**2022 Reinstein Set (VCU Version) – Packet 7**

**Tossups**

1. This leader’s early policies, passed with the support of his advisor Sextus Afranius [af-RAH-nee-uss] Burrus, included banning capital punishment and allowing slaves to sue their masters. The poet Lucan [LOO-kun] joined a conspiracy against this ruler which was called the Pisonian [pih-SOH-nee-un] conspiracy. This leader’s mother Agrippina [a-grih-PEE-nuh] the Younger was initially his regent, but he eventually had her assassinated. This last ruler of the Julio-Claudian dynasty succeeded Claudius. For 10 points, name this Roman emperor from 54 to 68 who, during the Great Fire of 64, supposedly fiddled.
ANSWER: **Nero** (Claudius Caesar Augustus Germanicus) [do not prompt on other parts of the name]

2. One poem by this writer ends “O, rest ye, brother mariners, we will not wander more.” This poet said of those mariners, “Branches they bore of that enchanted stem.” This poet based that poem on both a trip to Spain and a group of people described in Homer’s *Odyssey*. In another poem, this person said of a different group, “Theirs not to reason why, theirs but to do and die.” This poet memorialized those people who rode “into the valley of Death”. For 10 points, name this English poet who wrote “The Lotos-Eaters” and was inspired by 600 soldiers during the Crimean War to write “The Charge of the Light Brigade”.
ANSWER: (Alfred,) Lord **Tennyson**

3. The only library designed by this architect was completed a few years after his 1969 death, and it was recently modernized to increase the amount of natural light. That library, located in northwest Washington, D.C., is this architect’s Martin Luther King Jr. Memorial Library. For a 38-story building in midtown Manhattan, this architect designed most of the building, but two large restaurants inside it were designed by Philip Johnson. This designer of the Seagram Building was also the last director of the Bauhaus [rhymes with “cow house”]. For 10 points, name this German architect who often said “Less is more.”
ANSWER: Ludwig **Mies** van der Rohe [prompt on van der **Rohe**]

4. In most mammals, this gland has three lobes, but in humans the intermediate lobe is just a layer of cells. This gland’s lactotropic [lak-toh-TROH-pik] cells release prolactin [“pro-LACK-tin”]. Some hormones are released by this gland but not created in it, such as the ones that encourage uterus contractions and increase blood pressure, which are oxytocin [ahk-see-TOH-sin] and vasopressin [vay-soh-PRESS-in]. This gland’s somatotropic [soh-MAT-oh-TROH-pik] cells release growth hormone in response to signals from the hypothalamus [“hype”-oh-THAL-uh-muss]. For 10 points, name this gland below the hypothalamus and in front of the pineal [py-NEE-ull] gland, near the brain.
ANSWER: **pituitary** [**pih-TOO-ih-tair-ee**] gland [or **hypophysis**]

5. This program was supported by the slogan “Going all out, aiming high and achieving greater, faster, better, and more economical results”. Before it started, the person who oversaw this program said his country would overtake Britain in economic production in 15 years. This program started with a focus on conserving water before moving to a massive collectivization. Because of bad incentives, furnaces were used to melt farm equipment into steel. This program led to massive famines that killed millions of people during the early 1960s. For 10 points, name this second Five-Year Plan that was overseen by Mao Zedong.
ANSWER: **Great Leap Forward** [or **Dayuejin**; prompt on second **Five-Year Plan** before “second”]

6. Before Bob Novak was told, this reporter learned from Richard Armitage that Joe Wilson’s wife Valerie Plame [rhymes with “flame”] worked for the CIA. This writer reported that John Dowd told President Trump “It’s either that or an orange jumpsuit” to discourage an interview with Robert Mueller. That book by this journalist was *Fear: Trump in the White House*. This journalist’s book *The Secret Man* described his conversations with Mark Felt. Robert Redford, who played this person in a movie, convinced him to focus on himself and his colleagues when co-writing *All the President’s Men*. For 10 points, name this person who worked with Carl Bernstein to investigate Watergate.
ANSWER: (Robert Upshur) “Bob” **Woodward**

