

## ACF Nationals 2016

Packet by WUSTL (Seth Ebner, Charles Hang, Richard Yu) and Virginia (Vasa Clarke, Jack Mehr, Lawrence Simon, Eric Xu)

### Tossups

1. In one book, this thinker begins his chapter “Time, Space, and Modernity” by quoting a letter of the ambassador Ogier de Busbecq, discussing how men called talismans inefficiently use water-clocks to tell the time of day. This man’s Gottesman lectures were published in book form as *History: Remembered, Recovered, Invented*. Along with his supporter Daniel Pipes, he was compared to Darth Vader by John Esposito. In the *Wall Street Journal*, he claimed that August 22, 2006 was a likely day for Iran to nuke Israel. This man controversially translated the noun *thawra* as referring to the rising up of a camel. This author of the 2002 book *What Went Wrong?* wrote an article in *The Atlantic Monthly* ending with a section titled for a phrase later popularized by Samuel Huntington, “A Clash of Civilizations.” For 10 points, name this historian who wrote “The Roots of Muslim Rage” and “The Question of Orientalism,” a prominent opponent of Edward Said.

ANSWER: Bernard Lewis

2. The founder of this dynasty introduced the *jinshi* category to the exam system, and built both the Xuandu Abbey and the Daxingshan Monastery. This dynasty’s downfall began with revolts like that of Zhai Rang, who busted granaries to feed the peasants, in order to aid the prophecy of Li Mi. This dynasty’s founder promulgated a 500-article legal code which limited harsh punishments like the cangue, and started the “Rule of Avoidance” to prevent officials from ruling their native provinces. This dynasty invaded the Champa kingdom to begin the third domination of Vietnam. It first rose to power by overthrowing the Bei Zhou, or Northern Zhou, and promulgated the Kaihuang legal code, before seeing its downfall at the Battle of Salsu River. This dynasty was founded by Wen-di, who started the project to link the Yangtze and Yellow Rivers with the Grand Canal. For 10 points, name this dynasty that unified China but lasted only 37 years before falling to the Tang dynasty.

ANSWER: Sui Dynasty [or Sui chao]

3. The main character of this story claims that he is “no weakling” and if he “slapped someone he’d see all the way to Cracow.” Another character in this story first appears barefoot, pinning clothes to a line in her clay house, and shortly after demands a fifty-guilder dowry be paid to her. In this story, Rietze tells the protagonist that his father and mother have come back from the dead. This story’s main character is told that a “thick mire” exists in place of God in a vision and later has a dream in which he sees his wife in a shroud. The protagonist becomes a wandering storyteller at the end of this story, which was published in *Partisan Review* in a translation by Saul Bellow. After Elka reveals that all six of her children are illegitimate, this story’s title character is visited by the “Spirit of Evil,” who convinces him to put urine in the town’s bread. For 10 points, the residents of Frampol often take advantage of the title baker in what short story by Isaac Bashevis Singer?

ANSWER: “Gimpel the Fool”

4. This phenomenon gives its name to a device usually consisting of a tube of viscous fluid inside of which is a mass on a spring, and which is often used on dual spin spacecraft. That device is a “damper” named for this phenomenon and is often used as a passive means for energy dissipation. One instance of this phenomenon is usually divided into longitudinal and oblique components, depending on whether its components are parallel or perpendicular to the ecliptic. That astronomical instance of this motion was first noticed by James Bradley in the 18th century, who determined that it has a period of 18.6 years. Because the Earth is not entirely solid, Seth Carlo Chandler observed a non-zero value for the angle of this movement for Earth. Precession, spin and this motion can be modeled with Euler Angles. For 10 points, name this slight “nodding,” or “wobble,” of an axis of rotation.

ANSWER: **nutation**

5. This book discusses “Corinthian foliage” adorning pillars whose height consists of ten diameters to suggest that “established custom” is the only reason why there should not be five hundred other orders of architecture. It uses the legend of a monk telling Joanna of Castile how to revive her dead king as an example of “fruitless hopes” preventing people from returning to “natural tranquility.” In discussing a planned “civil society,” it warns against the “Man of System,” who builds society akin to placing pieces on a chessboard. This book contrasts voluntary beneficence with enforced justice in a section that also compares human sympathy to an “impartial spectator” observing one’s behavior in the mind. Largely presenting a systematic theory of humanity’s nature, much of it was inspired by the author’s teacher Francis Hutcheson. For 10 points, name this book on ethics by Adam Smith.

