

ACF Regionals 2019

Packet by MIT, UIUC A, and Virginia Tech

Tossups

1. Vacuum polarization results from a pair of particles with this property screening charges. Particles with this property are responsible for the non-zero parts of the propagator outside the light cone. Particles with this property are said to be “off-shell” because they do not satisfy the normal energy–momentum relations, and they are often described as vacuum fluctuations in quantum fields. In one formulation, Hawking radiation results from particles of this type being “boosted” by the gravitation of a black hole. The lifetime of these particles is limited by the uncertainty principle. A wavy line between two vertices in a QED diagram corresponds to a photon with this property. For 10 points, name this type of particle that produces forces when they are exchanged by ordinary particles and are sometimes said to “pop in and out of existence.”

ANSWER: virtual particles [accept off-shell particles or off-mass-shell particles until read; prompt on gauge bosons or photons by asking “what characteristic do those particles have in this situation?”]

<Physics>

2. One of this playwright’s characters claims to have lived for two years off of his misfortunes, such as losing the use of his limbs and becoming a “widow with six helpless children.” In a play by this author, a woman described as an “old weather-beaten she-dragon” serves as the guardian of an heiress who loves “Ensign Beverly,” who is actually another man in disguise. The second act of a play by this author features many comments from Mr. Sneer and Mr. Dangle, who are watching a rehearsal of the tragedy *The Spanish Armada*. In a play by this author, Charles Surface throws down the screen covering Lady Teazle, whom her husband and Charles had believed to be a French milliner. This author of *The Critic* wrote a play about Jack Absolute’s pursuit of Lydia Languish, the niece of Mrs. Malaprop. For 10 points, name this author of *The School for Scandal* and *The Rivals*.

ANSWER: Richard Brinsley Sheridan

<British Literature>

3. During this dynasty, a compilation of surnames in a common quatrain rhyming scheme, called the *Hundred Family Surnames*, was composed. A detailed map of China’s coast and rivers with a grid superimposed onto it was carved into a stele (“STEE-lee”) in Xi’an (“shee-ahn”) during this dynasty. A popular general from this dynasty who was executed after Qin Hui (“cheen hway”) betrayed him was named Yue Fei (“y’weh fay”). After the Humiliation of Jingkang ended this dynasty’s Northern era, this dynasty moved capitals from Kaifeng (“kye-fung”) to Hangzhou (“hong-joe”) to avoid Jurchen raids. After it lost the six-year-long siege of Xiangyang (“sh’yong-yong”), the last remnants of this dynasty were defeated at the Battle of Yamen (“ya-mun”) by the forces of Kublai Khan. For 10 points, name this dynasty that invented gunpowder but was nevertheless defeated by the Mongols.

ANSWER: Song Dynasty

<World History>

4. This architect used a hollow concrete shaft with a diameter of 4.5 meters to support a ten-story pod in his guy-wire-supported Torre de Collserola (“TORR-uh the cool-suh-RAW-luh”). One of his buildings incorporates a cast-stone base designed by Joseph Urban and features a “diagrid” façade that forms huge concave corner window structures known as “bird’s mouths.” This architect designed the world’s tallest bridge, the Millau (“mee-YO”) Viaduct, as well as Manhattan’s Hearst Tower. He placed a mirror-paneled cone surrounded by two helical ramps under a cupola (“KYOOP-uh-luh”) that he added to a building that was wrapped by Jean-Claude and Christo before its 1990s reconstruction. Swiss Re (“ree”) is the primary occupant of a skyscraper he designed at 30 St Mary Axe that is popularly known as “the Gherkin.” For 10 points, name this British high-tech architect who restored the Reichstag (“RIKE-stog”).

ANSWER: Norman **Foster** [or Norman Robert **Foster**; or Baron **Foster** of Thames Bank]
<Other Arts>

5. A work by this thinker argues for removing the Freudian notion of “wish-fulfillment” from the domain of individual biography to understand how all artworks are “vital episodes in a single vast unfinished plot.” This thinker, who opened that book with the command to “Always historicize!”, argued in a different work that the “curiously unmarked” entrances to the Bonaventure Hotel in Los Angeles fail to fulfill the “aesthetic populism” of a certain movement’s rhetoric. This author of *The Political Unconscious* described how the neutral mode of pastiche (“pass-TEESH”) has replaced the function of parody in criticizing an aesthetic and philosophical movement as the expression of American dominance in global capitalism. For 10 points, name this Marxist author of *Postmodernism: The Cultural Logic of Late Capitalism*.

