

**ACF Regionals 2016: Ben There, Didn't Do That**

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**Packet by Editors 1**

TOSSUPS:

1. The chronologically first event commemorated on the 17th of Tammuz was due to a transgression organized by this man. A revolt occurred after this man allegedly took all of a widow's sheep, and his younger brother wouldn't let her plow the entirety of her field. An object owned by this man budded and yielded almonds, and had earlier turned into a snake which swallowed those produced by some magicians. Because the Lord's fire consumed his sons Nadab and Alihu, this figure was succeeded by his son Eleazar after his death on Mount Hor. This eldest son of Amram and Yochebed became the first High Priest, and, while waiting for a descent from Mt. Sinai, he assisted the Israelites in the creation of the Golden Calf. For 10 points, identify this older brother of Moses.

ANSWER: **Aaron**

2. A six-movement work for this combination of players closes with "Le pas espagnol" and includes a "Kitty-Waltz". This combination of instrumentalists plays the original version of "Conversations of Beauty and the Beast". Robert and Gaby Casadesus played many pieces for this combination of players, including a sonata by Bela Bartok in which they are joined by two percussionists. This combination of players accompanies the cello in "The Swan" from *The Carnival of the Animals*. Fauré's *Dolly Suite* and the non-orchestral version of Ravel's *Mother Goose Suite* are for this combination of players, as are the original versions of Schubert's *Marches Militaires* and Dvorak's *Slavonic Dances*. For 10 points, name this combination of players that performs "four-hands" duets.

ANSWER: **two pianists** [or **piano duet**; be generous, and accept **two pianos** or **piano duo**, even though some of these pieces are meant to be played on one piano]

3. NOTE: DESCRIPTION ACCEPTABLE

The night before this speech was delivered, two men rode through town on a horse and motorcycle throwing leaflets at random passers-by to explain their actions. This speech warns against "outbursts of emotion" that might lose "the confidence of the world," and implores the addressees to look to the "construction of the future." A follow-up address had to clarify this speech, since it was delivered in high classical language and avoided using a certain word. Pledging that its listeners would "endure the unendurable," it was played from a recording smuggled out after officers stormed the Imperial Palace in the Kyujo Incident. For 10 points, name this radio address by Hirohito that ended an Asian country's participation in World War II.

ANSWER: **Jewel Voice** Broadcast [or **Gyokuon-hoso**; accept any answer about **Japan** and **Surrendering**; accept **Hirohito**'s address after the Hiroshima/Nagasaki bombings before "Hirohito"]

4. One poem by this author describes "a cave-mouth flame / Of leaf and stick / Trembling at the mind's wick". He described an anvil "[h]orned as a unicorn" in a poem that begins "All I know is a door into the dark". In one poem, this author of "Tinder" recounted carrying milk "in a bottle / corked sloppily with paper" to a man who drinks it before resuming the title activity. This poet of "The Forge" described animals whose "loose necks pulsed like sails" and who sat "[p]oised like mud grenades". A 1999 work by him became more popular than a similar work by Burton Raffel. He declared: "By God, the old man could handle a spade" in his poem "Digging". For 10 points, name this Irish author who described collecting frogspawn in "Death of a Naturalist" and translated *Beowulf*.

ANSWER: Seamus (Justin) **Heaney**

5. Isoschizomers of these molecules act on identical substrates. The presence of excess glycerol can cause these molecules to exhibit star activity. Polylinkers, also called multiple cloning sites, are designed to be recognized by multiple examples of these molecules. Some protocols for site-directed mutagenesis use one of these enzymes from the bacterium *Diplococcus pneumoniae* to destroy the original methylated template. A method of paternity testing compares the lengths of fragments produced by these enzymes in RFLP analysis. These enzymes cleave the phosphodiester bonds of their substrate to produce blunt and sticky ends, such as the ones produced by EcoRI [“eco-R-one”]. For 10 points, name these enzymes which recognize and cut specific sequences in DNA.

