2021 ACF Fall
Packet L by Editors
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Tossups

1. Researchers at USTC are attempting to implement boson ("boh-zawn") sampling with these particles to prove quantum supremacy. Wheeler's delayed-choice experiment tests if one of these particles "chooses" how to act in the presence of an experimental apparatus. One of these particles that can be polarized either horizontally or vertically forms a classic two-state quantum system. These particles are represented by wavy lines in Feynman diagrams. In the original double-slit experiment, a single one of these particles produced an interference pattern. The energy of one of these particles equals Planck's constant times its frequency. For 10 points, name these quanta of light.
ANSWER: **photon**s
<Physics>

2. An empire based in this country was ravaged by the warrior-queen Gudit. A saint from this country named Walatta Petros led a rebellion after this country's ruler Susenyos tried converting it to Catholicism. A failed rebellion in this country sought to solidify the position of this country's final empress, Zewditu. An empress of this country named Taytu Betul led forces along with her husband against Oreste Baratieri's forces at the Battle of Adwa. The kingdom of Aksum was based in this country, whose emperor Menelik II successfully defended it against an Italian invasion. Haile Selassie ruled, for 10 points, what country in the Horn of Africa with capital Addis Ababa?
ANSWER: **Ethiopia** [accept **Ethiopia**n Empire]
<World History>

3. Two characters in this musical sing "After twenty-five years / it's nice to know" after answering the title question of the song "Do You Love Me?" A wedding scene in this musical culminates in three dancers balancing bottles on their heads to slowly accelerating music. After giving his blessing to a butcher in the song "To Life," a character in this musical instead gives the blessing to Motel ("MAH-tul") the tailor. This musical ends with the main character and his family leaving Anatevka after a pogrom. For 10 points, name this musical in which Tevye tries to maintain Orthodox Jewish traditions in a changing Russia, much like the title balancing musician.
ANSWER: ***Fiddler on the Roof***
<Other Fine Arts>

4. A character in one play by this author scares her old classmate by clasping her "passionately" and saying, "fate has made you so rich! I think I must burn your hair off after all." A doctor in a play by this author informs the protagonist that he will "shut himself up and die" from syphilis by leaving a black cross on a letter. One character in a play by this author is accidentally killed when a pistol discharges in his breast-pocket while in Mademoiselle Diana's brothel after his manuscript went missing. One play by this author scandalously ends with a door loudly slamming as Nora Helmer leaves her family. For 10 points, name this Norwegian playwright of *Hedda Gabler* and *A Doll's House*.
ANSWER: Henrik **Ibsen** [or Henrik Johan **Ibsen**]
<European Literature>

5. Factors such as urbanization, upper class appeal, and backlash to Westernization led to this holiday's increased importance in Fiji. Red hibiscus is associated with a local holiday coinciding with this one celebrating a death goddess. This holiday is considered one goddess' birthday because she was born on a full moon. To honor that goddess, footprints are drawn on floors with rice flour and vermilion. Women pray for the success of their brothers on this holiday's final day, Bhai Dooj. Displays associated with this holiday are called *diyas* and *rangoli,* often used to welcome Lakshmi into one's home. For 10 points, name this five-day-long Hindu festival of lights.
ANSWER: **Diwali** [or **Deepavali**; prompt on Tihar or Swanti or Kali Puja; prompt on festival of lights before mention]
<Religion>

6. A philosopher writing in this language defined evil as restricting others' freedom in a rebuttal to Dostoyevsky. Another philosopher using this language identified "facticity" and "transcendence" as qualities of being-in-itself and being-for-itself, respectively. A philosopher used this language to advocate for lucidity and concluded that "One must consider [the title figure] happy" in one essay. A thinker using this language used the Subject/Other dialectic to conclude that "One is not born but becomes woman" in *The Second Sex.* For 10 points, name this language used to write *The Myth of Sisyphus* by Albert Camus and used to write *Being and Nothingness* by Jean-Paul Sartre.
ANSWER: **French**

