

Bulldog High School Academic Tournament 2019 (XXVIII): Description acceptable.

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Packet 8 Tossups

1. **In the Lux–Flood model, acids and bases are defined as acceptors and donors of an ion of *this* element. An ion of this element is the most common anion in the reactants of carbothermic reductions. It’s not nitrogen, but an anion of this element forms passivation layers with metals. An ion of this element has a namesake dismutase that prevents cell damage; that (*) free-radical ion of this element has the prefix “super.” An ion of this element is common to corundum, hematite, and quartz. An ion of this element bonds with silver in tarnishing and with iron in rusting. Ozone is an allotrope of—for 10 points—what element that combines with hydrogen to form water?**

ANSWER: oxygen [or O; accept superoxide] <AF>

2. **In a short epic by this poet, the title man becomes a falling comet and enters the narrator’s foot. This poet wrote proverbs like “exuberance is beauty” and ended a poem with the sadly ironic line “so if all do their duty, they need not fear harm.” This poet’s mythos included gods like Tharmas and Urizen. This author of *Milton* and *The Marriage of Heaven and Hell* wrote about a boy who cries (*) “weep! weep! weep! weep!” in “The Chimney Sweeper.” This poet wrote of the title city’s “chartered streets” and its inhabitants’ “mind-forged manacles” in “London.” This poet’s *Songs of Experience* includes a poem about an animal “burning bright.” For 10 points, who wrote “The Tyger”?**

ANSWER: William Blake <JW>

3. *Description acceptable.* **In this place, an epilepsy-related necklace is traded for a botched restoration of a painting. An umbrella is used to move a coat stand in this place after an argument about roulette being a game of skill. In this place, an actor is shown a bar of chocolate and interrogated about the kings of Austria and Prussia because another man thinks “That is not the real Ben Franklin. I am 99% sure.” In this place, the Asian actor (*) Steve fakes a family photo and learns a voicemail password to “impersonate” a friend. In this place, one man is told “Identity theft is not a joke!” after declaring “Bears. Beets. *Battlestar Galactica*.” For 10 points, name this place where Jim and Pam prank Dwight Schrute.**

ANSWER: the office [accept Dunder Mifflin Paper Company; prompt on Scranton, Pennsylvania] <BY>

4. **This empire’s early history is mostly known through Abd al-Sadi’s *Tarikh al-Sudan*. One of this empire’s kings (or “*dias*”) was assassinated by his brothers after usurping his blind and elderly father, Muhammad Turé. This empire fell after a defeat in 1591 by the (*) Moroccan sultan Judar Pasha. Mines at Taghaza were the center of salt production for this empire, which collapsed after the Battle of Tondibi. This empire was ruled by Askia Muhammad and Sonni Ali, who established its capital at Gao. For 10 points, name this empire that succeeded Mali as the dominant force in West Africa.**

ANSWER: Songhai Empire <MK>

5. The non-existence of certain of these objects with “square area” is the subject of Fermat’s only complete proof. Angle trisectors within these objects form specific types of these objects by Morley’s trisector theorem. The Exeter point is one of the four special points within these objects that lie on the Euler line. The Cauchy–Schwarz inequality is often used to prove the (*) inequality named for these objects. The orthocenter is the intersection of these objects’ altitudes. The length of this figure’s sides may be determined by the law of cosines. For 10 points, name these shapes, two sides of which are equal in their “isosceles” type.

ANSWER: triangle [accept more specific answers, like right triangle] <JW>

6. One of this architect’s buildings has a mosaic facade that evokes waterlilies, and is known locally as the “House of Bones.” The chimneys of a building by this architect are called “witch scarers” and resemble helmeted sentinels. A building by this man includes a controversial façade whose harsh, angular columns resemble bones, and which was completed in (*) 1974. That building by this man includes 18 spires representing the Apostles, Evangelists, Virgin, and Christ, and its Glory Facade was begun in 2002. For 10 points, name this designer of the Casa Milà and Parc Güell, a Catalan architect who designed the Sagrada Familia.