7. This airline is in the process of being bought out and renationalized by the Khazanah Nasional sovereign wealth fund. This airline's regional subsidiary Firefly operates out of Sultan Abdul Aziz Shah Airport. A request by a Dutch team to interview Sergey Muchkayev regarding a crash of one of this airline's planes was not honored. This airline's Flight 17 was shot down over the Donbas region in 2014. Just four months earlier, this airline's Flight 370 was lost in the Indian Ocean under unclear circumstances. For 10 points, name this flag carrier based at Kuala Lumpur International Airport.
ANSWER: **Malaysia** Airlines [Berhad] [or **Malaysia** Airline System; or **MAB**; or **Penerbangan Malaysia Berhad**; or **MAS**; or **Sistem Penerbangan Malaysia**]

8. This company used microwave links to increase the audience for the public debut of several of its technologies, at which *Whole Earth Catalog* proprietor Stewart Brand advised on PR and operated the camera. On December 9, 1968, an employee of this company gave the so-called "Mother of All Demos," at which Douglas Engelbart showed the first implementation of collaborative editing, hypertext, windows, the mouse, and the graphical user interface developed at this company's Palo Alto Research Center. In 1938, this company's signature product was pioneered when Chester Carlson first achieved "electrophotography." This company originally rented the 914 model for $25 per month plus 10 cents per page. For 10 points, name this pioneer of the copy machine.
ANSWER: **Xerox** (Holdings Corporation)

9. In the middle of the last act of an opera by this composer, Wolfram sings “O thou my fair evening star.” At the end of that opera, this composer portrayed the death of the title character after he sees the dead body of Princess Elisabeth. Another opera by this composer ends with a character freeing ravens and riding her horse into a fire. That Immolation Scene shows the death of Brünnhilde [broon-HEEL-duh] at the end of *Götterdämmerung* [GUH-tur-DAH-mer-oonk]. A related opera by this composer begins with the “Ride of the Valkyries”. For 10 points, name this composer of *Tannhäuser* [TAHN-hoy-zur] and a series of four operas called the *Ring* Cycle.
ANSWER: Richard **Wagner** [reek-hart **VAHG-nur**]

10. Power plants that collect this type of energy are classified as binary cycle, flash cycle, or dry steam. This renewable energy source is more constant than other sources, though its initial costs have prevented it from becoming more widespread. The best places for power plants that collect this energy are along the Ring of Fire and where the Earth’s crust is thin. The primary source of this energy is the natural radioactive decay of potassium, thorium, and uranium, and that energy is often collected by heating water. Ground-source heat pumps collect this type of energy. For 10 points, name this type of heat energy collected from the Earth.
ANSWER: **geothermal** energy [prompt on **thermal** energy]

11. In one novel by this author, the protagonist’s wife Madeleine leaves him for a man with a wooden leg named Valentine Gersbach. In that novel, this author had the protagonist write, “History, memory—that is what makes us human” in a letter to President Eisenhower that, like many letters in that novel, was never sent. In another novel by this author, Thea Fenchel wants to go to Mexico to train an eagle to hunt lizards. This author ended that novel in France after the protagonist grows up in Chicago. For 10 points, name this author of *Herzog* and *The Adventures of Augie March*.
ANSWER: Saul **Bellow** [or Solomon **Bellows**]

12. The ending of one of this director's films is set on Devil's Mountain in Wyoming and includes a repeated five-note sequence of music. Oprah Winfrey's film debut came was in a novel adaptation by this director. A home-video release of a film by this director replaced the rifles carried by FBI agents with walkie-talkies. A child's red coat is highlighted against otherwise black-and-white shots in a film by this director that stars Liam Neeson as a factory owner who works to save Jews during the Holocaust. He made that film at the same time as a film about genetically engineered dinosaurs in Costa Rica. For 10 points, name this director of *Schindler's List* and *Jurassic Park*.
ANSWER: Steven (Allan) **Spielberg**