7. One atom of this element bound to three phenyl groups forms a common ligand, three of which are coordinated to a rhodium atom in Wilkinson's complex. An ylide containing a positively-charged atom of this element is used to convert carbonyls to alkenes in the Wittig reaction. The titration curve of a weak acid containing one atom of this element in the +5 ("plus five") oxidation state has three equivalence points. One atom of this element and four atoms of oxygen form a polyatomic anion with a 3- ("three minus") charge. The tips of matches historically contained this element's "red" allotrope. For 10 points, what element sits below nitrogen on the periodic table and has chemical symbol P?
ANSWER: **phosphorus** [accept **P** before mention]
<Chemistry>

8. In a painting by this artist, a trombone player stands in front of a line of musicians above a darkened audience. In another painting, this artist showed musicians in the foreground looking up at a line of dancers in pink dresses kicking out a leg. A boy in a red hat cups his hands next to some figures reclining on shore in a painting by this artist of *Circus Sideshow* and *Le Chahut.* A large painting by this artist set along the same river as his *Bathers at Asnieres* includes a woman with a monkey on a leash and was painted only using small dots. For 10 points, name this Pointillist artist of *A Sunday Afternoon on the Island of La Grande Jatte.*
ANSWER: Georges **Seurat**
<Painting/Sculpture>

9. The *palaestra* was an exercise facility often attached to these locations. *Unctores* were slaves who worked at these locations and used a tool called a *strigil* on visitors to these locations. The *apodyterium* was the entrance to these locations, which were reliant on underground systems called *hypocausta.* The largest of these locations is named for Diocletian, which were inspired by one of these locations commissioned by Caracalla. The *caldarium, frigidarium,* and *tepidarium* were rooms that could be found at these locations containing water of various temperatures. For 10 points, name these locations where Romans went to go clean themselves.
ANSWER: **bath**s [accept **bath**houses; accept *thermae*]
<Other History>

10. This author wrote that he will be "neither better nor worse" than he was before the death of his five year old son. This author declared that "if I am the Devil's child, I will live then from the Devil" in a work where he claims that "to be great is to be misunderstood." This author of "Experience" noted in one essay that "a foolish consistency is the hobgoblin of little minds." The speaker of a poem by this author describes a place where some "embattled farmers" "fired the shot heard round the world." For 10 points, name this author of "Self-Reliance" and "Concord Hymn" who was a transcendentalist and friend of Henry David Thoreau.
ANSWER: Ralph Waldo **Emerson**
<US Literature>

11. This city's waterfront, the IJ ("ay"), is the site of a maritime celebration every five years called SAIL [this city.] A Pablo Picasso sculpture called *The Fish* can be found at the Vondelpark in this city, whose neighborhoods include Jordaan. This city is served by the fourth-busiest airport in Europe, Schiphol Airport. This city's red-light district of De Wallen is home to many of its trademark coffeeshops that actually sell cannabis. The Anne Frank House can be found in this city, which is sometimes known as the "Venice of the North" for its many canals. For 10 points, name this capital city of the Netherlands.
ANSWER: **Amsterdam**
<Geography>

12. After being mortally wounded by Finnbhennach (fin-BIN-nack), one of these creatures wandered around the country inspiring placenames. The god Atum-Ra was often syncretized with a black one of these animals called Mnevis (NEH-vis). One of these creatures named Auðumbla (ah-THOOM-blah) uncovered the god Buri from salty ice. During the Great Race of the Chinese zodiac, this animal finished second after being betrayed by the rat, whom this animal had ferried across a river. The tenth labor of Heracles was to obtain some of these animals belonging to Geryon. Hera turned Io into one of these animals. The minotaur had the body of a man and the head of, for 10 points, what animal sacred in Hindu tradition?
ANSWER: **cattle** [accept **cow**s or **bull**s or **ox**en or **heifer**s]
<Mythology>

13. One story by this author concludes when the poor, red-nosed protagonist loudly sneezes after he eats a tremendous amount of the title food. A character created by this author justifies stealing hair from a woman's corpse because she used to market snake flesh as fish. While tied to a cedar tree, a bandit gives one of this author's characters a choice as to whether or not his wife Masago will die. This author wrote the story "Yam Gruel." The final section of a story by this author is narrated by the spirit of a murdered man "through a medium." For 10 points, name this Japanese short story writer of "Rashōmon" and "In a Grove."
ANSWER: Ryūnosuke **Akutagawa** [accept Ryūnosuke **Nīhara**]
<World/Other Literature>