ANSWER: Antoni Gaudí (i Cornet) <HK>

7. This is the color of a fat “dimpled spider” described at the beginning of Robert Frost’s poem “Design.” According to a chapter about this color, it is “the most appalling to mankind” and “strikes more panic to the soul than the redness which affrights in blood.” Ten drops of another color are added to make an (*) “Optic” variety of this color at Liberty Paints. A character of this color titles a book that begins with an “Etymology” and “Extracts” “Supplied by a Sub-Sub-Librarian,” and is avoided by Starbuck. That animal of this color destroys the *Pequod* and is hunted by Captain Ahab. For 10 points, name this color of the whale Moby Dick.

ANSWER: white <JW>

8. This artist slashed his lover’s face after discovering her affair with his brother, although he may be better known for depicting her in his *Bust of Costanza Bonarelli*. Anthony van Dyck’s triple portrait of Charles I was intended as a model for this other artist, who also made portraits of his patron Scipione Borghese. This artist showed Pluto’s (*) fingers pressing into the title woman’s thigh in *The Rape of Proserpina*. This artist used dynamic, twisted compositions in sculptures like *Apollo and Daphne*. For St. Peter’s Basilica, this artist designed both the plaza and a *Baldacchino*. For 10 points, name this Italian Baroque sculptor of *The Ecstasy of St. Theresa*.

ANSWER: Gian Lorenzo Bernini <AH>

9. A mythological ruler of this modern-day country defeated an enemy with a bronze bull’s head and six arms. A ruler of this country allegedly constructed a “Meat Forest” island within a “Wine Pool”. Another early ruler of this country came to power after developing a canal system to mitigate its Great Flood. *The Investiture of the Gods* fictionalizes some early rulers of this country, and its other mythological rulers included the “Three (*) Sovereigns and Five Emperors.” This country’s ruler Yu the Great was a descendant of this country’s Yellow Emperor. For 10 points, name this country whose Xia [shyah] Dynasty is probably mythical.

ANSWER: China [or Zhongguo] <AW>

10. To commemorate a 20th century battle, the leader of one of these *two* countries gave the leader of the other a ceremonial sword, which his lieutenant immediately dropped. These two countries led a joint military effort that installed Mohammad Reza Pahlavi as shah of Iran. Leaders of these two countries negotiated spheres of influence in the Percentages Agreement. These two countries were by far the largest recipients of (*) Lend–Lease aid. A leader of one of them described the other as “a riddle, wrapped in a mystery, inside an enigma.” For 10 points, what two Allied Powers of World War II were led by Winston Churchill and Joseph Stalin?

ANSWER: United Kingdom [or Great Britain]

Soviet Union [or USSR; or Union of Soviet Socialist Republics; prompt on Russia] <SE>

11. **One section of this text differentiates between a “field” and the one who knows that field. This text ends with a chapter on action through renunciation. This text centers on three ways of being, or *gunas*: *sattva*, *rajas*, and *tamas*. This text, whose eighteen chapters are named for types of (*) *yoga*, begins with one character hesitating to fight and kill his friends and relatives. This dialogue is the most famous section of an epic recounting the war between the Kauravas and the Pandavas. Arjuna is advised by Krishna in—for 10 points—what central section of the *Mahabharata*?**

ANSWER: *Bhagavad Gita* [prompt on *Mahabharata* before it’s mentioned] <JW>

12. **A composer from this country dedicated her *Sonata for Harp* to Nicanor Zabaleta and wrote “The Knight’s Farewell” in memory of another composer from it. A composer from this country taught generations of Americans, including Aaron Copland and Philip Glass. A slow piano piece from this country begins with the left hand playing a low G on beat one, then a higher B minor triad on beat 2. A composer from this country used a (*) saxophone in *The Creation of the World* and wrote *The Ox on the Roof*. This country was home to a group of six composers including Darius Milhaud and Francis Poulenc. For 10 points, name this home country of Nadia Boulanger and Erik Satie.**

ANSWER: **France** [accept **French** Republic; accept **République française**] <WJ>

13. **This novel’s protagonist repeats a “bedrock prayer” of “I am, I am” before adding, “I think of the word *relish*. I could eat a horse.” This novel, in which Janine’s baby Angela is declared to have been a “shredder” at a “Prayvaganza” ceremony, features the Latin phrase “*nōlīte tē bastardēs carborundōrum*.” (*) Aunt Lydia leads the Red Center in this novel, in which Ofglen hangs herself before the Eyes of God can come after her. This novel’s protagonist sleeps with the chauffeur Nick and plays Scrabble with Serena Joy’s husband, who is known as “The Commander.” Offred is the narrator of—for 10 points—what novel set in Gilead and written by Margaret Atwood?**