ANSWER: *The **Theory of Moral Sentiments***

6. This artist included a giraffe in a fresco which he made for the Medici Villa at Poggio a Caiano called *The Triumph of Caesar*, which was finished by his fellow Florentine artist Alessandro Allori. A man with well-defined buttocks drops a severed head in one of this artist’s *grisaille* frescoes on the life of John the Baptist that he made for the Cloister of the Scalzo. His version of the Last Supper contains a representation of the Trinity above two servants who stand on a balcony overlooking the central scene. *Putti* hold slabs from Mary’s tomb as they surround a rising Mary in a painting this artist created that was partly based on his *Passerini Assumption*. The most famous work of this artist of the *Panciatichi Assumption* was originally supposed to contain St. Bonaventure instead of St. Francis. In that painting, two angels wrap their arms around the legs of the title figure, who holds Jesus and stands on a pedestal decorated with some mythological monsters. For 10 points, name this “faultless painter” of *Madonna of the Harpies*.

ANSWER: Andrea **del Sarto** [or **Andrea d'Agnolo** di Francesco di Luca di Paolo del Migliore; or Andrea **Lanfranchi**; or Andrea **Vannucchi**; prompt on "**Andrea**"]

7. An exception to this legal requirement exists when there are “exigent circumstances,” first established by the case of *Warden v. Hayden*, and extended by *Kentucky v. King*. The conviction of Theodore Payton was overturned in 1980 because a New York law did away with this constitutional requirement in the case of felonies. Valid compliance with this legal obligation requires a “neutral and detached” decision-maker who is not part of the “competitive enterprise,” according to *Coolidge v. New Hampshire*. The doctrine of hot pursuit describes occasions when this requirement does not apply. Neither this requirement nor the existence of probable cause must be met to conduct a Terry stop, only a reasonable suspicion of criminal activity. The person or place to be searched must be described “particularly” to satisfy this requirement of the Fourth Amendment. For 10 points, name this requirement that forces police to obtain a namesake document from a magistrate to conduct a search.

ANSWER: search **warrant** requirement [accept any descriptive answer such as: “getting a **warrant**”, prompt on “Fourth Amendment” or “illegal search and seizure” or “probable cause”]

8. Proteins that bind this molecule typically have a three-part motif consisting of spaced GXXXXGK, DXXG, and NKXD consensus sequences. One protein that breaks down this molecule is inhibited by both Pseudomonas exotoxin A and diphtheria toxin. Disassembly of the COPII coat in new vesicles is triggered by ARF and Sar1p breaking down this molecule. In the nucleus, its breakdown causes importins to dissociate from, and exportins to associate with, their cargo. The breakdown of this molecule causes the counterclockwise rotation of the small ribosomal subunit by the protein EF2. GEFs [“Geffs” with a hard “g”] promote the dissociation of one product of its breakdown, and its breakdown is activated by GAPs [“gaps”]. Rab and Ran, which are part of the Ras superfamily, break down this molecule. Seven-transmembrane receptors are coupled to heterotrimeric proteins whose alpha subunit binds to and breaks down this molecule, called G proteins. For 10 points, name this purine triphosphate that is not ATP.

ANSWER: **GTP** or **guanosine triphosphate**

9. Along with his father, this man bought the magazine *American Agriculturist*, and used it to further his platform of increased education and lower farm taxes. This man created a unified enforcement agency headed by Elmer Irey. His subordinates, Randolph Paul and John Pehle, helped him formulate a report to the president that led to formation of the War Refugee Board. He ascended to his highest office after the resignation of William Woodin. This man’s father of the same name served as an ambassador to the Ottoman Empire, in which role he exposed the Armenian genocide. This author of the book *Germany Is Our Problem* proposed that the Ruhr must be stripped bare so it could no longer serve as an industrial area, which was his namesake Plan. For 10 points, name this Secretary of the Treasury who funded agencies like the Public Works Administration while serving from 1934 to 1945.