ANSWER: **restriction** enzymes [or restriction **endonucleases**; prompt on “nucleases”]

6. Italian jurist Alberico Gentili published *On Embassies* after this monarch asked him to rule on the legality of executing a foreign official. The pseudonym “Doleman” was used to publish a major political tract challenging this monarch’s legitimacy by Robert Persons. This monarch lost a favorite courtier at the Battle of Zutphen, which followed an invasion authorized by the Treaty of Nonsuch. Philip Sidney died under the command of this monarch’s general, Robert Dudley, who fought the Spanish under Alessandro Farnese during this monarch’s intervention in the Dutch Revolt. After repulsing an attack in the Battle of Gravelines, this monarch delivered the Tilbury Speech. For 10 points, name this British ruler who triumphed over the Spanish Armada and was known as the “Virgin Queen.”

ANSWER: **Elizabeth I**

7. The Caseroti-Weierstrass theorem about neighborhoods in which these functions have dense image was improved by Picard’s “great” theorem. If the origin is a pole of a function  $g$ , then locally  $g$  can be written as one of these functions divided by  $z$ -to-the- $n$ . These functions over an annulus can be represented by a Laurent series about the center. The line integral over a loop of one of these functions equals zero. These functions can be decomposed into two components which are harmonic conjugates. Functions of this type whose domain is the whole plane are called entire, and these functions satisfy the Cauchy-Riemann equations. Functions of this type are infinitely differentiable and equal their Taylor series. For 10 points, identify these functions which are differentiable everywhere, and thus pretty important in complex analysis.

ANSWER: **holomorphic** functions [accept word forms, also accept **analyticity** before the end, prompt afterwards, prompt on any combination of the words “infinitely differentiable complex functions”]

8. In the *Mabinogion*, a giant warns a cousin of King Arthur that it is not possible to perform this action unless the blood of the Very Black Witch from Pennant Gofid is kept warm in the bottles of Gwyddolwyn [“gwuh-THOL-win”]. That giant is later subjected to this action after the hound Drudwyn is used to acquire some objects between the ears of the boar Twrch Trwyth [“toorch true-ith”]. Minos was able to capture Megara after a princess of that city betrayed her father by performing this action on Nisus. In the *Skaldskaparmal*, Loki atones for this action by having the Sons of Ivaldi forge an object made of gold to give to Thor’s wife Sif. For 10 points, name this action which Delilah performed on Samson in order to weaken him.

ANSWER: **cutting hair** [or giving a **haircut**; accept **cutting** a **beard** or **shaving**]

9. In one film, this actor quips: “All those feathers and he still can’t fly” while watching a motorcyclist plummet to his death. A character played by this actor throws a dove-shaped pin into a car containing an assassin, which he then kicks off a cliff. In one film, this actor’s character accidentally swallows a bullet that he sucks out of the navel of a belly dancer. This actor drove a hovercraft gondola through St. Mark’s Square in an infamous chase scene in one film. He foiled a Christopher Walken-played Max Zorin from flooding the Silicon Valley in *A View to a Kill*. And he battled with a metal-toothed henchman named Jaws in the films *Moonraker* and *The Spy Who Loved Me*. For 10 points, name this actor who played James Bond from 1973 to 1985, after George Lazenby and Sean Connery.

ANSWER: Sir Roger (George) **Moore**

10. One of these characters covers up a slip-up by falsely claiming that “orgies” is a synonym for “obsequies”. While witnessing the demise of these characters, the narrator declares: “Human beings *can* be awful cruel to one another”. One of these characters misremembers a speech as beginning: “To be, or not to be; that is the bare bodkin / That makes calamity of so long life”. One of them writes a sign saying “Sick Arab—but harmless when not out of his head”. That one of them pretends to be deaf and dumb while they crash Peter Wilks’ funeral to steal from Mary Jane and her relatives. These two characters perform a show called the Royal Nonesuch, while leaving Jim on the raft. For 10 points, name these conmen encountered by Huckleberry Finn, who pretend to be the namesake noblemen.