ANSWER: *The Handmaid’s Tale* <WJ>

14. **The shortest-lived of these people served only two years before uttering the words “Baba Bakale” and dying of smallpox. A book organized according to musical modes begins with a prayer written by one of these people, called the *Jappi*. That book was finished in the (*) Gurmukhi language by one of these people who commanded a group of followers to wear an iron bracelet and cotton undergarment, carry a comb and a dagger, and not cut their hair. One of these people created the *Khalsa* and gave this status to the book *Adi Granth Sahib*. Gobind Singh was one of—for 10 points—what spiritual leaders of Sikhism?**

ANSWER: Sikh **Gurus** <AH>

15. **Gangliosides are present in mammals and members of this phylum, leading some members of this phylum to be used as model organisms for treating Alzheimer’s disease. Another species in this phylum can create namesake “barrens” in typically biodiverse coastal waters due to the destruction of kelp forests. That species in this phylum has mouthparts known as “Aristotle’s Lantern.” In this largest group of non-chordate deuterostomes, water enters through the (*) madreporite, which links to their water vascular system. Members of this phylum typically possess pentaradial symmetry. For 10 points, what phylum contains sand dollars, sea urchins, and sea stars?**

ANSWER: **Echinodermata** [or **echinoderms**] <SCW>

16. **One innovation in this industry was introduced by slaughterhouse baron Gustavus Swift. Due to overinvestment in this industry, Jay Cooke's bank had to close in 1873, sparking that year's Panic. In the nineteenth century, companies in this industry were given "checkerboard" grants of land within 10-mile strips. Ulysses S. Grant's vice president was bribed with shares of a company in this industry called (*) Cr dit Mobilier. The spread of this industry led to the creation of the four standard U.S. time zones. The Vanderbilt family made their fortune in this industry. The Union Pacific company helped build a "transcontinental" project in—for 10 points—what industry?**

ANSWER: **railroads** [prompt on shipping or transportation by asking "What did they use to move the goods?"] (Gustavus Swift invented the refrigerated railcar.) <JR>

17. **A story by this man begins by describing how the title structure was built in thousand-yard sections, and includes the parable "A Message from the Emperor." Max Brod published several of this author's works posthumously. In a novel by this author, the painter Titorelli shows the protagonist several identical paintings, insisting that they are different. In that novel by this man, Willem and Franz (*) arrest Josef K., but refuse to tell him the crime he is being charged with. In a story by this author, a thrown apple sticks in the back of Gregor Samsa, who had transformed into a giant vermin. For 10 points, name this author of *The Trial* and "The Metamorphosis."**

ANSWER: Franz **Kafka** <CK>

18. **In November 2018, U.S. Solicitor General Noel Francisco argued in favor of this country in a Supreme Court case filed against it by victims of the *USS Cole* bombing. It's not India, but the local headquarters of this country's ruling National Congress Party were burned in its city of Atbara during December 2018 protests over bread and fuel prices. Larger January 2019 (*) protests in this country's capital saw the killing of the doctor Babiker Abdelhamid. This country currently disputes the Abyei Area with its southern neighbor, which declared independence from this country in a 2011 referendum. For 10 points, name this African country led by Omar al-Bashir from Khartoum.**

ANSWER: Republic of the **Sudan** [or Jumhuriyyat as-**Sudan**] <MK>

19. **A holder of this title obtained a charm to ward off thunder and lightning by dedicating sprats, onions, and human hair. One man was prophesied to hold this title when an eagle took his cap and returned it shortly after. A holder of this title had Mettius Fufetius drawn and quartered after taking the city of (*) Alba Longa. The last holder of this title twice refused to buy the Sibylline Books. Its first holder ordered the abduction of the Sabine women to populate his new city. The last holder of this title was exiled after his son Sextus Tarquinius raped the noblewoman Lucretia. For 10 points, what title was supposedly held by seven men, including Tullus Hostilius, Numa Pompilius, and Romulus?**