ANSWER: Henry **Morgenthau, Jr.**

10. Many references to this character were changed after his creator sold his house to James and Eliza Davis. This character claims that the worst thing about women is that “a very little thing serves to call up some long-forgotten feeling,” but that the best thing “is that it never lasts!” He reveals that some papers are hidden in a chimney in the penultimate chapter of the novel, which is titled for his “last night alive.” This character sends Noah Claypole to spy on a woman who meets with Rose Maylie. He often admonishes others to not “peach” on him, and was likely inspired by the real-life Ikey Solomon. This character works with Monks to bring about Nancy’s death, and he beats the Artful Dodger when he fails to bring another character back from a robbery. For 10 points, name this Jewish leader of a gang of street urchins who attempts to corrupt Oliver Twist.

ANSWER: **Fagin**

11. This composition’s last movement features a descending idea in D at a slightly faster tempo than a descending idea in the tonic key, the latter of which is shared between the entire string section. Its third movement opens with the strings playing a *moto perpetuo* before two oboes enter playing the first instance of a theme that later takes on a quarter, dotted eighth, sixteenth, quarter, quarter, eighth, half rhythm. That movement of this piece employs consecutive descending fourths from E to B in a fanfare motif that develops into an E major march theme. Many orchestras use a bass clarinet to play a descending four-note passage in its first movement, which opens with a low bassoon solo and features a loud crash at the beginning of the development section, immediately after a passage marked with six p’s. Unusually, this symphony’s final movement is marked *adagio lamentoso*, and its second movement is a 5/4 “limping waltz”. For 10 points, name this final symphony by Pyotr Tchaikovsky.

ANSWER: **Pathétique** *Symphony in B Minor, Op. 74* [or **Tchaikovsky**’s Symphony No. **6** or word forms like **Tchaikovsky**’s **Sixth**; accept **Tchaikovsky**’s **Opus 74**; “Tchaikovsky” is not needed after his name is read]

12. When this city was shaken by a namesake series of earthquakes in 1570, its last independent ruler called in a group of scientists to hold a council on seismology. One ruler of this city was known as “the North Wind” and “the Diamond” due to his icy personality. A war named for this city ended with the Treaty of Bagnolo, by which this city lost Rovigo to an alliance formed by Sixtus IV. This city, which lost the Salt War, was led by a man who allied with France to win the Battle of Ravenna. A duke of this city made it a founding member of the League of Cambrai and was attacked at Polesella—that duke was the last person to marry Lucrezia Borgia. He was also the son of this city’s duke Ercole I. The Council of Basel was transferred to this city in 1437 by Pope Eugenius IV. For 10 points, name this city led during the Renaissance by the d’Este family, which is hyphenated in the name of an ecumenical council with Florence.

ANSWER: **Ferrara**

13. The charge transfer complex between deca-methyl-ferrocene and an ethylene bonded to 4 of this species forms an inorganic molecular ferromagnet. A nickel(0) tetrakis(phosphite) complex is converted to a nickel(II) hydride complex in the catalytic cycle of the addition of this species to an alkene. Five of these ligands and one nitric oxide ligand binds to iron in the vasodilator sodium nitroprusside. This species nucleophilically attacks the carbonyl of an aldose in a procedure for lengthening monosaccharides named for Kiliani and Fischer. This strong pi acceptor ligand is isoelectronic to both nitric oxide and carbon monoxide. This species' toxicity is caused by it binding to cytochrome c oxidase, thus disrupting ATP production. Nitriles are organic compounds containing, for 10 points, what species containing a carbon triple bonded to a nitrogen?

ANSWER: **cyanide** anion [accept **CN** before the giveaway, prompt afterwards]

14. The first pope to compile a list of these objects was Pope Gelasius, though the spurious *Decretum Gelasianum* may not have been issued by him. In 1571, a "Sacred Congregation" was formed to inspect these objects, which were often said to be "*donec corrigatur*." The *Officiorum ac Munerum* decree gave both the cardinal vicar and the Master of the Sacred Apostolic Palace the power to regulate the production of these things. Ten rules for examining these things were laid out in a decree issued in the wake of the Council of Trent by Pope Paul IV. The Latin phrase *Nihil obstat*, meaning "nothing stands in the way," is added to these objects when it is deemed that they are not harmful to morals. Subsequently, the word *imprimatur* may be added to them. The Roman Catholic Church once maintained an index of, for 10 points, the "banned" kind of what objects?