ANSWER: **Duke** of Bilgewater and **Dauphin** of France [be generous, and accept **King** in place of “Dauphin”; accept in either order; prompt on descriptions like “conmen/swindlers from *The Adventures of Huckleberry Finn*”]

11. A photo discovered on a dead body shows a citizen of this country raising a weapon over the head of Len Siffleet, who sits on his knees bound and blindfolded. One photo taken in this country shows a woman being cradled by her mother in a bathtub, suffering from extreme deformities that were documented by W. Eugene Smith. While traveling in this country, Charles Wirgman and Felice Beato helped popularize hand-colored prints. A more famous photo taken in this country inspired a sculpture by Felix de Weldon. 19<sup>th</sup> century photo studies of this country recreated a native artist's depictions of 53 stops along the largest of its five routes. For 10 points, name this country where Joe Rosenthal photographed a group of Marines raising a flag on Iwo Jima.

ANSWER: **Japan**

12. When asked if he believes in God, a character in this play describes the earth’s mystery and concludes: “I have no name for it. The feeling’s all there is”. A character in this play donates to a priest a box of jewels that was left in the bottom of her daughter’s closet by a suitor. Another character in this play produces wine from holes in a tablecloth, but the wine catches on fire when spilled. At the end of this play, an angelic chorus sings “She is saved” about an imprisoned woman. This play’s protagonist stabs the soldier Valentine and climbs the Harz mountains to attend a Walpurgisnight. This play’s antagonist first appears as a black poodle before helping the protagonist woo Gretchen. For 10 points, name this play by Johann Wolfgang von Goethe about a scholar who sells his soul to Mephistopheles.

ANSWER: **Faust**: *The First Part of the Tragedy* [or **Faust**. *Der Tragödie erster Teil*]

13. In one experiment using this setup, a coincidence circuit makes sure that only particles produced through spontaneous parametric down-conversion are counted. The half-silvered mirror in a device named for Mach and Zehnder produces a similar output as one of these setups. Wheeler’s delayed choice experiment is meant to make sense of this apparatus. In the quantum eraser experiment, their output depends on whether or not the photon’s path is observed. The distance between the fringes produced by this apparatus is inversely proportional to the distance between the two central entities, and its pattern is repeated in a diffraction grating. For 10 points, identify this setup which produced an interference pattern, demonstrating light’s wavelike nature in a Thomas Young experiment.

ANSWER: Young’s **double-slit** [accept descriptions like “a **pair** of **slits**”]

14. The primacy of this work was championed by Bulgarus, Accursius, and Irnerius in France and Italy. Those men led the glossators, scholars who expounded on this work, after its rediscovery helped spur the founding of the University of Bologna. This work contains strikingly accurate transcription of quotes by Gaius and includes several writings by Ulpian as part of the *Pandects*, or *Digest*. An adaptation of this work was probably begun by Bardas but ironically is named for the person who murdered him, Basil I. Contradictions within this work forced the publication of some namesake “novels” by a commission under Tribonian following the Nika Riots. For 10 points, name this massive collection of law named for a great Byzantine emperor.

ANSWER: **Justinian's Code** [or the **Corpus Juris Civilis**; or the **Corpus Iuris Civilis**; or the **Body of Civil Law**; accept **Codex Justinianus**, which is a specific part but very commonly used to refer to the whole thing]

15. J.L. Austin defined this property as the correlation between demonstrative and descriptive conventions. A paper titled for this concept uses three-value logic to create “fixed-point semantics”. A 1933 paper defines this property as holding for X if and only if X appears in a metalanguage. Bertrand Russell used the sentence “Bishop Stubbs was hanged for murder” to attack a definition of this as “coherence”. Late in life, Heidegger rejected his own definition of this property as “disclosedness” or “aletheia”. Kripke wrote an “Outline to a Theory of” this property, of which Tarski introduced a “semantic conception”. The problem of self-reference and this property is called the “liar’s paradox”. For 10 points, “correspondence theory” defines what property as “agreement with reality or fact”?