ANSWER: Fredric **Jameson**
<Philosophy>

6. The Samuelson condition locates the point at which the marginal cost of providing things described by this adjective equals the individual’s marginal rate of substitution. Richard Musgrave developed his “three-branch model” in a book titled for this type of finance. As part of his work in a field of economic theory named for this adjective, Gordon Tullock analyzed how special interests secure profits through a process of “rent-seeking” and co-authored a book that outlined many of its key principles, *The Calculus of Consent*. The economist James Buchanan was best-known for his work in that field, whose name pairs this adjective with “choice.” This adjective describes a type of good that is both non-excludable and non-rivalrous, an example of which is clean air. For 10 points, name this term that denotes parts of the economy controlled by the government, unlike the private sector.

ANSWER: **public** [accept **public** goods, **public** finance, *A Theory of **Public** Finance*, **public** choice theory, and the **public** sector]
<Social Science>

7. An extreme left-wing terrorist group from this country assassinated United States diplomat Leamon Hunt in 1984. Bus 37 with its clock stopped at 10:25 a.m. memorializes a 1980 bombing of a train station in this country that killed 85 people. This is the first country in which the term “strategy of tension” was used to refer to the policy of encouraging extremist violence. Factory workers in the north of this country went on strike in a period called the Hot Autumn. A clandestine NATO stay-behind operation in this country was called Operation Gladio. Students and police clashed at a university in this country’s capital in the Battle of Valle Giulia (“vahl-lay JOO-lee-ah”). The Red Brigades kidnapped and killed this country’s prime minister Aldo Moro during its Years of Lead. For 10 points, name this country whose recent prime ministers have included Silvio Berlusconi.

ANSWER: **Italy** [or **Italian** Republic; or **Italia**]
<European History>

8. The central family in this novel goes to Vincent’s once a month to eat baked ziti. A character in this novel wears a veil made from the bottom of an old stocking, which she says helps prevent her stuttering. The protagonist of this novel makes his fortune by taking over his father’s luxury glove factory. That protagonist has an affair with his daughter’s speech therapist, Sheila Salzman. Rita Cohen sexually taunts the protagonist of this novel, and helps him locate his missing daughter. In this novel, a former Miss New Jersey named Dawn Dwyer gets a facelift to impress the architect Bill Orcutt, with whom she has an affair. Prior to the action of this novel, Merry plants a bomb in a post office in protest of the Vietnam War. Nathan Zuckerman narrates, for 10 points, what novel about Seymour “The Swede” Levov’s supposedly idyllic life, written by Philip Roth?

ANSWER: ***American Pastoral***
<American Literature>

9. P Cygni (“SIG-nee”) profiles are spectroscopic features caused by this phenomenon. This phenomenon can be “driven” by photon absorption by particular spectral lines. It’s not an accretion disk, but a magnetic field forces this phenomenon to co-rotate with its source when it is within the Alfvén (“all-VANE”) radius. The “fast” form of this phenomenon forms from open regions of a magnetic field called coronal holes. This phenomenon causes mass loss in Wolf–Rayet stars. This phenomenon slows down abruptly at the termination shock, and it stops at the heliopause, where the interstellar medium begins. Comets’ ion tails always point away from a star due to this phenomenon. Charged particles in this substance interact with the Earth’s magnetosphere, producing auroras. For 10 points, name this stream of charged particles emitted from the outer regions of stars.

ANSWER: **stellar wind** [or **solar wind**; prompt on interplanetary medium or IPM]

<Other Science (Astronomy)>

10. The second movement of a sonata for this instrument, marked *Cantilena*, opens with the piano playing a slow, rising B-flat minor arpeggio in eighth notes one beat before this instrument starts the same arpeggio. The Coolidge Foundation commissioned that sonata for this instrument, whose first movement in E minor is marked *Allegro malinconico*, from Francis Poulenc (“frawn-SEESE poo-LANK”). Jacques Ibert (“ee-BAIR”) wrote a concerto in D major for this instrument for Marcel Moyse (“moh-EEZ”), and the Paris Conservatoire commissioned a D major concertino for this instrument by Cécile Chaminade (“say-SEEL sha-mee-NOD”). Georges Barrère’s platinum model of this instrument inspired Edgard Varèse’s (“ed-GARR vah-REZ’s”) piece *Density 21.5*. This instrument played by Jean-Pierre Rampal and James Galway begins with descending and ascending chromatic notes in the *Prelude to the Afternoon of a Faun*. For 10 points, name this woodwind instrument, the larger sibling of the piccolo.