14. A drop in wages led to workers in this industry called *canuts* to rise up in revolt in Lyons. Many of those workers in this industry used a device invented by Joseph Marie Jacquard. Major technological developments in this industry included Richard Arkwright's water frame. Samuel Slater stole designs for technology in this industry from Britain and brought them to the United States. The Luddites destroyed machinery used in this industry. Manchester was a center for this industry, which suffered from the Lancashire cotton famine. For 10 points, name this industry that processed cotton and wool into yarn and cloth using looms.
ANSWER: **textile** industry [accept **silk**; accept **cloth**ing before "cloth"]
<European History>

15. A protein associated with this organelle uses a tyrosine motif as a targeting sequence and is called LAMP-1. An autophagosome fuses with one of these organelles during autophagy. Defects in this organelle can lead to accumulation of glycosaminoglycans in Hurler syndrome or sphingolipids in Fabry's disease. Precursor proteins to acid hydrolase enzymes found in this organelle are tagged with mannose 6-phosphate for transport to this organelle. This organelle's namesake "storage diseases" include Tay–Sachs disease. For 10 points, name this organelle that digests macromolecules and cellular debris.
ANSWER: **lysosome**
<Biology>

16. During this battle, Robert Abercromby led troops in a failed attempt to spike enemy cannons. After this battle, one commander refused to attend the surrender ceremony and instead sent his subordinate Charles O'Hara. Prior to this battle, the fleet of Thomas Graves was prevented from aiding one side by the Comte de Grasse. Alexander Hamilton led troops in a bayonet action to capture Redoubt #10 during this battle. This battle ended with Charles Cornwallis being forced to surrender to the forces of the Comte de Rochambeau and George Washington. For 10 points, name this 1781 victory for the Continental Army in Virginia, the last major battle of the Revolutionary War.
ANSWER: Battle of **Yorktown** [accept Siege of **Yorktown**]
<US History>

17. At the start of this piece's finale, the violins accelerate on the repeating phrase "long B, short C" before a triumphal statement of the main theme by trumpets and French horns. A woodwind solo in this symphony consists of the long-short-long melody "F A-flat A-flat, F E-flat D-flat." This symphony's *scherzo* movement was based on a dance scene in *The Song of Hiawatha*. Harry Burleigh's singing is mimicked by the English horn solo in this symphony's *largo* second movement, as well as by other quotations of various spirituals. For 10 points, name this E minor symphony by Antonin Dvorak inspired by his trip to the United States.
ANSWER: Symphony "*From the **New World***" [or the "**New World**" Symphony or **Dvorak**'s **Symphony** No. **9** in E minor; accept just **Symphony** No **9** after "Dvorak" is read]
<Classical Music>

18. Deleuze and Guattari criticized this concept's reliance on familialism in the first volume of *Capitalism and Schizophrenia*. Malinowski argued that the societal organization of the Trobriand islanders proved that this concept was not universal. Karen Horney argued that products of this concept stemmed from "masculine narcissism." This concept creates "castration anxiety" and "penis envy" and overcoming this concept results in the formation of a strong superego. Carl Jung introduced a female analogue of this concept called the Electra complex. For 10 points, name this Freudian concept, the attraction of a child to their opposite-sex parent.
ANSWER: **Oedipus** complex
<Social Science>

19. This quantity is approximately proportional to the fourth power of stellar velocity dispersion according to the Faber–Jackson relation. Setting radiation pressure equal to gravitational force yields the theoretical Eddington limit for this quantity. Absolute bolometric magnitude is proportional to the logarithm of this quantity, which for stars is approximately proportional to mass to the 3.5 power. In Cepheid variable stars, this quantity is directly proportional to period. Either this quantity or absolute magnitude is used as the y-axis in Hertzsprung–Russell diagram. For 10 points, name this quantity, the amount of light energy per unit of time emitted by an astronomical body.
ANSWER: **luminosity**
<Other Science>

20. In one novel by this author, a "Cootings Machine" is destroyed by the narrator who is an Artificial Friend of the "lifted" child Josie. Two characters created by this author attempt to get a "deferral" from the headmistress of Hailsham in a novel titled for a fictional song by Judy Bridgewater. In March 2021, this author published his novel *Klara and the Sun*. This creator of the clones Tommy, Ruth, and Kathy also wrote a novel revolving around the past experiences that Miss Kenton and Lord Darlington had with the butler Stevens. For 10 points, name this winner of the 2017 Nobel Prize in Literature who wrote *Never Let Me Go* and *The Remains of the Day*.
ANSWER: Kazuo **Ishiguro**
<British Literature>