ANSWER: **King of Rome** [or **Rex** Romae; prompt on partial answer] <SPQR>

20. **Julius Edgar Lilienfeld invented an early type of these devices in 1930 but failed to widely publicize it. That type of these devices switches from the cutoff regime to the linear regime at the threshold voltage. These devices are produced in complementary pairs in CMOS [see-moss] technology. An applied voltage controls the carrier concentration in the (*) "field effect" class of these devices, whose three terminals are the source, gate, and drain. Two *p-n* junctions sit back-to-back in their "bipolar junction" type. MOSFETs are the most common type of—for 10 points—what semiconductor devices that amplify electrical signals, which are found by the millions on computer chips?**

ANSWER: **transistors** [accept **MOSFETs** or **FETs** before "bipolar junction"] <SE>

Tiebreaker

21. **This country supposedly began to use its present name after a battle in which Arnold Winkelried sacrificed himself. In a sermon “Regarding the Choice and Freedom of Foods,” an inhabitant of this country defended eating sausages during Lent. That man from this country argued that Christ was *not* present in the Eucharist at the (*) Marburg Colloquy. Napoleon reorganized this country into the Helvetic Republic. In this home of Ulrich Zwingli, the *Institutes of the Christian Religion* were published by John Calvin, whose religious reforms led to wars between its cantons. For 10 points, name this country that has been officially neutral since 1815.**

ANSWER: **Switzerland** [or **Swiss Confederation**; or **Helvetic Republic**] <SPQR>

Bonuses

1. In two dimensions, this type of transformation is represented by a two-by-two matrix with “cosine theta” on the diagonal and “plus or minus sine theta” in the off-diagonal entries. For 10 points each:

[10] Name this type of motion. The kinetic energy due to this type of motion is given by “one-half I times omega-squared.”

ANSWER: **rotation** [or **rotational** motion]

[10] Classroom demonstrations of rotational motion often use *this* device, a spinning disk locked within three independently rotating frames called gimbals. Airplanes and smartphones use these devices for directional sensing.

ANSWER: **gyroscopes**

[10] The analysis of a gyroscope would be more difficult if it were not one of *these* objects, in which the distance between any pair of points is fixed. Max Born showed that these objects are difficult to define in special relativity.

ANSWER: **rigid bodies** [prompt on partial answer] <SE>

2. These people included Antipater’s son Cassander. For 10 points each:

[10] Name these Hellenistic generals who fought a series of wars for control of the Middle East and Central Asia starting in 323 B.C.

ANSWER: **diadochi**

[10] The *diadochi* were generals and friends of *this* king of Macedon who conquered Persia and reached India before dying at the age of 32.

ANSWER: **Alexander** the Great [or **Alexander III** of Macedon]

[10] This *diadochus* was rumored to be the half brother of his childhood friend Alexander the Great. The queens of his successors often took the name of his mother, Arisanoë, or his wife Berenice.

ANSWER: **Ptolemy I** [prompt on **Ptolemy**] Soter <JW>

3. For 10 points each—name some locations around the world that are famous for their rainfall:

[10] According to some measurements, the rainiest city in the contiguous United States is Forks, located on the Olympic Peninsula west of Puget Sound in *this* state.

ANSWER: **Washington**

[10] The rainiest place in the United States *as a whole* is Mt. Waialeale on *this* Hawaiian island. This is the farthest west of the major Hawaiian islands, and it’s the fourth-largest, after the Big Island, Maui, and O’ahu.

ANSWER: **Kaua’i**

[10] Several of the rainiest places in the world, including Cherrapunji, are located in *this* cloudy northeastern state of India. This state runs east-west between Assam to its north and Bangladesh to its south.

ANSWER: **Meghalaya** <JW>

4. This novel’s protagonist becomes a delivery boy for a DVD rental company and then starts a bottled water company. For 10 points each,

[10] Name this 2013 novel by Mohsin Hamid, which is narrated exclusively in the second person.

ANSWER: ***How to Get Filthy Rich in Rising Asia***

[10] In Hamid’s novel *Exit West*, Saeed is struck by Nadia’s choice to wear hijab, which is forbidden by the government of *this* country in the novel *Snow*. An author from this country wrote *My Name is Red*.

ANSWER: Republic of **Turkey** [or **Türkiye** Cumhuriyeti]

[10] That author, Orhan Pamuk, wrote about Ottoman-Italian relations in *The White Castle*. Similarly, the novel *The Enchantress of Florence* fictionalizes both Mughal court and *this* Italian author of the political treatise *The Prince*.