ANSWER: **flute**

<Music>

11. In a novel by this author, a military historian who can write simultaneously backwards and forwards with both hands is one of the three friends who meet at the Toxique restaurant, where they see the supposedly long-dead Zenia. One of this writer’s protagonists recalls reading about “pig balls,” which are given to pigs who are being fattened for slaughter. One of this author’s characters used to be a televangelist on the Growing Souls Gospel Hour, and arranges for the protagonist to secretly have a relationship with Nick. In 2018 this author announced that her most popular novel would receive a sequel called *The Testaments*. In that novel, in which Unwomen are exiled to the colonies to clean up toxic waste, Offred (“OFF-red”) is forced to bear children for the Commander. For 10 points, name this author of *The Robber Bride* and *The Handmaid’s Tale*.

ANSWER: Margaret **Atwood** [or Margaret Eleanor **Atwood**]

<World Literature>

12. In some species, this compound contains pentaglycine bridges. This compound contains diaminopimelic acid, which covalently links to Braun’s lipoprotein. Teichoic (“tay-KO-ick”) acids are embedded within this compound and inhibit the action of autolysins on it. Changing one amino acid in this compound to lactate renders organisms resistant to vancomycin. DD-transpeptidases form crosslinks within this compound, whose subunits are transported by bactoprenol. This compound contains D-amino acids embedded within a polymer of N-acetylglucosamine and N-acetylmuramic acid. This compound takes up the crystal violet dye used in Gram staining. The assembly of this compound is inhibited by beta-lactam antibiotics like penicillin. For 10 points, name this polymer that forms the bacterial cell wall.

ANSWER: **peptidoglycan**

<Biology>

13. Idaho Senator Len Jordan’s namesake rule was to vote the opposite way whenever this politician lobbied him to vote a certain way. This politician closed down historically-black Bowie State College during student riots and said that H. Rap Brown should be locked up and the key thrown away. This man described his enemies as “hopeless,

hysterical hypochondriacs of history” and “nattering nabobs of negativism” in an address to Republicans in San Diego. This ethnic Greek was replaced in his highest position by a man who Lyndon B. Johnson called “too stupid to chew gum and walk at the same time.” This former Governor of Maryland resigned after he was accused of bribery and corruption, and was replaced by Gerald Ford. For 10 points, name this first Vice President under Richard Nixon.

ANSWER: Spiro Agnew [or Spiro Theodore Agnew]

<American History>

14. E. Burke Rochford, a leading scholar of this movement, wrote an article for *Social Problems* discussing their recruitment practices. A member of this movement whose birth name was Keith Ham was accused of conspiring to murder two dissenters, but was acquitted thanks to a team led by Alan Dershowitz. The founder of this movement also founded a community near Wheeling, West Virginia, that is home to the Palace of Gold. Members of this movement often distribute a unique abridged version of a sacred text that adds the phrase “as it is” to the title. This movement is primarily known for its charitable Food for Life program and public street preaching. Founded by Swami Prabhupada, for 10 points, name this Hindu religious movement, named for a mantra to the eighth Avatar of Vishnu its adherents often chant.

ANSWER: Hare Krishna movement [or the International Society for Krishna Consciousness or ISKCon]

<Religion>

15. In one creation myth of these people, a god creates men from golden insects and women from silver insects, but is later eaten after turning into a deer, resulting in the creation of evil. After a ferryman refused to let three gods of disease enter the land of these people, a virgin goddess of these people severed his head and inflicted smallpox on his children. A semi-legendary king of these people was said to have been able to summon a bridge of turtles using his bow and arrow, and another king of these people was said to have been born after a tiger lost a contest to a bear who ate mugwort and garlic in a cave for 100 years. Mount Baekdu (“beck-doo”), a sacred site of these people, was the birthplace of their legendary king Dangun (“dahn-noon”). For 10 points, name these East Asian people who recorded their myths in the *Samguk Yusa*, which was written during the Goryeo (“gor-yuh”) dynasty.