ANSWER: **truth** [accept word forms like “being **true**”; accept “**correspondence** theory of truth”, before “three-value”]

16. This artist made the best-known painting owned by the Czartoryski Museum in Krakow. A portrait by this artist is named for a style of horizontal band with a jewel in the center, worn across the forehead of the subject. The obverse of one painting by him shows a palm frond and laurel branch joining above a banner that reads: “Virtutem forma decorat”. In that portrait by him, a woman in a brown dress with blue lacing at the bosom stands in front of a juniper tree, punning on her name Ginevra de’ Benci. This artist’s *La Belle Ferronière* may depict Cecilia Gallerani, the subject of his *Lady with an Ermine*. Marcel Duchamp drew a mustache on his most famous painting in *L.H.O.O.Q.* For 10 points, name this artist who showed an enigmatically smiling woman in his *Mona Lisa*.

ANSWER: **Leonardo Da Vinci** [accept either underlined name]

17. This metal’s sulfate catalyzes a reaction in which an alkyne is hydrated to form an enol that quickly tautomerizes into a ketone. Sodium borohydride is used to remove this metal from a hydrocarbon in a reaction that uses this element’s acetate to generate alcohols from alkenes. In the patio process, this element is used to isolate silver from its ores. An atom of this metal is bonded to two methyl groups in an extremely toxic compound that poisoned Karen Wetterhahn when she was using the 199 isotope of this element in NMR spectroscopy. Joseph Priestly first isolated oxygen by heating an oxide of this metal, which is extracted from the ore cinnabar. For 10 points, name this transition metal that is liquid at room temperature.

ANSWER: **mercury**

18. Roscoe Conkling once had to flee half-naked from a shotgun-wielding politician from this state after being discovered in the bed of that man's wife, Kate Chase. As governor, that politician was nearly killed by a cannonball after deciding to accompany this state's regiments to First Bull Run. Politicians from this state include William Sprague and a man who led the National Monetary Commission in the wake of the Panic of 1907 after co-sponsoring a bill with Edward Vreeland; that “general manager of the nation” was Nelson Aldrich. As a colony, this state denied citizenship to Aaron Lopez, a wealthy Jew who financed its Touro Synagogue, the oldest in North America. For 10 points, name this site of Dorr's Rebellion, a tiny U.S. state whose capital is Providence.

ANSWER: **Rhode Island** [or State of **Rhode Island** and Providence Plantations]

19. During this decade, one character is surprised to learn that police were issued new guns after an earlier shootout with a cult. In that novel set in his decade, only some people notice that there are now two moons in the sky. In this decade, a dyslexic character is helped with writing the novel *Air Chrysalis* by Tengo. Another character living in this decade reflects on an old paperweight while with his lover in a room he rented above Charrington’s shop. A character erased from the Chess Club’s membership during this decade is named Syme and helped develop the language Newspeak. During it, one novel’s protagonist falls in love with Julia, and O’Brien is revealed to be a member of the Thought Police. For 10 points, Winston Smith is the protagonist of a dystopian George Orwell novel set in what decade?

ANSWER: the **1980s** [or the **1Q80s**; grudgingly accept **1984** or **1Q84**]

20. This thinker's originality was challenged in a work describing the Protestant *seelsorge* practice by Henri Ellenberg. This thinker may have suppressed some of his earlier theories according to *The Assault on Truth*, which was based on this man's correspondence with Wilhelm Fliess. Elizabeth Thornton's book about this man's "fallacy" charts how Jean-Martin Charcot inspired his work on hysteria, and concludes that this thinker's ideas were mainly fueled by his cocaine abuse. This thinker argued that the guilt from killing a political leader led an Egyptian group to embrace religion in *Moses and Monotheism*. For 10 points, name this author of *Totem and Taboo* who popularized the concepts of id, ego, and superego, the Austrian founder of psychoanalysis.