ANSWER: **books** [accept banned / forbidden / allowed **books**, accept synonyms for books, such as **treatises**, **writings**, etc.]

15. A collection of essays by Lewis Lapham intended as "Variations" on this poem discusses Timothy McVeigh in its entry "Bomb-O-Gram." This poem parenthetically describes "How serious people's faces have become." "Bracelets with so many amethysts" and "rings sparkling with magnificent emeralds" are worn by characters in this poem, which describes a ruler who has assembled a scroll "replete with titles and imposing names." At its conclusion, one of this poem's two speakers is anxious because "night has fallen," and "some who have just returned from the border" say that the title figures are gone. Members of an empire assemble in a forum at the beginning of this poem, which calls the title group "some kind of solution." For 10 points, name this poem by Constantine Cavafy that gave its name to a novella about Colonel Joll torturing the Magistrate authored by J. M. Coetzee.

ANSWER: "**Waiting for the Barbarians**"

16. This quantity is joined by 3 similar quantities representing a neutral scalar, a pseudoscalar, and a charged scalar in a “two-doublet” model. This quantity must be less than square root of 8 pi times one-third times root 2 times the Fermi constant; violation of that bound derived by Lee, Quigg, and Thacker means that high-energy W-W scattering would violate unitarity. This quantity equals the square root of 2 times a self-coupling parameter times the vacuum expectation value of a certain so-called “mexican hat” potential. The fact that this quantity is much smaller than the Planck mass is one statement of the hierarchy problem. Experiments at the LEP collider gave a lower bound of 114 GeV for this quantity, which was determined to be about 125 GeV by the ATLAS and CMS experiments. For 10 points, name this mass whose value was estimated in 2012 by the Large Hadron Collider.

ANSWER: **Higgs mass** [or equivalent answers indicating the “**mass** of the **Higgs** boson”]; do not accept or prompt on “mass”]

17. In the mid-20th century, hundreds of women in this country were forced to undergo symphysiotomies, in which the pelvis is permanently damaged to circumvent the need for a C-section. Nearly 800 children in this country died in the Mother and Baby Home operated by the Bon Secours order. A group of old volunteer soldiers in this country known as the “Gorgeous Wrecks” was decimated in a bloody battle here at Mount Street Bridge. The former wife of a Polish count participated in an uprising in this modern-day country; that was the politician Constance Markievicz. In this country, a mass grave was found in High Park housing the remains of women forced to perform uncompensated labor in its Magdalene laundries. In this modern-day country, a failed German weapons shipment was organized by Roger Casement, and a politician lost support after revelation of his affair with Kitty O’Shea. For 10 points, identify this modern-day country where home rule was sought by Charles Parnell.

ANSWER: Republic of **Ireland**

18. An uncommon myth describes this figure’s clash with the Great Tom Cat under the *ished* tree. Because he was born from his mother’s saliva, Romans believed his name meant, “he who was spat out.” Priests created wax sculptures of this character in order to burn them while reciting spells from a text found in the Bremner-Rhind Papyrus. This character has a head made of flint, and he is sometimes depicted with twelve heads that represent the souls that are freed when he is defeated. During the tenth hour of the *Book of Gates*, fourteen deities use magical nets to control this figure while Geb ties chains around him. Mehen’s coils defend against this creature, who often clashes with Set and other gods standing at the prow of the solar barque. For 10 points, name this serpent god who attacks Ra each night.

ANSWER: **Apophis** [or **Apep**; or **Apepi**; or **Aapep**]

19. In his final appearance, this character's wife is given a sapphire, while this man is made a chevalier for giving a carriage to a man who appears to be a lunatic. In another appearance, this character frequents the "Long Rooms" and earns a living playing whist. This character's two children, Maria and a namesake son, die of smallpox at the conclusion of a novel in which he takes three Sinhalese pearl fishers to Marmarice Bay. Before he recaptures a cutter named *Witch of Endor* in *Flying Colours*, this character and his coxswain Brown escape from a false trial and stay at the chateau of the Comte de Gracay. This man develops affection for Lady Barbara in the first novel to feature him, *The Happy Return*, in which he sinks the *Natividad* while captaining the HMS *Lydia*. Admiral Nelson inspired, for 10 points, what British naval officer created by C. S. Forester?