ANSWER: Koreans [accept Hanminjok or Hancha; accept answers referring to Jeju Island; accept Goryeo until read]

<Mythology>

16. An artist created a series of ten square one-and-a-half meter canvases, including one titled for how this city “was all gold,” for a 1961 exhibition in this city titled *Art and Contemplation*. A modern art museum in this city is housed in the former home of the American heiress Peggy Guggenheim. James Whistler painted his *Nocturne in Blue and Silver* during an extremely productive period of time in this city following his lawsuit against John Ruskin, who himself wrote a three-volume study of this city’s architecture. The workshop of Giovanni Bellini was located in this city, which gives its name to a “school” of artists that includes Giorgione (“jor-JO-nay”) and Tintoretto. Before he moved to England, Canaletto produced a number of incredibly accurate large-scale *vedute* (“veh-DOO-tay”) of, for 10 points, the Piazza San Marco and the Grand Canal in what Italian city?

ANSWER: Venice [or Venezia; accept Venice Was All Gold and *The Stones of Venice*]

<Painting>

17. This playwright founded the small Intima Theater, where many of his plays were first performed. At the end of a play by this author, a young woman who complains about the drudgery of keeping the “filth of life” away disappears behind a screen as white light fills the room and a harp plays. One of this playwright’s characters is a “Sunday child,” which supposedly allows him to see people who others can’t, such as the apparition of a milkmaid. A character created by this man breaks off her engagement when her fiancé refuses to jump over a riding whip. In the same play by this author, a character is convinced to waltz with the title character and cheats on the cook Christine.

In that play by this author, the valet Jean (“zhahn”) cuts off the head of the title character’s canary with a razor blade. For 10 points, name this Swedish playwright of *The Ghost Sonata* and *Miss Julie*.

ANSWER: August **Strindberg** [or Johan August **Strindberg**]

<European Literature>

18. One group decided to oppose this military campaign when Ludwig Yorck von Wartenburg signed the Convention of Tauroggen. Three decades before Matthew Sankey created his first Sankey diagram, a “flow map” depicting six variables related to this campaign used line thickness to represent the number of soldiers in it. “Berezina” became a synonym for catastrophe among the instigators of this military campaign, since they suffered heavy losses while crossing the Berezina River. This campaign came to a climax at a battle in which attacks on the Bagration (“ba-gra-tee-OWN”) flèches (“flesh”) and the Raevsky Redoubt led to heavy losses on invading forces. Over 600,000 soldiers started this campaign but only 27,000 returned, many dying of cold during the retreat. For 10 points, the Battle of Borodino was part of what military campaign in which a country led by Alexander I was invaded by Napoleon?

ANSWER: **French invasion of Russia** [or **Patriotic War of 1812**; accept **Napoleon’s invasion of Russia** until “Napoleon” is read; accept **invasion of Russia** after “Napoleon” is read; accept **Second Polish War**; prompt on **Russian Campaign**; prompt on **Napoleonic Wars** or **Polish-Russian Wars**]

<European History>

19. DOPE/CHEMS liposomes are sensitive to this quantity. BCECF-AM is used to measure this quantity in flow cytometry. A standard scale for this quantity relies on the Bates–Guggenheim convention to calculate the activity of chloride. Stable phases in an electrochemical solution are found by plotting potential against this quantity. Measurements of this quantity are confounded by the residual liquid junction potential. Carboranes and fluorinated antimony compounds are subject to the leveling effect, where solvent decreases this quantity, necessitating the use of the Hammett function instead. The value of this quantity for which an amino acid has zero net charge is the isoelectric point. It equals pKa plus the log of conjugate base over acid by the Henderson–Hasselbalch equation. Buffers keep this quantity constant. For 10 points, name this quantity equal to the log of the H-plus concentration.

ANSWER: **pH** [prompt on acidity or basicity]

<Chemistry>

20. This island’s two highest peaks are home to the El Tucuche golden tree frog, a variety of heart-tongued frog. This island was referred to as Île, deriving from a word for “hummingbird,” by its native Arawak inhabitants. The Lion House, the ancestral home of this island’s prominent Capildeo family, is located in its largest settlement, Chaguanas. The banning of African percussion instruments on this island in 1880 led to the development of the steelpan. This island is across the Gulf of Paria from Venezuela, making it the southernmost major island in the Caribbean. Supposedly, Christopher Columbus fulfilled a promise that he had made when he named this island after a religious concept after sighting three hills. The capital city of Port of Spain is on, for 10 points, what island which is much larger than its neighbor, Tobago?