ANSWER: Sigmund **Freud**

BONUSES:

1. A Percy Shelley poem titled for one of these objects concludes: “Like a child from the womb, like a ghost from the tomb / I arise and unbuild it again”. For 10 points each:

[10] Name these objects. William Wordsworth’s poem “Daffodils” begins “I wandered lonely as” one of these objects.

ANSWER: **clouds**

[10] This contemporary British author wrote of Eiji Miyake’s coming of age in *number9dream* and interlocked stories set in 1850’s New Zealand, 1930’s Belgium, and Dystopian North Korea, among others, in *Cloud Atlas*.

ANSWER: David (Stephen) **Mitchell**

[10] This feminist British playwright transported her characters from Victorian Colonial Africa to 1979 between the acts of her play *Cloud 9*. Her play *Top Girls* opens with a dinner party of famous women from history and literature.

ANSWER: Caryl **Churchill**

2. Identify the following about pesky Slavic spirits, for 10 points each:

[10] These protective household spirits often took the form of cats, and would sometimes ignore their responsibilities as guardians and instead assume the role of obnoxious poltergeists.

ANSWER: **domovoi** [or **domovoy**]

[10] These water nymphs, often the spirits of drowned women, haunted passersby and tried to lure men to their watery deaths. Sometimes, for giggles, they’d tickle their victims to death.

ANSWER: **rusalki** [or **rusalka**, I guess]

[10] Despite flying in a mortar and not atop a broom, Baba Yaga was basically one of these cackling, wizened old women. Western cultures often include large warts in their depictions of these people.

ANSWER: **witches** [or **hags**]

3. Sufferers of this disease often have webbed necks. For 10 points each:

[10] Identify this disease, caused by women missing one of their sex chromosomes.

ANSWER: **Turner** syndrome

[10] The missing chromosome in Turner syndrome is one of these chromosomes. People with Klinefelter’s syndrome have two of them.

ANSWER: **X** chromosome

[10] In contrast to the XY system of humans, many insects use this sex-determination system, which is also present in *C. elegans*. In species that use it, females are much more common than males, who only have one X chromosome.

ANSWER: **X0** [“X-zero”] sex-determination system

4. Alan Merriam co-founded this sub-discipline's main international association. and its phenomenological form was pioneered by Harris Berger and Steven Friedson. For 10 points each:

[10] Name this academic sub-discipline whose name was coined by Jaap Kunst. Mantle Hood created its first American university department, at UCLA. Its method of "cantometrics" was developed by Alan Lomax.

ANSWER: **ethnomusicology** [or **comparative musicology**; prompt on "musicology"; anti-prompt on "music anthropology"]

[10] This ethnomusicologist did extensive folksong collection in his native Hungary. He composed *Háry János* and *Psalmus Hungaricus*, and developed a music education system that teaches solfege with hand signs.

ANSWER: Zoltán **Kodály** [accept names in either order]

[10] Bonnie C. Wade and James R. Kippen are known for their ethnomusicological work in this country. This country's classical music includes the genres of Dhrupad and Kriti, and uses instruments like the sitar and the tabla.

ANSWER: **India**

5. A resident of this city, Hasdai ibn Shaprut, was the addressee of the Schechter Letter as part of an effort to correspond with the Khazar state. For 10 points each:

[10] Identify this city that built up its power base under the leadership of a former legal scholar, Almanzor.

ANSWER: **Cordoba**

[10] The beginning of the Reconquista is often traced to the defeated of the Cordoba Caliphate by Asturias under Pelayo at this 718 battle.

ANSWER: Battle of **Covadonga**

[10] The Reconquista was completed with the fall of Granada in this year, the same year re-conquering monarchs Ferdinand and Isabella sponsored Columbus's voyage.