Bonuses

1. While performing this action, its perpetrator thinks of her husband and children and notes that "they need not have thought that they could possess her, body and soul." For 10 points each:
[H] Describe this action. The person performing this action notes how Dr. Mandelet "would have understood" why she did it before she recollects a memory of a "cavalry officer" walking across the porch of the Kentucky house she grew up in.
ANSWER: **Edna** **Pontellier** committing **suicide** [accept descriptive answers that relate that **Edna** **Pontellier** **died** by **drown**ing herself in the Gulf of Mexico (or "the sea" as it is called); accept first or last name; prompt on suicide or drowning with "Who is committing suicide?"]
[M] Edna Pontellier drowns herself in the Gulf of Mexico after having affairs with Robert Lebrun and Alcée Arobin at the end of this 1899 novel.
ANSWER: The *__Awakening__*
[E] *The Awakening* was written by this American author whose short stories include "The Story of an Hour" and "Désirée's Baby."
ANSWER: Kate **Chopin** [or Katherine **O'Flaherty**]
<US Literature>

2. A leftist government in this country set up by Bishop Fan Noli was overthrown in 1924 by this country's eventual king. For 10 points each:
[H] Name this country, whose king went into exile after it was invaded in 1939 by troops under Alfredo Guzzoni. After World War II, this country was taken over by a communist dictator who declared it the world's first atheist state.
ANSWER: Republic of **Albania** [accept Kingdom of **Albania**]
[E] Albania was invaded by this country, whose king Victor Emmanuel III was made the new Albanian king. This country was led by Benito Mussolini until this country's defeat in the Second World War.
ANSWER: Kingdom of **Italy**
[M] The Albanian king Zog's 1924 coup was aided by the Yugoslavs and soldiers who had previously fought under Pyotr Wrangel in this war as part of the White Army. The U.S. launched the Polar Bear Expedition during this war.
ANSWER: **Russian Civil** War
<European History>

3. Protests in this country were sparked by the removal of president Martín Vizcarra from power. For 10 points each:
[M] Name this country whose recent contentious presidential election ended in Pedro Castillo's victory. Castillo defeated the Popular Force Party's candidate Keiko Fujimori, daughter of this country's former dictator Alberto.
ANSWER: **Peru** [or Republic of **Peru**]
[H] Protests broke out against this country's president Iván Duque after proposed tax hikes during the COVID-19 pandemic. The men who assassinated Haitian president Jovenel Moïse allegedly came from this country.
ANSWER: **Colombia** [or Republic of **Colombia**]
[E] This country also faced protests in June 2021 over the pandemic response of its president Jair Bolsonaro, who himself contracted COVID-19 in 2020. Many protests have taken place in this country's largest city of Sao Paulo.
ANSWER: **Brazil** [Federative Republic of **Brazil**]
<Current Events>

4. This quantity can be estimated from the creatinine clearance rate. For 10 points each:
[H] Name this quantity, the volume of filtered fluid flowing into Bowman's capsule per unit time.
ANSWER: **glomerular filtration rate** [or **GFR**; accept estimated **glomerular filtration rate** or estimated **GFR** or **eGFR**]
[M] Both the glomerulus and Bowman's capsule are components of these functional units of the kidney.
ANSWER: **nephron**s
[E] Nephrons use countercurrent exchange to concentrate this liquid waste product that is excreted from the body through the urethra. This substance is stored in the bladder and gains its yellow color from bilirubin.
ANSWER: **urine** [accept informal names such as **pee** or **piss**]
<Biology>

5. A castle that overlooks this feature is represented by the harps' theme "B-flat E-flat D B-flat" in one piece. For 10 points each:
[H] Name this specific geographic feature that is depicted in a symphonic poem beginning with a flowing melody played by two flutes. That piece is the second in a collection of six nationalistic works.
ANSWER: **Moldau** River [or **Vltava** River; prompt on river]
[M] This Czech composer depicted the castle Vysehrad and the Moldau River in his nationalist cycle *Ma Vlast*.
ANSWER: Bedrich **Smetana**
[E] Smetana imagined his struggle with this condition with a piercing high E played by the violin in his first string quartet. Ludwig van Beethoven used an ear trumpet to have conversations after being afflicted with this condition.
ANSWER: **deaf**ness [accept **tinnitus**]
<Classical Music>