13. The capital of this country contains a statue to the scholar Ibn Khaldoun [kahl-DOON] in addition to the Cathedral of St. Vincent de Paul. This country contains a salty lake that is sometimes large called “Chott el Djerid [jeh-REED]”, which is near its towns of Kebili [keh-BEE-lee] and Douz [dooz]. This country contains an ancient amphitheatre in the town of El Djem [jam]. The island of Djerba [JER-buh] is off the east coast of this country, in the Gulf of Gabès [GAH-bess]. This country is the closest African country to Italy. For 10 points, name this country at the north end of the border between Algeria and Libya, the former site of Carthage.
ANSWER: (Republic of) **Tunisia** [or (al-Jumhuriyah at-)**Tunisiyah**]

14. This general was put in charge of the troops who had lost at the Battle of Kasserine [KASS-uh-reen] Pass, and he led them to win the Battle of El Guettar [guh-TAR]. This general then pushed his troops to get to Messina [meh-SEE-nuh] as fast as possible because he wanted to get there before the British troops under his ally Bernard Montgomery. During that fighting on Sicily, this general thought some troops in a hospital were cowardly, so he slapped them, which Dwight Eisenhower made him apologize for. This general then led troops into Germany after the Battle of the Bulge. For 10 points, name this subject of a George C. Scott movie who was nicknamed “Old Blood and Guts”.
ANSWER: George S(mith) **Patton** (Jr.)

15. At the beginning of a novel by this author, the narrator is given a mop and then hears somebody describe him as “big enough to eat apples off my head”. This author’s narrator thinks that he is cagey because he is half-Indian, though some characters think that the narrator is deaf. This author had that narrator, Chief Bromden, perform a mercy killing on Randle McMurphy after McMurphy’s lobotomy. This author used the money he made from that book to buy a bus called *Furthur* for the Merry Pranksters, which was described in Tom Wolfe’s book *The Electric Kool-Aid Acid Test*. For 10 points, name this author of *One Flew Over the Cuckoo’s Nest*.
ANSWER: Ken(neth Elton) **Kesey**

16. This function gives the position of where a ray from the origin intersects the line “*y* equals 1”. The range of the inverse of this function is the open interval from zero to pi. This function equals the derivative of the natural log of the sine function. The derivative of this function is the opposite of the square of the co*·*secant function, so this function decreases over its entire domain. Adding 1 to the square of this function gives the square of the co*·*secant function. On the unit circle, this function equals *x* over *y*. For 10 points, name this function that, for an acute angle in a right triangle, equals the adjacent side length over the opposite side length.
ANSWER: **co***·***t**angent [accept answers that additionally mention a variable; do not prompt on “tan” or “tangent”]

17. A scientific instrument named for this phenomenon is used to study crystal structures, often along with a Bernal [BUR-nul] chart. The pattern formed by this phenomenon is the same in some ways whether it is caused by an object or a space according to Babinet’s [bab-ee-nay’z] principle. The Fresnel [freh-nel] equation describes the near-field type of this phenomenon, and the Fraunhofer [FRAUN-hau-fur] equation describes the far-field type. This phenomenon explains why pictures taken with a small aperture are less focused. Many spectrometers use a grating that produces this phenomenon. For 10 points, name this bending of light when light goes around a barrier or through a hole.
ANSWER: **diffract**ion or **diffract**ing or **diffract**ometer [do not accept **refract**ion]

18. This person was taught music by the same teacher as both Thamyris [THAN-uh-riss] and Orpheus. When that teacher, Linus, reprimanded this person, he hit Linus with his lyre, killing him. This person was born after Zeus impersonated Amphitryon [am-FIT-ree-un], and this person’s birth name was Alcaeus [al-KAY-us]. This person died due to a lie that Nessus told to this person’s wife, Deianira [dee-uh-NEE-ruh], who gave him a blood-soaked tunic. This person showed his strength by wearing the skin of the Nemean [nih-MEE-un] lion, which he killed before killing the Lernaean [ler-NEE-un] Hydra. For 10 points, name this mythological hero who performed 12 labors.
ANSWER: **Hercules** or **Heracles** [accept **Alcaeus** before it is mentioned] 6