ANSWER: **Horatio Hornblower** [accept either underlined answer]

20. This album's final track was originally recorded as the penultimate track on *Circle in the Round* and opens with an improvisation on the standard "I Fall In Love Too Easily." This album's third day of recording featured an 11-person rhythm section that included bass clarinetist Bennie Maupin and 19-year-old drummer Lenny White. This album opens with a track written by Joe Zawinul that was never performed live, and it ends with a song by Wayne Shorter. An outtake track titled for this album's guitarist, John McLaughlin, precedes a song titled for its bandleader "Run[ning] the Voodoo Down" that opens its fourth side. This album continued its bandleader's break from traditional jazz in favor of electric instruments and a more improvisational style that was first seen on the album *In a Silent Way*. For 10 points, name this fusion Miles Davis album that features the songs "Pharaoh's Dance" and "Sanctuary."

ANSWER: **Bitches Brew**

Tiebreaker: The internal energy of a gas of these particles equals a constant times volume times temperature raised to the fourth power. Unlike heavier particles with the same spin, the Lorenz gauge is *not* automatically satisfied when computing the polarization states of this particle; instead the Coulomb gauge is used, leading to the result that these particles have only two polarization states. Minus  $i$  times the Minkowski metric divided by the square of the exchanged four-momentum equals the propagator associated with this particle. In quantum electrodynamics, the exchange of virtual examples of these particles mediates electromagnetic interactions. Interactions between these particles and metals include Compton scattering and an effect whose explanation won Albert Einstein a Nobel Prize. For 10 points, name these massless particles, the quanta of light.

ANSWER: **photons**

## ACF Nationals 2016

Packet by WUSTL (Seth Ebner, Charles Hang, Richard Yu) and Virginia (Vasa Clarke, Jack Mehr, Lawrence Simon, Eric Xu)

### Bonuses

1. These were the first data structures invented for which the technique of tree rotations were used, which minimizes their height. For 10 points each:

[10] Name these self-balancing binary search trees which are named after their two inventors.

ANSWER: **AVL** trees [or Georgy **Adelson-Velsky** and Evgenii **Landis** tree]

[10] Because it is height-balanced, the tight big-O runtime for AVL trees is proportional to this number of  $n$  nodes. The naive way to search through a list, and not the binary search, also has this asymptotic runtime.

ANSWER: **linear** [or big O of **n**]

[10] You can kind of get a self-balancing binary search tree by implementing this data structure, a tree whose shape is probabilistic. Aragon and Seidel first invented this structure whose properties are a function of a random variable..

ANSWER: **treap** [prompt on randomized binary search trees]

2. The last of these poems ends with God stopping the “pink boat” of a man. For 10 points each:

[10] Name these three poems, the first of which begins “Men placed your body in an icy niche, but I

will lower it to the humble, sunny earth.” They were inspired by the suicide of Romelio Ureta.

ANSWER: ***Sonnets of Death*** [or ***Sonetas de la Muerte***]

[10] The *Sonnets of Death* won fame for this woman in Chile’s Floral Games, a literary contest, in 1914. She took her pen name from an Occitan poet who won the Nobel in 1904.

ANSWER: Gabriela **Mistral** [or Lucila **Godoy** y Alcayaga]

[10] An essay by Gabriela Mistral concludes that this word describing the “virile” force in Jose Marti’s poems is “literary babble turned bombastic by its sheer force,” and that it is a “word that has been stained, like democracy.” This term also identifies the artistic movement inspired by the “cultural cannibalism” of Oswald de Andrade.

ANSWER: **tropicalismo** [or **tropicalism**; accept **tropicalia**]

3. Answer the following about reactions that occur at the alpha-carbon of a carbonyl group, for 10 points each:

[10] Deprotonation of a ketone at the alpha position causes it to convert to an enol. The resulting equilibrium between ketone and enol is given this name.