ANSWER: **1492**

6. This group has been engaged in a long-running conflict with the Buddhist Rakhine people in the Arakan region. For 10 points each:

[10] Identify this Muslim group, the subject of ongoing ethnic and political violence in Myanmar.

ANSWER: **Rohingya**

[10] The Rohingya and other Burmese are opposed by Ashin Wirathu's militant 969 movement, whose name references the six attributes of this body of Buddha's teachings. This common term is also used in Hinduism and Buddhism to refer to actions in accordance with the cosmic order.

ANSWER: **Dharma**

[10] 969 is in part a response to 786, a number that corresponds to this Islamic phrase. It is generally translated as "in the name of Allah, the most gracious, the most merciful."

ANSWER: The **basmala** [or **Bismillah** al-Rahman al-Rahim]

7. This man's foreign minister arranged the Agreement of Saint-Jean-de-Maurienne to carve out Middle Eastern claims in the wake of the Sykes-Picot Agreement. For 10 points each:

[10] Identify this leader who upset nationalists by failing to address the broken London Pact.

ANSWER: Vittorio **Orlando**

[10] After the war, Orlando initially supported this man, but realized that was a bad idea after his supporters murdered socialist Giacomo Matteotti. This Fascist later became dictator of Italy.

ANSWER: Benito **Mussolini**

[10] Orlando rallied Italy after this crushing defeat in 1917, which saw Otto Hahn implement chemical warfare to aid German troops. It is also known as the 12<sup>th</sup> Battle of the Isonzo.

ANSWER: Battle of **Caporetto**

8. This phenomenon was originally discovered during its namesake's investigation of van der Waals forces. For 10 points each:

[10] Identify this effect, wherein two barely-separated plates in a vacuum exert a force on each other.

ANSWER: Casimir effect [or Casimir-Polder force]

[10] The Casimir effect acts through the virtual type of these particles. These particles are the quanta of light.

ANSWER: photons

[10] The quantum electromagnetic field generating the Casimir effect can be considered as having undergone this process. This process takes fields to operators, in contrast to a similar transformation of Poisson brackets into commutators.

ANSWER: second quantization [or canonical quantization, prompt on partial answer]

9. Answer the following about the geography of Italian pasta dishes, for 10 points each.

[10] This capital of Liguria is known for a pasta dish consisting of basil pesto, string beans, and potatoes. An Italian-American form of dry salami containing fennel seed and wine is also named for this city.

ANSWER: Genoa

[10] The southernmost region of Italy is this island, known for pasta with sardines, pine nuts, and raisins. Its Catania region, which includes Messina and Syracuse, popularized a rigatoni dish with eggplant and ricotta salata.

ANSWER: Sicily

[10] This region of Italy produces thick whole wheat noodles called *bigoli*, which are often served with an anchovy sauce. Risotto in this region is traditionally made with *Vialone Nano* rice, and it produces *Soave* white wine.

ANSWER: Veneto

10. Answer the following about fictionalized accounts of the Khmelnytsky Uprising, for 10 points each.

[10] Bohdan Khmelnytsky is a prominent character in *With Fire and Sword*, the first novel in a trilogy by Henryk Sienkiewicz, who hailed from this country.

ANSWER: Republic of Poland [or Rzeczpospolita Polska]

[10] This Polish-Jewish author chronicled the rise of the messianic Sabbatean cult after the Khmelnytsky Uprising in his first novel *Satan in Goray*. His other novels include *The Family Moskat* and *The Magician of Lublin*.

ANSWER: Isaac Bashevis Singer

[10] This other Yiddish-speaking author dealt with the Khmelnytsky Uprising in his novel *Kiddush ha-Shem*. He wrote the play *God of Vengeance* and a novel about fraught intermarriage between Jews and Catholics, *East River*.