ANSWER: **Trinidad**

<Geography>

21. Large tree trunks were buried around this city’s walls to slow the work of sappers during one siege. Nicholas, Count of Salm successfully defended this city but was killed during that siege by a falling rock. The Cossack Jerzy Kulczycki broke out of this city to request reinforcements and later opened its first coffeehouse after capturing coffee beans left by besieging forces. According to legend, culinary developments resulting from a siege of this city included the invention of the croissant. The largest cavalry charge in history was in defense of this city and was made up of 20,000 winged hussars. Kara Mustafa was executed after he failed to capture this city, which was

successfully defended by Jan III Sobieski, in 1683. The Ottomans twice failed to capture, for 10 points, what capital of Austria?

ANSWER: **Vienna**

<European History>

Bonuses

1. In this poem's section "Yeux Glauques ("yuh GLOAK")," the speaker criticizes John Ruskin and Robert Buchanan for attacking Dante Rossetti and Algernon Swinburne. For 10 points each:

[10] Name this long poem by Ezra Pound whose title character tries to "maintain 'the sublime' in the old sense" and "resuscitate the dead art of poetry."

ANSWER: Hugh Selwyn Mauberley

[10] Mauberley is often compared to this character, who asks "Do I dare to eat a peach?" in a "love song" by T. S. Eliot.

ANSWER: J. Alfred Prufrock [accept either underlined portion; accept "The Love Song of J. Alfred Prufrock"]

[10] Mauberley's middle name may be an homage to Selwyn Image, a member of this group of British poets co-founded by W. B. Yeats. They met at a pub called Ye Olde Cheshire Cheese.

ANSWER: Rhymers' Club

<American Literature>

2. A "trick" named for these functions is often used to produce a nonlinear classification boundary in support vector machines. For 10 points each:

[10] Name these functions that give a way to calculate the inner product of vectors transformed into a different feature space. These functions can be based on polynomials or radial basis functions.

ANSWER: kernel functions [accept kernel trick]

[10] SVMs are an example of a supervised model in this field of computer science that makes predictions based on sample "training" data.

ANSWER: machine learning [or ML; prompt on, but DO NOT REVEAL, artificial intelligence or AI]

[10] Support vector machines usually rely on an optimization algorithm named for "descending" in the direction given by this function. This function points toward local minima in parameter space.

ANSWER: gradient [accept stochastic gradient descent]

<Other Science (Computer Science)>

3. Name these painters who were inspired by the work of John Cage, for 10 points each:

[10] The Tate Modern houses *Cage*, a set of six square abstract paintings produced in 2006 by this artist with the help of a squeegee. He painted his daughter Betty looking away from the viewer in a 1988 portrait of her.

ANSWER: Gerhard Richter

[10] The subtitle of this man's painting *Blue With China Ink* notes that it is an homage to John Cage, with whom he was a co-editor of the art journal *Possibilities*. This abstract expressionist painted the series *Elegy to the Spanish Republic*.

ANSWER: Robert Motherwell

[10] Cage lost two games of musical chess to this artist as part of the performance piece "Reunion." Earlier in his career, this man caused a stir at the Armory Show with his *Nude Descending a Staircase, No. 2*.

ANSWER: Marcel Duchamp ("dew-SHOM")

<Painting>

4. Answer the following about the 26th of July Movement, for 10 points each.

[10] The 26th of July Movement overthrew this dictator, whose regime killed tens of thousands of people while giving away his country's key industries and resources to the United States.

ANSWER: Fulgencio Batista [or Fulgencio Batista y Zaldívar; or Rubén Zaldívar]

[10] The 26th of July Movement was led by this man, who took power after the fall of Batista. He would rule Cuba for the next fifty or so years, before passing power to his brother Raúl.

ANSWER: Fidel Castro [or Fidel Alejandro Castro Ruz]

[10] Castro gave his “History Will Absolve Me” speech after a failed assault on this military location. Castro’s revolutionary movement later took its name from the date this attack occurred, July 26th, 1953.

ANSWER: **Moncada** Barracks

<World History>

5. To become a priest in this religion, the initiate must go through four rituals, beginning with obtaining beaded necklaces known as the ilekes (“ee-LAY-kays”). For 10 points each:

[10] Name this syncretic Caribbean religion known as the “worship of saints” that is a combination of Roman Catholicism and Yoruban (“YOR-oo-bin”) beliefs.

ANSWER: **Santería**

[10] This sacred language of Santería is a variety of the Yoruba language. The namesake people of this language share their traditional healing practice in Santería rituals.

ANSWER: **Lucumí**

[10] An ordinance against this Santería practice was declared unconstitutional in *Church of the Lukumi Babalu Aye v. City of Hialeah*. In Judaism, this practice is known as korban (“kor-BAHN”).