ANSWER: **tautomerism** [or **tautomerization**]

[10] In the Hell-Volhard-Zelinsky reaction, this functional group is brominated at the alpha position. “Derivatives” of this functional group include amides and esters.

ANSWER: **carboxylic acids**

[10] In this reaction, an ethyl ester of the reaction's namesake ketone body is alkylated at the carbon alpha to both of its carbonyl groups. Addition of acid and heat then produces an alpha-alkylated ketone.

ANSWER: **acetoacetic ester** synthesis [accept words like “alkylation” or “reaction” in place of “synthesis”]



4. This composition features an allegro section in its first movement that is notably scored for only flutes and oboes. For 10 points each:

[10] Identify this symphony whose name derives from its second movement, which features “Turkish” instruments, timpani rolls, loud outbursts in A flat major, and trumpets playing fanfares and bugle calls.

ANSWER: Military Symphony [or Joseph Haydn's Symphony No. 100 in G major; or Hoboken I/100]

[10] The *Military Symphony* is one of the twelve symphonies written by Joseph Haydn during his time in this English city. Ralph Vaughan Williams titled his second symphony for this city, whose Royal College of Music he attended.

ANSWER: London

[10] This *London* symphony, the first listed in the Hoboken catalogue, has the oboes quote the aria “Viva la libertà” from Mozart’s *Don Giovanni* in its final movement. It also includes a bassoon “fart” in its second movement.

ANSWER: Symphony No. 93

5. One attempt to kill this man resulted in the killing of a Moroccan waiter named Ahmed Bouchiki and his musician brother Chico Bouchiki in Lillehammer, Norway. For 10 points each:

[10] Name this terrorist, known as the Red Prince, who led Force 17 and served as chief of security for Fatah.

ANSWER: Ali Hassan Salameh [prompt on Abu Hassan, his codename]

[10] Operation Wrath of God against Salameh was authorized by this Israeli Prime Minister, known as the “Iron Lady” of Israeli politics. She resigned in the aftermath of the Yom Kippur War.

ANSWER: Golda Meir [or Golda Meyerson; or Golda Mabovitch]

[10] As the representative of British Mandate Palestine, Meir attended a 1938 conference at this city convened by FDR to gain support in accepting Jewish refugees. Another set of treaties signed here brought an end to an eight-year conflict that included the Philippeville Massacre.

ANSWER: Evian, France [or Evian-les-Bains; accept the Evian Conference or Evian Accords]

6. This series originally contained 106 photographs, but most were destroyed by *Life* magazine. For 10 points each:

[10] Identify this series of nearly a dozen photographs depicting the Omaha Beach invasion on D-Day. The artist’s autobiography takes its name from the caption of some of these photos, “slightly out of focus.”

ANSWER: *The Magnificent Eleven*

[10] *The Magnificent Eleven* is a series by this Hungarian photographer, who captured a “loyalist militiaman at the moment of death” in *The Falling Soldier*.

ANSWER: Robert Capa [or Endre Friedmann]

[10] In 1947, Capa and John Steinbeck toured this country, producing a photo-illustrated “Journal” of the experience that included some haunting images of the ruins of Stalingrad.

ANSWER: the Soviet Union [or the USSR; or Russia; or the Union of Soviet Socialist Republics; or the Soyuz Sovetskikh Sotsialisticheskikh Respublik; or the CCCP; or the SSSR]

7. The last of these events involved one party calling the other a “Crypto-Nazi,” drawing the response “Now stop calling me a Crypto-Nazi or I’ll punch you in the face you goddamn queer, and you’ll stay plastered.” For 10 points each:

[10] Name these lively exchanges between the editor of *National Review* and the author of *Myra Breckinridge* that took place on ABC in the lead-up to the 1968 Democratic and Republican National Conventions.

ANSWER: debates between Gore Vidal and William F. Buckley, Jr.

[10] Of this other author, Vidal once stated “I truly loathed [him]. The way you might loathe an animal. A filthy animal that has found its way into the house.” This author wrote the nonfiction novel *In Cold Blood* and *Breakfast at Tiffany’s*.

ANSWER: Truman Garcia Capote [or Truman Streckfus Persons]

[10] After the debates, Buckley continued to helm this PBS program on which he held additional debates with intellectuals like Noam Chomsky and John Kenneth Galbraith. Its theme music was the Brandenburg Concerto No. 2 in F Major.