19. This person said “May your chains sit lightly upon you, and may posterity forget that you were our countrymen” in an August 1776 speech delivered in Philadelphia. Four years earlier, this person wrote “The Rights of the Colonists”. Thomas Gage exempted John Hancock and this person when Gage offered to pardon people who laid down their arms during the Battles of Lexington and Concord. According to legend, this person said “This meeting can do nothing further to save the country” to start the Boston Tea Party. For 10 points, name this Massachusetts politician whose cousin became a U.S. president.
ANSWER: **S**amuel **Adams** [prompt on **Adams**]

20. In one novel by this author, a fictional character has an imaginary son who is in black-and-white and talks to spirits. This author made that fictional character in the mind of spy-novel writer Sam DuChamp, and the character is a modern American version of Don Quixote. In another novel by this writer, the narrator’s sister is a famous singer who is known as the Brass Monkey. This author’s narrator has supernatural powers, and after being switched at birth is raised by a wealthy family in Bombay. For 10 points, name this author of *Quichotte* [kee-shawt] who wrote about Saleem Sinai [si-NIE] in *Midnight’s Children*.
ANSWER: (Ahmed) Salman **Rushdie**

**Extras**

21. Vizing’s [“VIE”-zeeng’z] theorem puts graphs into this many classes. This number is the chromatic number of a graph whose edges correspond to the sides of a polygon with an even number of sides, which is one less than for a polygon with an odd number of sides. If multiplying a prime by this number and adding 1 gives another prime, then the original prime is a Germain [zhair-“main”] prime. The sum from zero to *k* of 1*/*2 to the *k* power equals this number. For 10 points, identify this number that is the only even prime.
ANSWER: **2**

22. In S.I. units, electric field strength is given in this unit per meter. To calculate the amount of energy that a capacitor can store in joules [“jewels”], multiply one-half times the number of farads times the square of a quantity that is measured in this unit. A measurement in this unit tells the number of joules required to move a coulomb [koo-lohm] of charge from one point to another. From that definition, it can be derived that this unit times amperes equals watts, which is a common formula for Joule heating. This unit is equivalent to amperes times ohms, and it is the most common unit of electric potential difference. For 10 points, name this unit commonly used to measure the strength of a battery.
ANSWER: **volt**s [do not accept “voltage”]

23. The female lead in this play states “If I be waspish, best beware my sting.” When the male lead of this play later says “Sunday is the wedding-day”, the female lead replies “I’ll see thee hanged on Sunday first.” The lead couple in this play does get married, but the man shows up late wearing inappropriate clothes, and during the ceremony he knocks over the priest. Near the end of this play, the husband wins a bet by demonstrating that he has the most obedient wife. For 10 points, name this play about Petruchio [peh-TROO-kee-oh] and Katherina [kath-uh-REE-nuh], written by William Shakespeare.
ANSWER: *The* ***Taming of the Shrew***

24. This element combines with sodium and aluminum to form cryolite [“CRY-oh-light”]. The 1906 Nobel Prize for Chemistry was given to Henri Moissan [awn-ree mwah-sawn] for isolating this element. The compound known as “hex” consists of six atoms of this element around uranium and is used in uranium enrichment. The acid formed by combining this element with hydrogen is harmful to glass containers and is sometimes used to etch glass. This element was combined with carbon, hydrogen, and chlorine to make Freon [FREE-ahn], which was used as a refrigerant until it was discovered to harm the ozone layer. For 10 points, name this lightest halogen that has a very high electronegativity.
ANSWER: **fluorine** [accept **F**]

**2022 Reinstein Set (VCU Version) – Packet 7**

**Bonuses**

1. In this novel, Tom Robinson is accused of raping Mayella Ewell. For 10 points each:
[10] Name this novel in which Robinson is defended in court by the narrator’s father.
ANSWER: ***To Kill a Mockingbird***
[10]This author wrote *To Kill a Mockingbird* and *Go Set a Watchman*.
ANSWER: (Nelle) Harper **Lee**
[10]Heck Tate has this job in *To Kill a Mockingbird*. Mr. Tate is a witness at the trial, and after the trial he tells Atticus Finch that Bob Ewell fell on his own knife.
ANSWER: **sheriff** of Maycomb County