ANSWER: **animal sacrifice** [accept **chicken sacrifice**; prompt on **sacrifice**; prompt on **killing animals**]

<Religion>

6. In January 2019, this politician declared “Trans rights are civil rights are human rights” during an appearance on a charity stream of *Donkey Kong 64* run by British YouTube personality Hbomberguy. For 10 points each:

[10] Name this democratic socialist representative of New York’s 14th congressional district, the youngest woman ever to serve in Congress.

ANSWER: Alexandria **Ocasio-Cortez** [or **AOC**]

[10] Ocasio-Cortez pulled off a stunning upset in her campaign against this ten-term incumbent, who was at the time the Chair of the House Democratic Caucus.

ANSWER: Joe **Crowley** [or Joseph **Crowley**]

[10] In the general election, Crowley was still on the ballot as the nominee of the Women’s Equality Party and this other New York-based minor left-wing party, despite its executive director Dan Cantor explicitly endorsing Ocasio-Cortez.

ANSWER: **Working Families** Party [or **WFP**]

<Current Events>

7. Reading this phrase prompts the observation that the only feeling Cleopatra had towards Octavia was jealousy. For 10 points each:

[10] Name this three-word sentence that exposes the fact that the relationships between fictional women are often very simple, and that fictional women are “almost without exception... shown in their relation to men.”

ANSWER: “**Chloe liked Olivia**”

[10] The phrase “Chloe liked Olivia” is discussed in this essay, which imagines what would have happened to the hypothetical Judith Shakespeare.

ANSWER: *A **Room of One’s Own***

[10] *A Room of One’s Own* was written by this author of *To the Lighthouse* and *Mrs Dalloway*.

ANSWER: Virginia **Woolf** [or Adeline Virginia **Stephen**]

<British Literature>

8. Answer the following about the South Sea Bubble, for 10 points each.

[10] One consequence of the South Sea Bubble was this man’s rise to power as the first British Prime Minister.

ANSWER: Robert **Walpole**, 1st Earl of Orford

[10] This Chancellor of the Exchequer was forced to resign for his role in the South Sea Bubble. This man was a strong supporter of the plan for the South Sea Company to take over the national debt in exchange for government bonds.

ANSWER: John **Aislabe** (“AYZ-luh-bee”)

[10] The failure of the South Sea Company led to the pre-eminence of this institution, often called “the old lady of Threadneedle Street.” George Soros was known as the man who “broke” this institution after he short-sold 10 billion dollars in pounds on Black Wednesday.

ANSWER: **Bank of England**

<British History>

9. These diagrams can be applied to a wider range of species than the similar Orgel diagrams. For 10 points each:

[10] Name these diagrams used to predict absorption bands in coordination complexes. The x - and y -axes of these diagrams are scaled by the Racah parameter B .

ANSWER: **Tanabe–Sugano** (“tah-nah-bay soo-gah-no”) diagrams

[10] Unlike Orgel diagrams, Tanabe–Sugano diagrams apply to complexes with either a high or a low value for this quantity. A high value for this quantity corresponds to a low field strength, and vice versa.

ANSWER: **spin**

[10] The Tanabe–Sugano diagram for complexes with this number of d electrons does not exist, because the d orbitals are completely filled and thus there are no transitions between them. This is the atomic number of neon.

ANSWER: **10**

<Chemistry>

10. In the early 1990s, a team of researchers at the University of Pennsylvania used the Brown Corpus to construct one of these entities for American English. For 10 points each:

[10] Name these parsed corpora in linguistics that are created by annotating either phrase structures or dependency structures in a body of texts.

ANSWER: **treebanks** [prompt on corpora or corpus]

[10] The Penn Treebank project created the most popular of the namesake “sets” for tagging these linguistic categories, which include nouns, verbs, and adjectives.

ANSWER: **parts of speech** [or **POS**; accept **part of speech** tagging or **POST**; prompt on lexical categories]

[10] Corpus linguists often analyze the occurrence of these sets of co-occurring words within a given window of text. Jon Orwant and Will Brockman used the Google Books corpus to develop a program that displays the frequencies of these things over time.

ANSWER: **n-grams** [accept the Google Books **Ngram** Viewer; anti-prompt on bigrams, trigrams, etc. by asking “can you be less specific?”]

<Social Science>

11. One of these institutions named San Diego de Alcalá (“all-kah-LAH”) was built on the land of the Kumeyaay (“koo-mee-eye”) people. For 10 points each:

[10] Name these Spanish religious outposts in California, the first of which were founded by Junípero Serra (“hoo-NEE-pay-roh SAIR-ah”).