6. The Angarium was an institution that used this structure. For 10 points each:
[M] Name this structure stretching from Susa to Sardis. This structure was used by the mounter couriers of the Angarium to transmit messages across one empire.
ANSWER: Persian **Royal Road**
[H] The Royal Road was constructed during the reign of a ruler with this name, who later faced the Ionian Revolt. The last ruler with this name was assassinated by the *satrap* Bessus.
ANSWER: **Darius** [accept **Darius** I; accept **Darius** the Great; accept **Darius** III]
[E] Darius the Great also initiated road-building projects and the construction of a canal in this region. Many architectural projects were built in this region by rulers like Ramesses the Great and Akhenaten.
ANSWER: **Egypt**
<Other History>

7. This object was seized by Hector after the death of Patroclus. For 10 points each:
[M] Name this object which was competed for by Odysseus and Ajax after its true owner's death. After Ajax lost the contest, he slaughtered a herd of sheep during a fit of insanity and then killed himself in shame.
ANSWER: the **armor** of **Achilles** [accept answers containing both underlined words; accept the **breastplate** of **Achilles**; accept the **cuirass** of **Achilles**; prompt on the **helmet** of a`**Achilles**; prompt on armor or breastplate or cuirass or helmet by asking "Who does it belong to?"]
[E] The impenetrable armor of Achilles was forged by this Greek god of smithing.
ANSWER: **Hephaestus**
[H] After this other Greek warrior realized that his grandfather Oeneus was friends with the grandfather of his opponent Glaucus, he traded his bronze armor for Glaucus' golden armor rather than fight in a duel.
ANSWER: **Diomedes**
<Mythology>

8. In one work of this type, Count Horeszko and the title character are saved from a bear by the monk Father Robak. For 10 points each:
[H] Name this type of work exemplified by *Pan Tadeusz*. In a different work of this type, a group of sailors encounter the giant Adamastor at the Cape of Good Hope.
ANSWER: **national epic** [prompt on epic poem; prompt on poem] (the other national epic is *The Lusiads*)
[M] In this other national epic compiled by Elias Lönnrot, Väinämöinen forces Ilmarinen to create the Sampo, an object that can create flour, salt, and gold.
ANSWER: the ***Kalevala***
[E] A poem fictionalizing the Castilian knight El Cid is generally considered to be the national epic of this Iberian country.
ANSWER: **Spain** [or **España**]
<European Literature>

9. Answer the following about the RSA encryption algorithm, for 10 points each:
[E] The RSA cryptosystem uses this many keys and relies on the difficulty of factoring the product of this many prime numbers. A bit has this many possible values.
ANSWER: **two**
[H] To encrypt a padded plaintext *m* using RSA, one must find a ciphertext *c* such that this operation with respect to *n* applied to *m* to the *e* equals it applied to *c*. This operation is often represented by a percentage sign.
ANSWER: **modulo** [or **remainder**; accept **mod** n]
[M] RSA-encrypted data can be decrypted, but data encrypted using one of these functions cannot. These one-way functions convert input to a bit string of fixed size and are often used to encrypt passwords.
ANSWER: cryptographic **hash** functions [or **CHF**s]
<Other Science>

10. An alternate cover for *Secret Empire* issue 5 that featured this character sparked backlash for apparently depicting him working with neo-Nazis. For 10 points each:
[M] Name this Holocaust survivor and frequent enemy of the X-Men, who believes that mutants and humans cannot live together peacefully. He formed the original Brotherhood of Evil Mutants.
ANSWER: **Magneto** [or Max **Eisenhardt**; accept Erik M. **Lehnsherr**]
[H] The controversy came following this 2016 plot twist, which arose from a mistake Kobik made in *Avengers: Standoff!* and resulted in the *Secret Empire* event storyline. A description is required.
ANSWER: **Captain America** being a sleeper agent for **Hydra** [accept reasonable equivalents, such as "**Captain America** is part of **Hydra**" or "**Captain America** says "Hail **Hydra**"]
[E] The fascist organization Hydra is led by a villain named for a "Red" one of these objects. One of these objects is depicted in the Punisher's symbol, which has been co-opted by the Blue Lives Matter countermovement.
ANSWER: **skull** [accept **Red Skull**]
<Pop Culture>