2. This battle was fought in Embabeh [em-BAH-bay] and is named for objects that were visible on the horizon during the fighting. For 10 points each:
[10] Name this 1798 victory in Egypt by Napoleon.
ANSWER: Battle of the **Pyramids**
[10]At the Battle of the Pyramids, the French defeated a remnant of this 13th- through 16th-century sultanate that came from slave soldiers.
ANSWER: **Mamluk**s
[10] One month later, Horatio Nelson won this major victory over the French at Aboukir [ah-BOO-kir] Bay on the coast of Egypt.
ANSWER: Battle of the **Nile**

3. This poem states “Now you will not swell the rout of lads that wore their honors out.” For 10 points each:
[10] Name this poem that begins “The time you won your town the race, we chaired you through the market-place.”
ANSWER: **“To an Athlete Dying Young”**
[10]“To an Athlete Dying Young” is in this English poet’s collection *A Shropshire Lad*.
ANSWER: A(lfred) E(dward) **Housman**
[10]E. Housman also wrote “When I Was One-and-Twenty”, whose narrator claims to currently be this age.
ANSWER: **22** or **two-and-twenty**

4. This constitutional amendment includes the Establishment Clause. For 10 points each:
[10] Name this amendment stating that Congress can make no law “abridging the freedom of speech, or of the press; or the right of the people peaceably to assemble, and to petition the Government for a redress of grievances”.
ANSWER: **1**st Amendment
[10] Complete this phrase from the beginning of the 1st Amendment: “Congress shall make no law respecting an establishment of...”
ANSWER: **religion**
[10]Many Establishment Clause legal cases now are decided based on a test named for this plaintiff in a 1971 Supreme Court case. The test tries to prevent excessive government entanglement with religion.
ANSWER: Alton (Toussaint) **Lemon** [accept **Lemon** test]

5. This quantity can be called amount concentration or substance concentration. For 10 points each:
[10] Name this measure of concentration equal to moles per liter.
ANSWER: **molar**ity or **molar** concentration [do not accept “molality”]
[10] This measure of equivalent concentration is always an integer multiple of molarity.
ANSWER: **normality**
[10]One way to calculate normality is to divide molarity by an equivalence factor that is less than 1. Find the equivalence factor for phosphoric acid.
ANSWER: **1*/*3**

6. Walter Lippmann said of this U.S. president, “This active inactivity suits the mood and certain of the needs of the country admirably.” For 10 points each:
[10] Name this president who replaced Warren Harding and then won the election of 1924.
ANSWER: (John) Calvin **Coolidge** (Jr.)
[10] This secretary of State under Coolidge won a Nobel Peace Prize for working with French foreign minister Aristide Briand [ah-ree-steed bree-awn] to create a treaty renouncing war as a national policy.
ANSWER: Frank B(illings) **Kellogg**
[10]Coolidge supported this plan that worked out the terms of Germany’s World War I reparations payments.
ANSWER: **Dawes** Plan

7. For 10 points, answer the following about the origins of NFL nicknames.
[10] This team originally gained its nickname from the shade of red on their hand-me-down jerseys. The name followed this team's moves from Chicago to St. Louis to Arizona.
ANSWER: Arizona **Cardinals**
[10] This man co-founded both the Cincinnati Bengals and another team, whose name honors him rather than their jersey color.
ANSWER: Paul **Brown**
[10] In February 2022 the team which has played two years as "The Washington Football Team" announced this new nickname starting in the fall 2022 season.
ANSWER: Washington **Commanders**