ANSWER: Sholem Asch

11. One way of imaging cells is by sending in beacons of this type, then photobleaching everything else that would give off light. For 10 points each:

[10] Identify these nifty substances, which can be formed by precipitating an acid containing chlorine and the namesake element. When that element is in this form, it notably has a much lower melting point than the pure metal.

ANSWER: gold nanoparticles [accept colloidal gold, prompt on partial answer]

[10] Gold nanoparticles can be used for cell imaging because they undergo this process, in which a substance absorbs light and quickly emits light of a lower wavelength. It is contrasted with phosphorescence.

ANSWER: fluorescence [accept word forms]

[10] Gold nanoparticles can be used to create one of these structures. They form when head groups stick to a surface, and then tail groups act to form a sheet with long-range order.

ANSWER: self-assembled monolayers [or SAMs]



12. This character eyes grocery boys and asks: “Who killed the pork chops? What price bananas? Are you my Angel?”. For 10 points each:

[10] Name this character who is called a “lonely old courage-teacher” in a poem that asks “Which way does your beard point tonight?”.

ANSWER: (Walter ) “Walt” **Whitman**

[10] That fictionalized version of Walt Whitman appears in “A Supermarket in California” by this Beat poet of “Howl”.

ANSWER: (Irwin) Allen **Ginsberg**

[10] Every two or three lines of the final section of Ginsberg’s “Howl” repeats this five-word phrase.

ANSWER: “**I’m with you in Rockland**”

13. While campaigning against this demographic group, appropriately-named Princeton professor James McNutt McElroy accused literally every resident of Wisconsin of treason. For 10 points each:

[10] Name this American ethnic group whose vilification during World War I led to absurd jingoistic neologisms like “liberty steaks,” “liberty cabbage,” and best of all, “liberty measles.”

ANSWER: **German**-Americans

[10] Anti-German sentiment was further fueled after this 1916 incident, in which German-trained agents triggered a massive explosion at a munitions store on the namesake pier in Jersey City.

ANSWER: **Black Tom** Incident

[10] Wilson reconciled anti-German isolationists with anti-German interventionists by naming Newton Baker as Secretary of War. Baker was a longtime mayor of this city, whose civic challenges include manage the oft-igniting Cuyahoga River.

ANSWER: **Cleveland**

14. This quantity can be found pretty quickly using Newton’s method if you know the value of vega. For 10 points each:

[10] Identify this quantity, which, when plotted against strike price, often displays a namesake “smile.” This forward-looking value is derived from the prices of certain financial instruments.

ANSWER: **implied volatility** [prompt on partial answer]

[10] Implied volatility can be figured out by looking at the prices of these contracts. The “call” variety of them gives the holder the right to buy the underlying at a certain price at some time in the future.

ANSWER: **options**

[10] This formula, later improved by Robert Merton, prices options by assuming that the log returns are a random walk with constant volatility, in a constant interest-rate environment.

ANSWER: **Black-Scholes**-Merton model

15. In the center-left of this painting, a weird creature with one blue and one yellow wing sits on a die. For 10 points each:

[10] Name this colorful, chaotic work by Joan Miro, perhaps the most popular of his Surrealist period. At its right, two cat-like creatures that are joined by a wire dance under a blue table on which sits a green globe and a goldfish.

ANSWER: **Harlequin’s Carnival** [or **Carnival of Harlequin**; or **Carnaval d’Arlequin**]

[10] In one painting, Joan Miro showed a dog sitting near to a ladder, barking at this object. This object appears in the upper right corner of Van Gogh’s *The Starry Night*.

ANSWER: the Earth’s **moon** [or a crescent **moon**, I suppose, since it’s crescent in both]

[10] Miro’s first Surrealist painting was this one depicting his farm in Montroig. A snail and chicken stand near a tree on the right that is growing an ear; and French, Catalan, and Spanish flags grow out of the tree on the left.