11. This ruler supposedly enjoyed watching his nobles play the board game *patolli*. For 10 points each:
[M] Name this ruler who reduced social mobility in his empire by disallowing *macehualtin*, or commoners from working in the palace after he became *tlatoani*. This ruler was stoned to death by his people according to a history by Bernal Díaz del Castillo.
ANSWER: **Montezuma II** [or **Moctezuma II**; prompt on Montezuma or Moctezuma]
[E] Montezuma II was the ruler of this pre-Columbian empire in what is now Mexico. Floating gardens called *chinampas* dotted this empire's capital of Tenochtitlan, which was later captured by Hernán Cortés in 1521.
ANSWER: **Aztec** Empire
[H] Montezuma and his predecessor Ahuitzotl earlier subjugated these people from the Valley of Oaxaca. Monte Albán was the center of these people's civilization.
ANSWER: **Zapotec**s
 <World History>

12. Lu Xun ("loo shween") used the example of a story in which a man kills his baby to feed his mother in order to criticize China's overreliance on this concept. For 10 points each:
[M] Name this concept praised in the *Twenty-Four Paragons*, defined as deference and devotion to the elder members of one's family.
ANSWER: **filial piety** [or *xiao* ("shee-ow")]
[E] Filial piety is central to the works of this Chinese philosopher, whose sayings were collected after his death into the *Analects*.
ANSWER: **Confucius** [or **Kong**zi or **Kong Fuzi**]
[H] While this Chinese word originally referred to court rituals designed to uphold cosmic order, Confucians use it to refer to the norms that make up proper conduct for people with various rigid social roles.
ANSWER: *li* ("lee")
<Philosophy>

13. Every component of this sequence is a pure sine wave. For 10 points each:
[H] Name this sequence of vibrational modes where the frequency of each mode is an integer multiple of the frequency of the fundamental.
ANSWER: **harmonic series** [or **overtone series**; accept **harmonic**s or **overtone**s]
[E] The harmonic series can be visualized as peaks on a spectrogram, on which this quantity is represented by different levels of color intensity. This property of a wave corresponds to the loudness of a sound.
ANSWER: **amplitude**
[M] On a vibrating string with both ends fixed, the first harmonic has only one nontrivial instance of these points. These points on a standing wave occur where amplitude is zero.
ANSWER: **node**s [do not accept or prompt on "antinodes"]
<Physics>

14. Three bronze figures cower below a curling piece of onyx marble in this sculptor's small work *The Wave*. For 10 points each:

[H] Name this sculptor of *Sakuntala* who showed an old woman guiding a man away from the reaching hands of his lover in the bronze work *The Mature Age*.

ANSWER: Camile **Claudel**

[E] Claudel's sculpture *The Mature Age* allegorized her relationship with this other sculptor. This artist included his sculptures *The Thinker* and *The Three Graces* in his unfinished *Gates of Hell*.

ANSWER: Auguste **Rodin**

[M] An early work by Claudel depicts two lovers performing this action. Edgar Degas created a wax sculpture of a girl "of Fourteen Years" who is dressed to perform this action.

ANSWER: **dancing** [or **waltz**ing; accept word forms; accept **ballet**; accept *Little **Dancer** of Fourteen Years* or *The Little Foutreen-Year-Old **Dancer***; accept *The **Waltz***]

<Painting/Sculpture>

15. In a play written by an author from this country, Ariel and Tupolski interrogate the author Katurian since his gruesome stories were the basis for a string of child murders. For 10 points each:

[H] Name this country home to the author of *The Pillowman*. In a different play written by an author born in this country, a character gives a speech in which he talks about a "skull in Connemara" and a "personal God quaquaquaqua with white beard."

ANSWER: Republic of **Ireland** [or Poblacht na h**Éire**ann]

[M] The author of *The Pillowman*, Martin McDonagh, titled his play *A Skull in Connemara* from a speech in this play that Lucky gives after a bowler hat is put on his head and he is told, "Think!"