ANSWER: Niccolò (di Bernardo dei) **Machiavelli** <HK>

5. Massive inflation in this year sparked a flour riot in February. For 10 points each:

[10] Name this year in which a financial panic was brought on by Martin Van Buren's enforcement of the Specie Circular.

ANSWER: **1837**

[10] The Specie Circular was issued by *this* U.S. president, who liquidated the Second Bank of the U.S. This man created the "Trail of Tears" by ordering the forced march of the Cherokee and other tribes from their homeland.

ANSWER: Andrew **Jackson**

[10] The 1837 flour riot was carried out by "Locofocos" in *this* state, where William Leggett wrote many influential editorials.

ANSWER: **New York** <JR>

6. These organelles contain translocases named TIC and TOC. For 10 points each,

[10] Name these organelles that contain thylakoid membranes surrounding a fluid known as stroma. Photosynthesis occurs in these organelles.

ANSWER: **chloroplasts**

[10] Chloroplasts, like mitochondria, contain their own DNA. Mitochondrial DNA has been used to trace *this* most recent-common female ancestor of all living humans, who lived anywhere from 180-580,000 years ago.

ANSWER: mitochondrial **Eve** [or mt-**Eve**, or mt-**MRCA**]

[10] This theory postulates that both chloroplasts and mitochondria exist as the result of cyanobacteria and proteobacteria being absorbed by other cells and adapting, thus explaining why they have their own DNA.

ANSWER: **endosymbiotic** theory <HK>

7. The Gospels describe three different instances of Jesus raising people from the dead. Answer the following about them, for 10 points each.

[10] Jesus's resurrection of the son of the widow from Nain has often been compared to a story in which *this* Old Testament figure resurrects the son of the widow of Zarephath by stretching his body over the boy three times.

ANSWER: **Elijah**

[10] Jesus was forced to resurrect Jairus's daughter when he failed to make it to her house in time in order to heal her. On the way, another miracle occurred when a bleeding woman was healed after touching *this* object.

ANSWER: Jesus's **clothes** [accept obvious equivalents or more specific answers referencing his **cloak**]

[10] The Gospel of John reports that Jesus did *this* action upon hearing of Lazarus's death. The two-word phrase reporting that Jesus did this action is the shortest verse in the King James Bible.

ANSWER: "Jesus **wept**" [or **edakrusen** ho Iesous; accept answers that indicate **crying**] <MK>

8. For 10 points each—answer the following about everybody's favorite Baroque composer, Barbara Strozzi:

[10] Strozzi studied with Francesco Cavalli, an early composer of works in *this* form of musical theater. Later Italian composers of these musical dramas included Giuseppe Verdi.

ANSWER: **operas**

[10] Strozzi published several volumes of "ariettas" and pieces in *this* mid-length genre. This Italian term has been somewhat misleadingly applied to short-ish sacred choral works like "Sleepers Wake" by Johann Sebastian Bach.

ANSWER: **cantatas**

[10] Strozzi sang her own pieces while accompanying herself on *this* instrument, which could have upwards of 15 courses by the Baroque era. Unlike similar instruments, this instrument always has a rounded back.

ANSWER: **lutes** <JR>

9. This play ends with a silent scene in which the actors stand perfectly still with wide open mouths and goggling eyes. For 10 points each:

[10] Name this comedy, in which a minor civil servant impersonates the title character to extort bribes from a small town.

ANSWER: *The **Government Inspector*** [or *The **Inspector General***; accept any translation indicating an **Inspector**; or **Revizor**] (by Nikolai Gogol)

[10] *The Government Inspector* premiered ten years before this other Russian man's play *A Month in the Country*. In one of his novels, a nihilistic medical student says "A decent chemist is twenty times more useful than any poet."

ANSWER: Ivan (Sergeyevich) **Turgenev** (The novel is *Fathers and Sons*.)

[10] In Gogol's *The Government Inspector*, the Mayor "breaks" this theatrical construct by asking the audience "What are you laughing at?" This term refers to an imaginary divider between the onstage characters and the crowd.

ANSWER: **fourth wall** <JR>

10. For 10 points each—answer the following about paradoxes in classical philosophy:

[10] This Plato dialogue presents a paradox that can be summarized: "You can't search for what you already know, since you already know it; you can't search for what you *don't* know, since then you don't know what to look for."

ANSWER: **Meno**

[10] This follower of Parmenides pioneered arguments by contradiction and *reductio ad absurdum* with a paradox about an arrow, and another paradox about Achilles and the tortoise.