ANSWER: *The* **Tilled Field** [or *La* **terre labourée**]

16. After Terry Lennox's purported suicide, this character is hired by Howard Spencer to track down the alcoholic writer Roger Wade in *The Long Goodbye*. For 10 points each:

[10] Name this Los Angeles-based private eye, who is hired by General Sternwood to protect his daughter Carmen, in his most famous appearance.

ANSWER: Philip **Marlowe**

[10] This Victorian author created the gardening-obsessed detective Sergeant Cuff in his early mystery novel *The Moonstone*.

ANSWER: (William) Wilkie **Collins**

[10] Another famous literary detective is Jules Maigret, who was created by Georges Simenon, an author from this country. A non-Danish author from this country wrote about Amélie's time working for the Yumimoto company in *Fear and Trembling*.

ANSWER: Kingdom of **Belgium**

17. The speaker of this philosophical work suggests the possibility that everything that he perceives is an illusion created by an "evil demon". For 10 points each:

[10] Name this 1641 work that uses rationalist logic to overcome skepticism about the existence of God and the external world.

ANSWER: ***Meditations on First Philosophy*** [or ***Meditationes de prima philosophia***; or ***Méditations Métaphysiques***]

[10] In *Meditations on First Philosophy*, this French philosopher adjusted his earlier statement of "I think, therefore I am" into "I am a thinking thing".

ANSWER: René **Descartes**

[10] In *Meditations on First Philosophy*, Descartes explains that error results when this infinite human capacity exceeds the finite human powers of intellect or understanding.

ANSWER: the **will** [or le **volonté**; do NOT prompt on or accept "volition", as that means something different for Descartes]

18. This aria is addressed to the fronds of a plane tree by the title character of the opera in which it appears. For 10 points each:

[10] Name this first aria from the 1738 opera *Serse*. It sank without a trace in the 18<sup>th</sup> century, until its revival in the 19<sup>th</sup> century suddenly caused it to become one of its composer's best-known melodies.

ANSWER: "**Ombra mai fu**" [or "**Never was a shade**"; DO NOT READ THIS PROMPT ALOUD: prompt on "Handel's Largo"]

[10] "Ombra mai fu" is sometimes called the namesake "Largo" of this German Baroque composer whose non-operatic works include "Zadok the Priest" and *Messiah*.

ANSWER: George Frideric **Handel** [or Georg Friedrich **Handel**]

[10] "Ombra mai fu" is often sung in modern productions by female mezzo-sopranos. But it was originally sung by Caffarelli, who was one of these male singers prized in the 18<sup>th</sup> century, the most famous of which was Farinelli.

ANSWER: **castrati** [or **castrato**]

19. The Kepler mission searches for these objects. For 10 points each:

[10] Identify these entities, which are called “Goldilocks” when they’re within the hospitable zone. These objects are easiest to detect when they’re Jupiter-sized, and they orbit stars that aren’t our Sun.

ANSWER: exoplanets [or extrasolar planets]

[10] One unresolved question about exoplanets is why so many of them have high values of this quantity. Tidal circularization reduces it over time, and the vector named for this quantity is proportional to the LRL vector.

ANSWER: eccentricity

[10] These other extrasolar objects are difficult to distinguish from sub-brown dwarfs. Cha 110913 is probably an example of these planets that lie in interstellar space, not in orbit around any star.

ANSWER: rogue planets

20. Members of this clan include the general Prithvaraj of the Chauhan dynasty, who won the Battle of Tarain against Mohammed of Ghor. For 10 points each:

[10] Identify this people whose princess Harka Bai became Mariam-uz-Zamani after a matrimonial alliance in 1562.

ANSWER: Rajputs

[10] Mariam-uz-Zamani married this Mughal emperor, the son of Humayn, who won the 2<sup>nd</sup> Battle of Panipat.

ANSWER: Akbar I [or Akbar the Great]

[10] Mohammed of Ghor’s general, Qutb al-Din Aibak, led a group of Mamluks in establishing the long-ruling sultanate of this city. Its ruler Hemu was defeated by Akbar at Panipat.

ANSWER: Delhi