8. The narrator of this novel often asks “What’s it going to be then, eh?”. For 10 points each:
[10] Name this novel that begins with Alex, Pete, Georgie, and Dim drinking what he calls both “milk with knives in it” and “moloko [muh-loh-KOH] with knives in it”.
ANSWER: *A* ***Clockwork Orange***
[10]This author wrote *A Clockwork Orange* and four novels about Mr. Enderby.
ANSWER: (John) Anthony **Burgess** (**Wilson**) [accept either underlined name]
[10] Anthony Burgess’s studies of this other author led Burgess to create *A Shorter Finnegans Wake* and an operetta titled *Blooms of Dublin*.
ANSWER: James (Augustine Aloysius) **Joyce**

9. This man fled Avignon [ah-veen-yohn] and became an ally of Holy Roman Emperor Louis IV following a dispute with Pope John XXII ["the 22nd"] over the Franciscan rule. For 10 points each:
[10] Identify this philosopher who is the namesake of a principle of simple solutions stating "entities should not be multiplied beyond necessity."
ANSWER: William of **Ockham** [or Gulielmus **Occamus**; accept **Ockham**'s Razor; prompt on "William"]
[10] Ockham and Pope John disagreed over whether this condition was obligatory for Christian clergy. Mendicant orders in the late Middle Ages advocated this economic status.
ANSWER: Apostolic **poverty** [accept descriptions of devout Christians **not owning** things or being **poor**]
[10] Ockham wrote a commentary disputing this philosopher's skepticism of *metabasis* [met-AA-buh-sis] and advocating that some entities do not posses all of the "ten categories" of attributes that this man outlined.
ANSWER: **Aristotle**

10. This empire ended when Brihadratha [brih-hah-DRAH-tuh] was assassinated in 185 BCE. For 10 points each:
[10] Name this empire started by Chandragupta [CHAHN-druh-GOOP-tah].
ANSWER: **Maurya**n Empire
[10] Chandragupta and Bindusara [bin-doo-SAH-rah] Maurya were advised by this person, who might be identical to the person named Kautilya [kau-TEEL-yuh] or Vishnu*·*gupta who wrote the *Artha-shastra*.
ANSWER: **Chanakya**
[10]Following Chandragupta and Bindusara, this person ruled for 36 years. Early in his reign, he won the bloody Kalinga [kuh-LEEN-guh] War.
ANSWER: **Ashoka** the Great

11. A 1974 law created an independent agency subsidiary to Congress that is charged with making nonpartisan forecasts about this kind of resolution. For 10 points each:
[10] Name this kind of resolution that Congress passes annually in order to declare total revenue and expenditure goals.
ANSWER: **budget** resolution or United States federal **budget**
[10] This process, which involves a conference report balancing House and Senate priorities, has a special status in the rules of the Senate and is designed to make budget resolutions easier to pass. Budgets submitted as a result of this process cannot be filibustered and cannot have non-budgetary riders attached.
ANSWER: **reconciliation**
[10] Following the passage of the budget, twelve bills of this type are created to actually authorize government spending. The Senate and House committees named for this word are led by Patrick Leahy and Rosa DeLauro, respectively.
ANSWER: **apropriation**s

12. These compounds contain carbon and a 2-to-1 ratio of hydrogen to oxygen. For 10 points each:
[10] Name these compounds often found in foods, such as sugar, starch, and cellulose.
ANSWER: **carb**ohydrates or **carb**s [prompt on **saccharide**s]
[10] Cellulose combines with pectin to form this structure that exists in most living things but not in animals.
ANSWER: **cell wall**s
[10] Though cellulose is usually produced in plants, it is also produced by these invertebrate chordates [“CORE-dates”] that are sometimes called sea squirts.
ANSWER: **tunicate**s [accept **Tunicata**]

13. This 15-minute musical piece has been described as a “continuous crescendo”. For 10 points each:
[10] Name this 1928 composition that begins with snare drums and flutes playing parts that get passed around to the rest of the orchestra.
ANSWER: ***Boléro***
[10]This Frenchman wrote *Boléro*. He also wrote the ballet *Daphnis et Chloé*.
ANSWER: (Joseph-)Maurice **Ravel**
[10]This Russian dancer and actress commissioned Maurice Ravel to write *Boléro*.
ANSWER: Ida (Lvovna) **Rubinstein**

