrait of the Artist as a Young Man*** (The play by Joaquin is titled *A Portrait of the Artist as Filipino*)

[M] Joaquin subverted this literary genre to critique colonizing European powers in a short story collection titled for its "Tropical" form. *The Castle of Otranto* is generally regarded as the first novel of this genre and this genre is parodied in the Jane Austen novel *Northanger Abbey*.

ANSWER: **gothic** [accept *Tropical Gothic*] <Ezrielev — World Literature>

16T. **With his friend and translator Eliot Weinberger, this author helped write an analysis of translations of Chinese poetry in *19 Ways of Looking at Wang Wei*. This author explored the psychology of masculinity and violence in his country through the word "chingar" in his essay "The Sons of La Malinche." This author used the line (*) "willow of crystal/a poplar of water" to begin a 584-line poem based on the Aztec calendar. In a book-length essay, this author analyzed his country's national identity in sections including "The Day of The Dead" and "Mexican Masks." For 10 points, name this Mexican author of "Sunstone" and *The Labyrinth of Solitude*.**

ANSWER: Octavio **Paz** Lozano

<Delot-Vilain — Other Literature>

16B. This document remarks that "if men were angels, no government would be necessary" before stating that a government must both "control the governed" and "control itself." For 10 points each:

[H] Name this document, which is not the Constitution, which lays out the importance of checks and balances by saying that "ambition must be made to counteract ambition."

ANSWER: **Federalist Papers No. 51** [or **Federalist No. 51**; accept "**The Structure of the Government Must Furnish the Proper Checks and Balances Between the Different Departments**"; prompt on **Federalist Papers**]

[E] Federalist No. 51 was written by this author, who, along with Alexander Hamilton and John Jay, wrote the Federalist Papers under the pseudonym Publius. This person would later become the fourth president of the United States.

ANSWER: James **Madison**

[M] Federalist No. 51 specifically raises the hypothetical of this state breaking away from the Union in order to explain why a federal government is necessary. This state was founded after Roger Williams was banished from the Massachusetts Bay Colony.

ANSWER: State of **Rhode Island**

<Rao — American History>

17T. **The Risch algorithm computes this mathematical operation on elementary functions. This operation is computed on polynomials using nodes and weights in Gaussian quadrature. One form of approximating this operation averages two other forms in a 2 to 1 ratio; that form uses interpolated parabolas and is named for Thomas (*) Simpson. The "LIATE" [LIE-ate] rule is used to assign functions to parameters in this operation's "by parts" method. This operation is often numerically computed by constructing rectangles of a fixed width in Riemann sums. For 10 points, name this operation from calculus that is the opposite of differentiation.**

ANSWER: **integration** [accept **integral**s or other word forms; accept numerical **integration**]

<Tran — Other Science>

17B. Answer the following about the poet Terrance Hayes, for 10 points each:

[E] A 2018 collection by Hayes is titled for an undefined "American" version of this literary form. William Shakespeare wrote 154 of these 14-line poems.

ANSWER: **sonnets** [accept Shakespearean **sonnets** or *American Sonnets for My Past and Future Assassin*]

[M] Hayes' collection of *American Sonnets* opens by saying "The black poet would love to say his century began / With Hughes or God forbid, [this colonial-era poet]," who wrote "On Being Brought from Africa to America" and "To His Excellency General Washington."

ANSWER: Phillis **Wheatley** [or Phyllis **Wheatly** Peters]

[H] In his poem *The Golden Shovel*, Hayes used the words of this Gwendolyn Brooks poem as the last words of each successive line, though he broke up words like “lurking” and “straightened” to create the effect.

ANSWER: “**We Real Cool**”

<Carvell — American Literature>

18T. **This location appears in the title of a song whose singer has “been high in the Rockies under the evergreens,” and who cites being “out of touch with the rhythm and blues” as a reason for traveling to this location. On another song titled for this location, the artist declares “I never sleep, ‘cause sleep is the cousin of death.” A third song about this location describes how (*) “these streets will make you feel brand new, big lights will inspire you,” and calls this city the “concrete jungle where dreams are made of.”** For 10 points, name this city where Billy Joel “takes a Greyhound down the Hudson River line,” the subject of Jay-Z’s “Empire State of Mind.”