ANSWER: **Zeno** of Elea

[10] Zeno's paradoxes often rely on producing *this* quantity of tasks to do, which can't be done in any given amount of time. Aristotle solved the paradoxes by contrasting versions of this property for divisibility and extension.

ANSWER: **infinity** [or **infinite**] <JW>

11. This city became capital of the Western Roman Empire in 402 A.D. For 10 points each:

[10] Name this city, whose namesake "Exarchate" served as the Byzantine stronghold in Italy from 584-751 A.D, when its last exarch was put to death by the Lombards.

ANSWER: **Ravenna**

[10] This Byzantine empress is depicted on the walls of San Vitale in Ravenna. This woman was accused of all kinds of depravity by Procopius in his *Secret History*.

ANSWER: **Theodora**

[10] Theodora was the wife of *this* Byzantine emperor, who successfully reconquered much of the former Western Empire and issued the landmark law code *Corpus Juris Civilis*.

ANSWER: **Justinian I** [or **Justinian** the Great] <SPQR>

12. The noble houses of Thebes claimed descent from people born from *these* objects. For 10 points each:

[10] Name these objects sown by Cadmus at Athena's advice. After planting them, fully-armed men warriors called the *spartoi* emerged from the earth.

ANSWER: **dragon's teeth** [prompt on partial answer]

[10] Another group of mythological *autochthonoi*, or those born from the earth, were the kings of *this* Greek city. Kings of this city named Cecrops and Erichthonius were depicted as half-snake, half-person.

ANSWER: **Athens**

[10] Due to her function as goddess of the Earth, many autochthons were conflated with children of *this* deity. This deity gave birth to the Titans by her husband Ouranos.

ANSWER: **Gaia** [accept **Ge**] <SPQR>

13. This man picked a number of women to randomly dub “superstars” and give them their “fifteen minutes” of fame, a phrase he coined. For 10 points each:

[10] Name this artist best-known for his silkscreen prints of everyday objects like Campbell’s Soup Cans.

ANSWER: Andy **Warhol** [or Andrew **Warhola**]

[10] Many of Warhol’s films and plays were produced at *this* studio, which hosted many famously wild parties while occupying three different buildings between 1962 and 1964.

ANSWER: The **Factory**

[10] In 1968, Warhol was shot and wounded at the Factory by Valerie Solanas, whose *SCUM Manifesto* calls for overthrowing the government, complete automation, and the eradication of *these* people.

ANSWER: **men** [accept **males** or other similar answers] <SCW>

14. One of these *two* characters calls the other “A great...big...fat...FLOP!” For 10 points each:

[10] Name these *two* characters, who are named for a U.S. President and a First Lady. One of them tells the other “you’re a blank, a cipher” after declaring “if you existed I’d divorce you.”

ANSWER: **George** AND **Martha**

[10] George and Martha terrorize Nick and Honey in *this* extremely long 1962 play. Although this play was selected to win the 1963 Pulitzer, the advisory board balked at its profanity and decided to just not give out any award at all.

ANSWER: ***Who’s Afraid of Virginia Woolf?***

[10] Edward Albee’s portrayal of a failing marriage in *Who’s Afraid of Virginia Woolf?* came two years before *this* older playwright re-lived his own divorce in *After the Fall*. This man wrote *The Crucible* and *Death of a Salesman*.

ANSWER: Arthur (Asher) **Miller** <JR>

15. This opera’s second act ends with a “dream pantomime” in which fourteen angels surround the title characters. For 10 points each:

[10] Name this opera by Engelbert Humperdinck.

ANSWER: ***Hansel and Gretel*** [or ***Hänsel und Gretel***]

[10] Humperdinck’s major influence was *this* German composer who used densely chromatic harmony and a system of leitmotifs in *Tristan and Isolde* and the *Ring* cycle.

ANSWER: (Wilhelm) Richard **Wagner**

[10] The premiere of Humperdinck’s *Hansel and Gretel* was conducted by this other composer, whose own operas include *Die Frau ohne Schatten* and *Elektra*.

ANSWER: Richard (Georg) **Strauss** <JR>

16. If this sum converges to a function in a given interval, then that function is called “analytic.” For 10 points each:

[10] Give this term for the best polynomial approximation of a function, which is usually an infinite sum. These polynomials are named for Maclaurin when centered around 0.