14. Deuterium [doo-TEER-ee-um] and tritium [TRIH-tee-um] have this relationship to hydrogen. For 10 points each:
[10] Give this general term for atoms that have the same number of protons but different numbers of neutrons.
ANSWER: **isotope**s [**“ICE”-oh-tohp**s]
[10] This element can be turned into a super*·*fluid. One of its isotopes has two different superfluid states, and another isotope has only one superfluid state.
ANSWER: **helium** [accept **He**]
[10] The Girdler process to separate isotopes of hydrogen is named for this ion, which consists of a sulfur atom with a 2-minus charge.
ANSWER: **sulfide** [do not accept “sulfite” or “sulfate”]

15. This Buddhist concept is similar to the Hindu concept moksha [MOHK-shah]. For 10 points each:
[10] Name this state of perfection that can be achieved when there is no more desire.
ANSWER: **nirvana**
[10]Moksha is the release from this Hindu cycle of death and reincarnation.
ANSWER: **samsara**
[10]Patanjali wrote that samsara is caused by ignorance in his sutras [SOO-truhz] named for this term. This term originally meant “union”, “yoke”, or “harness” in Sanskrit.
ANSWER: **yoga**

16. This play begins with a watchman seeing a fire that indicates the fall of Troy. For 10 points each:
[10] Name this play in which Clytemnestra [kly-tem-NESS-truh] kills the title character, who is her husband.
ANSWER: ***Agamemnon*** [**ag-uh-MEM-nahn**]
[10] *Agamemnon* is the first play in this writer’s *Oresteia* [or-eh-STY-uh] trilogy.
ANSWER: **Aeschylus** [**ESS-kuh-luss**]
[10] *Agamemnon* is followed by *The Libation Bearers*, in which Orestes [or-ESS-teez] kills Clytemnestra and this man whom she marries after the death of Agamemnon.
ANSWER: **Aegisthus** [**ih-JISS-thuss**]

17. This painter often made paintings in series, including one series of Charing Cross Bridge and another on Rouen [roo-en] Cathedral. For 10 points each:
[10] Name this painter of *Impression: Sunrise* who also made a series of paintings showing haystacks.
ANSWER: (Oscar-)Claude **Monet**
[10]Many Monet paintings are set in his garden in this village about 50 miles northwest of Paris.
ANSWER: **Giverny** [zhee-vair-nee], France
[10] Monet painted a series showing this type of tree near the Epte [ep-tuh] River. Just after he finished, the trees became lumber.
ANSWER: **poplar** trees or **poplar**s

*Virginia content question - non-Virginia tournaments may read bonus 18a instead.*
18. Virginia's oldest museum and the Emancipation Oak are on the campus of this university. For 10 points each:
[10] Name this university which operates the world's largest single-purpose proton therapy facility and was the first college attended by Booker T. Washington.
ANSWER: **Hampton** University
[10] Hampton was ranked 5th among this kind of school in the 2022 *U.S. News* lists. The 101 post-secondary institutions known by this phrase include Virginia Union, Howard, and Morehouse.
ANSWER: **HBCU**s [or **Historically Black** Colleges and Universities]
[10] This other eastern Virginia HBCU was originally a branch of Virginia Union and became independent in 1942. This university's students comprise many residents in the "Spartan Village" neighborhood of its namesake city.
ANSWER: **Norfolk State** University [prompt on "NSU"]

*At VCU site: Read the above bonus and skip bonus 18a.*18a. This musician composed the song "Woody 'n' You," whose 1944 recording featuring him and Coleman Hawkins is sometimes considered the first bebop record. For 10 points each:
[10] Name this jazz musician and leader of the Bebop Six who wrote "Salt Peanuts."
ANSWER: Dizzy **Gillespie** [or John Birks **Gillespie**]
[10] Gillespie popularized the syncopated bassline in this 1942 song originally written for the Benny Carter band. Gillespie called this song "Interlude" when he wrote it out on a garbage can, but it quickly became known by a title referencing a North African country.
ANSWER: "A **Night in Tunisia**"
[10] Gillespie's signature "Silver Bell" trumpet had this unusual characteristic, which Gillespie found advantageous after the instrument was involved in a 1953 accident.
ANSWER: **bent** [or forming an **angle**]