ANSWER: Spanish **missions** in California [or **misiones**]

[10] Serra was assisted in his mission-founding exploits by this Spanish governor of California, who led the first exploration up California’s coast and into its interior in 1769 and 1770. San Francisco Bay was first sighted by this man’s expedition.

ANSWER: Gaspar de **Portolà** [or Gaspar de **Portolà** y Rovira]

[10] The Portolà expedition founded this capital of Alta California under Spanish and Mexican rule. John Sloat captured this city in 1846 during the Mexican-American War, claiming California for the United States.

ANSWER: **Monterey**

<American History>

12. In this novel, Carlos realizes that he's been unwittingly having sex with his sister after Ega tells him of a gift he received from his mother's friend. For 10 points each:

[10] Name this novel by José Maria de Eça de Queiroz ("zhoo-ZAY mah-REE-ah dee EH-sah dee kay-ROHSH") about the decline of the title family.

ANSWER: *The **Maias**: Episodes of Romantic Life* [or *Os **Maias**: Episódios da Vida Romântica*]

[10] Eça de Queiroz is an author from this country. The author of *Blindness*, José Saramago ("zhoo-ZAY sah-rah-MAH-goo"), is also from this country.

ANSWER: **Portugal** [or **Portuguese** Republic; or República **Portuguesa**]

[10] In 1995, Saramago received this prize, the most important prize given to authors who write in Portuguese. It's named for the author of an epic poem about Vasco da Gama.

ANSWER: **Camões** ("kah-MOISH") Prize [or Prémio **Camões**; accept **Camoens** Prize]

<European Literature>

13. One model of this phenomenon finds a particle velocity of diffusivity over the current sheet half thickness, and predicts that the field reverses over a length of two delta. For 10 points each:

[10] Name this phenomenon in which the topology of magnetic field lines changes, releasing energy. One form of this process happens faster than predicted by MHD.

ANSWER: magnetic **reconnection**

[10] Magnetic reconnection happens in highly conductive examples of these systems, which are hot ionized gases.

ANSWER: **plasma**

[10] Magnetic field lines are "frozen in" to conductive plasma because charged particles undergo this type of motion in a uniform magnetic field due to the Lorentz force. Particles move in circular orbits with angular frequency q times B over m in this type of motion.

ANSWER: **cyclotron** motion [accept **cyclotron** orbits; prompt on **circular** motion or similar descriptions]

<Physics>

14. The third movement serenade of this piece is in 6/8 time and begins with the tempo marking "Allegro assai" before transitioning to an Allegretto with an English horn solo. For 10 points each:

[10] Name this composition. The soloist in this piece opens with the notes "D, long low B, [pause] C, long low E," over G major arpeggios in the harp.

ANSWER: **Harold in Italy** [or **Harold en Italie**]

[10] *Harold in Italy* was written by this French composer of *The Damnation of Faust* and *Symphonie Fantastique*.

ANSWER: Hector **Berlioz** [or Louis-Hector **Berlioz**]

[10] This musician commissioned *Harold in Italy* after acquiring a new viola. This man also composed a piece which inspired Franz Liszt's *La Campanella* étude.

ANSWER: Niccolò **Paganini**

<Music>

15. The first king of what would become this city was punished in Tartarus by being forced to roll a boulder up a hill for all eternity, and also married Merope, one of the Pleiades. For 10 points each:

[10] Name this city first ruled by Sisyphus, who founded its Isthmian Games. While in this city, Jason abandoned his wife Medea to marry its princess, Glauce ("glossy").

ANSWER: **Corinth**

[10] Sisyphus earned his divine punishment by putting Thanatos, the god of this concept, in chains. Humans who had recently undergone this experience crossed the river Styx in a ferry driven by Charon ("karen").

ANSWER: **death**

[10] Greek heroes making a visit to the underworld are often depicted observing Sisyphus and other criminals suffering in Tartarus. This is the Greek name for the mytheme (“MYTH-eem”) in which heroes journey to the underworld.

ANSWER: **katabasis**

<Mythology>

16. This ruler signed the “Eternal Peace” with Khosrau I. For 10 points each:

[10] Name this Byzantine emperor, the husband of Theodora. He put down the Nika Revolts.

ANSWER: **Justinian**

[10] This historian from Caesarea wrote a “Secret History” of Justinian’s reign, which probably exaggerated or made up many atrocities that Justinian supposedly committed.