ANSWER: **New York** City [or **NYC**] (The first song is “New York State of Mind” by Billy Joel; the second is “N.Y. State of Mind” by Nas)

<Ye — Pop Culture>

18B. In one film by this director, the title artist thinks about a Passion Play while claiming that Jesus’s crucifixion was an expression of God’s will. For 10 points each:

[H] Name this Soviet director of the biographical epic *Andrei Rublev*. This director’s film *Mirror* follows a non-linear narrative structure and is roughly autobiographical, and this filmmaker also directed *Stalker*.

ANSWER: Andrei (Arsenyevich) **Tarkovsky**

[E] Another film by Tarkovsky, *Solaris*, is primarily set in this general location. Stanley Kubrick used music by György Ligeti rather than an original score by Alex North in a film titled for being an “*Odyssey*” in this place.

ANSWER: outer **space** [accept equivalent answers; accept *2001: A Space Odyssey*]

[M] Tarkovsky collaborated with Tonino Guerra to catalogue his travels in Italy in *Voyage in Time*, his only film of this type. The Netflix Original *My Octopus Teacher* won the Academy Award for the Best one of these films in 2021.

ANSWER: **documentary**

<Rao — Other Fine Arts>

19T. **One atrocity during this war began with the arrest of intellectuals and leaders of a certain nationality in an event called “Red Sunday.” The Kingdom of Hejaz captured Aleppo and Damascus during this war after the McMahon-Hussein Correspondence promised its autonomy. The Treaty of Sèvres, which was signed in the aftermath of this war, sparked the Turkish War of Independence. *Seven Pillars of Wisdom*, a memoir about this war's (*) Arab Revolt, was written by T. E. Lawrence. Mustafa Kemal Atatürk helped repel an ANZAC assault of the Dardanelles during this war's Gallipoli campaign.** For 10 points, the Ottoman Empire dissolved after what war that also saw the German Empire sign the Treaty of Versailles?

ANSWER: **World War I** [or **WWI**; or **First World War**; or the **Great War**; prompt on “Armenian Genocide” by asking “what larger conflict did that take place during?”]

<Sarma — World History>

19B. The wife of Utnapishtim bakes seven loaves of bread to prove that this man failed to stay awake for a week. For 10 points each:

[M] Name this legendary king of Uruk, who names an Akkadian epic. The death of this man’s companion Enkidu sets him on a desperate search for a way to become immortal.

ANSWER: **Gilgamesh**

[H] Enkidu is created as a parallel to Gilgamesh on the orders of this Mesopotamian creator god of the sky. This god’s daughter Ishtar convinces him to send the Bull of Heaven to attack Gilgamesh after he rejects her advances.

ANSWER: **Anu**

[E] Gilgamesh eventually obtains a youth-granting plant, but his efforts prove all for naught when it is stolen by one of these animals. As a baby, Heracles strangled two of these animals that Hera had sent to kill him.

ANSWER: **snake** [accept equivalents like **serpent**]

<Xie — Mythology>

20T. **This composer created four different albums titled “Cookin’,” “Relaxin’,” “Workin’,” and “Steamin’” with this composer’s band. This composer worked with Bill Evans to feature the Dorian, Mixolydian and Lydian modes in the song “Blue in Green,” one of the two ballads on the album it is featured in. This musician who wrote (*) “Flamenco Sketches” adapted the Adagio from the *Concierto de Aranjuez* for the opening track of one of his albums. This musician created the album**

Sketches of Spain and featured tracks like “Freddie Freeloader” and “So What” on his best selling album. For 10 points, name this jazz bandleader and trumpeter who composed the album *Kind of Blue*.

ANSWER: Miles (Dewey) **Davis** III <Morales — Other Fine Arts>

20B. The Hayashi track is a relationship between luminosity and temperature that describes objects before they reach this band. For 10 points each:

[H] Name this band of stars that stretches from the top left to bottom right of a certain astronomical diagram. Most stars spend the majority of their lifetime in this evolutionary stage.

ANSWER: **main sequence**

[M] The main sequence occurs as a band on this doubly eponymous diagram that plots stars based on temperature and luminosity to show patterns within different classifications.

ANSWER: **Hertzsprung-Russell** diagram [or **H-R** diagram]

[E] Main sequence stars with a mass of below around 1.5 times that of this star undergo fusion through the CNO cycle. This main sequence star is located at the center of the solar system.

ANSWER: the **Sun**

<Morales — Astronomy>