19. This person was praised for his performance at the First Battle of Bull Run despite being on the losing side. For 10 points each:
[10] Name this general who later burned Atlanta and led the March to the Sea.
ANSWER: William Tecumseh **Sherman**
[10]William Sherman was a brigadier general under Ulysses Grant at this Union victory in Tennessee.
ANSWER: Battle of **Shiloh** [**SHY-loh**] [accept **Pittsburg Landing**]
[10] This Confederate general died soon after being a pallbearer at Sherman’s funeral. Along with P. G. T. Beauregard and Stonewall Jackson, this person led the Confederate Army at the First Battle of Bull Run.
ANSWER: **J**oseph E. **Johnston** [prompt on **Johnston**]

20. The Standard Model of physics was worked out during the 1970s to explain three of the four fundamental forces. For 10 points each:
[10] One confirmation of the Standard Model was the discovery of the top flavor of this particle in 1995. The other five flavors of this particle are up, down, strange, charm, and bottom.
ANSWER: **quark**s
[10] Further confirmation came in 2012 with the discovery of this particle that confers mass to W and Z bosons [BOH-zahnz].
ANSWER: **Higgs** particle(s) or **Higgs** boson(s)
[10] The Higgs boson is the only fundamental particle classified as this type of boson. These bosons have zero spin, and alpha particles and pions [“PIE”-ahnz] are also this type of boson.
ANSWER: **scalar** boson

**Extras**

21. When a fraction’s denominator is a complex number, the fraction can be rationalized by multiplying both the numerator and denominator by a number that has this relationship to the denominator. For 10 points each:
[10] Give this term for a number that has the same real component but opposite imaginary component as another number.
ANSWER: complex **conjugate** [accept complex **conjugation**]
[10] A matrix is called Hermitian [air-MISH-un] if a combination of conjugation and this other operation does not change the matrix.
ANSWER: **transposition** or **transpose** [or **transposing**]
[10] Find the simplified result when 5 plus 2*i* is multiplied by its conjugate.
ANSWER: **29**

22. Some textbooks use this term synonymously with “co*·*domain”, while others use it synonymously with “image”. For 10 points each:
[10] Give this term for the set of values that a function maps to, in contrast to the domain.
ANSWER: **range**
[10]Find the largest real number that is not in the range, or image, of the function “*f* of *x* equals 5 raised to the power of the quantity *x* minus 3”. The domain is all real numbers.
ANSWER: **0**
[10]Find the smallest real number that is in the range, or image, of the function “*f* of *x* equals *x* squared minus 6*x*”.
ANSWER: ***−*9** [do not prompt on “9”]

23. For 10 points each, name these stars:
[10] This star, sometimes called “Alpha Ursa Minor”, has been used for navigation for hundreds of years. It can be located by following a line made by the end of the bowl in the Big Dipper.
ANSWER: **Polaris** [accept the **North Star** or the **Pole Star**]
[10] This star is traditionally called “Alpha Orion” even though Rigel [“RYE”-jul] is brighter.
ANSWER: **Betelgeuse** [**“beetle-juice”**]
[10] In 1850, this star became the first one other than the Sun to be photographed. It joins Altair and Deneb [DEN-eb] to form the Summer Triangle.
ANSWER: **Vega** [or **Alpha Lyra**]

24. These diagrams are similar to Euler [OY-lur] diagrams. For 10 points each:
[10] Name these diagrams that typically use overlapping circles to represent sets.
ANSWER: **Venn** diagrams
[10] How many regions does a Venn diagram have if there are two sets? Include the region that is outside both sets.
ANSWER: **four** regions
[10] If there are two sets, one of which has 12 elements and another of which has 20 elements, and their union has 25 elements, then how many elements are in their intersection?
ANSWER: **seven** elements