ANSWER: **Procopius**

[10] Justinian’s reign is considered to be part of this two-word historical period from 150 to 750 AD. It was popularized by a 1971 Peter Brown book that discusses this period as the transition between the ancient and medieval worlds.

ANSWER: **late antiquity** [accept *The World of Late Antiquity*]

<Ancient History>

17. In a paper whose title pairs this thesis with “the metaphysics of reduction,” Jaegwon Kim argues that it requires that global psychology be reconceived as a “conjunction of species-restricted psychologies.” For 10 points each:

[10] Name this thesis which holds that mental states, such as pain, can be instantiated in different kinds of systems.

ANSWER: **multiple realizability** [or **multiple realization** thesis]

[10] The concept of multiple realizability was introduced to the philosophy of mind in a series of articles by this thinker, who used his “Twin Earth” thought experiment to argue for semantic externalism.

ANSWER: Hilary **Putnam**

[10] Empirical arguments for multiple realizability often appeal to developments in computer-based cognitive functioning in this two-word field. John Searle criticized the “strong” form of a thesis named for this concept in his Chinese Room argument.

ANSWER: **artificial intelligence** [or **AI**; accept Strong **AI**]

<Philosophy>

18. A character in this novel is told by his wife that “those who have always won will win again,” which he turns into a campaign slogan. For 10 points each:

[10] Name this novel in which a clairvoyant character predicts the death of Rosa the Beautiful.

ANSWER: *The **House of the Spirits*** [or *La **casa de los espíritus***]

[10] *The House of the Spirits* is by this Chilean novelist.

ANSWER: Isabel **Allende** [or Isabel **Allende** Llona]

[10] The novel ends with the revelation that this character is pregnant, as she sits with the dead body of Esteban Trueba. She is the daughter of Blanca and Pedro Tercero.

ANSWER: **Alba** Trueba de Satigny

<World Literature>

19. The protein katanin severs these structures, which are stabilized by taxanes. For 10 points each:

[10] Name these cytoskeletal components that are polymers of tubulin arranged in a 13-fold symmetric hollow cylinder. They form the mitotic spindle.

ANSWER: **microtubules**

[10] These molecular motors move towards the negative end of microtubules. They link microtubules together in flagella, and they are responsible for retrograde axonal transport.

ANSWER: dyneins (“DYNE-ins”)

[10] Lysine-40 on alpha-tubulin can undergo this chemical modification, which stabilizes microtubules. GNATs like GCN5 catalyze the addition of this group to a different protein, a modification recognized by bromodomains.

ANSWER: acetyl [or ethanoyl; or acetylation or ethanoylation]

<Biology>

20. This character accepts a peace offering of four doubloons from a man who attempted to frame and probably murder him. For 10 points each:

[10] Name this servant who repeatedly punctuates the opening aria “Notte e giorno faticar” (“NOTE-tay ay JOR-no fah-tee-CAR”) with “No no no no no.” This character also details the romantic conquests of his master in the “Catalogue Aria.”

ANSWER: Leporello

[10] Leporello appears in this opera by Mozart that ends with the title nobleman being dragged to hell by a statue of the murdered Commendatore.

ANSWER: Don Giovanni [or *Il dissoluto punito*; ossia, *il Don Giovanni*; or *The Rake Punished*, or Don Giovanni; or *The Libertine Punished*, or Don Giovanni]

[10] The Commendatore drags Don Giovanni to hell after Don Giovanni had earlier performed this action because Leporello was too frightened to do it himself. The statue bellows out an affirmative “Si” after this proposal.

ANSWER: invites the statue to dinner [or offers him an evening meal; or equivalents; prompt on invites him to his house (or equivalents)]

<Other Arts>

21. Rather than trying to portray his physical likeness, Auguste Rodin created a sculpture of this author based on what he believed to be his writing persona. For 10 points each:

[10] Name this French author who included the novel *Le Père Goriot* (“luh pair gor-YO”) in his collection *The Human Comedy*.

ANSWER: Honoré de Balzac

[10] In a novel from *The Human Comedy*, Raphaël de Valentin (“val-on-TAN”) acquires a magical wish-granting piece of the skin of one of these animals.

ANSWER: wild ass [accept *The Wild Ass's Skin*]

[10] The original title of *The Wild Ass's Skin* puns on this French word, which can refer either to a particular type of hide or to an emotion.

ANSWER: chagrin

<European Literature>