ANSWER: **Taylor** polynomial [or **Taylor** series, or **Taylor** approximation]

[10] The coefficient of the *x* term in a Taylor polynomial is *this* value for the function at the chosen center point. This value can be thought of as the instantaneous slope of a function, or the opposite of its integral.

ANSWER: first **derivative** [accept **differentiation** or word forms]

[10] Give the first two nonzero terms of the Taylor polynomial for the sine function. It may help you to remember that sine is an odd function, so these terms will be the *x* and *x*³ terms.

ANSWER: **$x - \frac{1}{6}x^3$** [*x* minus 1-6th *x*-cubed] <JW>

17. This man fathered the first *mestizo* child with an interpreter usually known as La Malinche. For 10 points each:
[10] Name this Spanish *conquistador* who invaded and conquered the Aztec Empire. Early in his campaign, this man scuttled his ships so that his soldiers would fight without thought of retreat.

ANSWER: Hernán **Cortés** (de Monroy y Pizarro Altamiran)

[10] This soldier under Cortés later wrote the *True History of the Conquest of New Spain*, which spread many of the classic rumors and falsehoods about Cortés and Moctezuma.

ANSWER: Bernal **Díaz** del Castillo

[10] Another major source for Cortés's deeds is the *General History* by Bernardino de Sahagún, which was unusually written out in both Spanish and *this* language of the Aztecs.

ANSWER: **Nahuatl** <SPQR>

18. For 10 points each—answer the following about Saruman the White:

[10] Saruman is described as “the chief of my order” by *this* wizard, who takes Frodo Baggins to Rivendell and accompanies Bilbo on his journey to Smaug's lair.

ANSWER: **Gandalf** the Grey [or **Gandalf** the White]

[10] Saruman was played in the *Lord of the Rings* movies by *this* English actor, who also played Francisco Scaramanga in the James Bond film *The Man With the Golden Gun*.

ANSWER: Christopher (Frank Caradini) **Lee**

[10] In Howard Shore's music for the films, Sauron's base of Isengard is associated with a percussive repeating pattern of *this* many beats. The pattern includes two anvil strikes.

ANSWER: **5** <JR>

19. The relative energies of these constructs can be approximated with the LCAO method. For 10 points each:

[10] Name these constructs that represent probability distributions of electrons in polyatomic systems. The theory of these constructs is an alternative to the “hybridization” model of valence bond theory.

ANSWER: **molecular orbitals** [or **MOs**]

[10] Molecular orbitals that are formed by the *destructive* interference of atomic orbitals have *this* property. Orbitals with this property have higher energies than corresponding orbitals of the opposite type.

ANSWER: **antibonding** orbitals

[10] Walsh diagrams show how energies of molecular orbitals change with *this* value for a molecule. Water has a value of 104 degrees for this value and tetrahedral compounds theoretically have a value of 109.5 degrees for this quantity; a description is fine.

ANSWER: bond **angle** <CK>

20. This story's protagonist sobs “Forgive my hat” after seeing a man whose “sleeping face” seems to say “This is just as it should be. I am content.” For 10 points each:

[10] Name this story whose protagonist has an existential crisis while delivering a basket of leftovers.

ANSWER: “The **Garden Party**”

[10] “The Garden Party” is by Katherine Mansfield, whose husband, John Middleton Murry was mocked as “Denis Burlap” in *this* man's novel *Point Counter Point*. He also wrote *The Doors of Perception*.

ANSWER: Aldous (Leonard) **Huxley**

[10] Huxley is best known for *this* dystopian novel, in which John the Savage hangs himself.

ANSWER: **Brave New World** <WJ>

Tiebreaker

21. The mother of this novel's protagonist at one point has him put on his deceased elder brother's suit. For 10 points each:

[10] Name this novel in which a coal miner's son ends up rejecting relationships with Miriam and Clara due to his passion for his mother.

ANSWER: ***Sons and Lovers***

[10] *Sons and Lovers* was written by *this* English author, who was the subject of an obscenity trial for his *Lady Chatterley's Lover*.

ANSWER: D(avid) H(erbert) **Lawrence**

[10] *Sons and Lovers* is often classified as *this* kind of coming-of-age novel, exemplified by James Joyce's *Portrait of the Artist as a Young Man*.

ANSWER: ***bildungsroman*** <JR>