ANSWER: ***Waiting for Godot*** [or ***En attendant Godot***]

[E] *Waiting for Godot* was written by this Irish-born author of *Endgame*.

ANSWER: Samuel **Beckett** [or Samuel Barclay **Beckett**]

<British Literature>

16. Carbon-14 can be used to determine the age of recent specimens because its value for this quantity is equal to approximately 5,730 years. For 10 points each:

[E] Name this quantity equal to the amount of time it takes for fifty percent of a radioactive material to decay.

ANSWER: **half-life**

[M] The half-life of a sample can be calculated by treating radioactive decay as a reaction with this numerical order. The atomic number of an atom that undergoes beta decay increases by this number.

ANSWER: **one** [accept **first-order** reactions]

[H] One of the oldest forms of radiometric dating involves measuring the decay of this element into a noble gas via electron capture. That technique is particularly useful for volcanic rock partially because orthoclase feldspars are rich in this metal.

ANSWER: **potassium**-40 [accept ^{40}**K**]

<Chemistry>

17. The film *Dancer on the Roof* captures the craze for this dance style in Soviet bloc nations during the second half of the 1980s. For 10 points each:
[M] Identify this style of dancing with toprock and downrock moves. This improvisational dance style originated with groups like Rock Steady Crew in The Bronx.
ANSWER: **break**dancing [or **break**ing; accept **b-boying** or **b-girling**]
[E] Breakdancing is most associated with the "breakdown" sections of music in this genre. Rapping, beatboxing, and DJing are all associated with this music style.
ANSWER: **hip-hop** music
[H] Breakdance moves have been compared to this Brazilian martial art form originally created by enslaved African workers. This style's basic steps include the rocking motion of the *ginga*.
ANSWER: **capoeira**
<Other Fine Arts>

18. Hugh Thompson, Jr. ordered his men to turn their weapons on other American soldiers during this event. For 10 points each:
[M] Name this 1968 event, during which forces under William Calley massacred hundreds of civilians in the namesake hamlet during the Vietnam war. This event took place in a location codenamed "Pinkville."
ANSWER: **My Lai** massacre
[H] A letter relating the My Lai massacre was investigated by this man who initially declared the massacre to be exaggerated. This man later held up a fake vial of anthrax before the United Nations in the run-up to the Iraq War.
ANSWER: Colin Luther **Powell**
[E] Despite Calley's conviction, this then-governor of Georgia asked citizens to drive for a week with their headlights on in his honor. The Iran Hostage Crisis began under this future president who lost the election of 1980 to Ronald Reagan.
ANSWER: Jimmy **Carter** [or James Earl **Carter**, Jr.]
<US History>

19. In this novel, Mrs. Kirsha beats up a young salesman with whom her husband has been having an affair. For 10 points each:
[H] Name this novel that culminates with a group of British soldiers beating the protagonist to death after he throws a glass at the prostitute Hamida. This novel revolves around different characters' ambitions while living on the title street.
ANSWER: *Midaq Alley*
[M] *Midaq Alley* was written by this author who created the dysfunctional al-Jawad family in his novel *Palace Walk*.
ANSWER: Naguib **Mahfouz** [or Naguib **Mahfouz** Abdul Aziz Ibrahim Ahmed Pasha]
[E] The Egyptian author Naguib Mahfouz wrote his novel *Palace Walk* and the rest of his *Cairo Trilogy* in this language.
ANSWER: **Arabic** [or al-**arabiyyah**]
<World/Other Literature>

20. Copies of this text can only be made by specially made scribes called *sofer.* For 10 points each:
[M] Name this holy text whose name was translated by Martin Buber as "Law." This text is divided into the *Sedrah*, one of which is read each week after this text is taken out of an Ark and placed on a platform called the *Bimah.*
ANSWER: **Torah** [prompt on Pentateuch]
[H] A Jew's first time reciting a blessing over the Torah before the congregation is referred to by this word. This Hebrew word also denotes the act of immigrating to Israel.
ANSWER: ***aliyah***
[E] *Aliyah* occurs during or soon after this Jewish coming of age ceremony that takes place upon the thirteenth birthday of the celebrant.
ANSWER: ***bar mitzvah*** [accept ***bat mitzvah*** or ***b'nei mitzvah*** or ***b'not mitzvah***]
<Religion>