ANSWER: Firing Line

8. For an optical resonator, this quantity is defined as the ratio of the free spectral range to the bandwidth of its resonance peaks. For 10 points each:

[10] Name this quantity. An etalon with very narrow peaks on its transmitted intensity versus input wavelength graph has a high value of this quantity.

ANSWER: coefficient of finesse

[10] The coefficient of finesse is an important parameter in describing the Fabry-Perot type of these devices. In February 2016, the LIGO project announced that it had successfully used an example of the Michelson type of these devices to detect a gravitational wave.

ANSWER: interferometer

[10] The finesse of a Fabry-Perot interferometer equals 4 times this quantity divided by one minus this quantity squared. This quantity symbolized  $R$  can be computed via the Fresnel equations.

ANSWER: reflection coefficient or reflectance

9. One of this author’s poems describes the speaker wearing an uncomfortable “stiff, brocaded gown” and notes that “the man who should loose me is dead / Fighting with the Duke in Flanders.” For 10 points each:

[10] Name this author who concluded that poem by asking “Christ! What are patterns for?”

ANSWER: Amy Lowell [or Amy Lawrence Lowell; prompt on partial answer]

[10] Lowell included “Twenty-Four Hokku on a Modern Theme,” “Song for a Viola d’Amore,” and the patriotic poem “Lilacs” in this Pulitzer-winning collection.

ANSWER: What’s O’Clock?

[10] Lowell's prominence in the Imagist movement led this former Imagist to mockingly label it “Amygism”. He compared “the apparition of these faces in the crowd” to “petals on a wet black bough” in his Imagist poem “In a Station of the Metro”.

ANSWER: Ezra Pound [or Ezra Weston Loomis Pound]

10. This structure was constructed between 1901 and 1907 after a 25,000 pound reward failed to motivate the “effectual extermination” of a population introduced by the First Fleet and Thomas Austin in 1788. For 10 points each:

[10] Name this barrier that extends from Wallal Downs to Jerdacuttup in its longest form in Western Australia.

ANSWER: the rabbit-proof fence [or State Barrier Fence of Western Australia; or State Vermin Fence; prompt on the “Emu Fence”, accept any answer that mentions both a “fence” and “rabbis”]

[10] In *The Sand of Windee*, Arthur Upfield described a perfect murder that was imitated in this series of three murders committed by Snowy Rowles along the rabbit-proof fence in the 1930s.

ANSWER: Murchison murders or killings

[10] The most commonly-used creatures for pulling drays along the rabbit-proof fence were these pack animals ideal for Western Australia due to their ability to go long distances without water. They come in Bactrian and Dromedary types.

ANSWER: camels [or camelus or cameli]

11. For 10 points each, answer the following about Hindu facial markings.

[10] Hindu women commonly wear this small, red, dot on their foreheads. It is usually either made of paste or a jewel, and is often interpreted as the third eye of consciousness.

ANSWER: bindi

[10] Hindus often honor this preserver god by applying V or U shaped facial markings, or *tilaka*, on their foreheads with a third line or dot in between the V or U.

ANSWER: Vishnu

[10] On the other hand, Shaiva Hindus will often apply a *tilaka* consisting of three horizontal lines of this sacred ash on their foreheads. Its strong aroma partly comes from the fact it is made by burning the *tulasi* plant.

ANSWER: Vibhuti [or Bhasma or Thiruneeru or Vibhooti]

12. This character names a play featuring Ignatius Dullfeet, who represents Austrian dictator Engelbert Dollfuss, and Ernesto Roma, who represents Ernst Rohm. For 10 points each:

[10] Name this gangster who leads the Cauliflower Trust to control Chicago’s vegetable trade.

ANSWER: Arturo Ui [accept either underlined portion; accept *The Resistible Rise of Arturo Ui*; accept *Der aufhaltsame Aufstieg des Arturo Ui*]

[10] This playwright fictionalized Adolf Hitler as the title ganger in his play *The Resistible Rise of Arturo Ui*. This German proponent of epic theater also wrote *Mother Courage and Her Children*.

ANSWER: Bertolt Brecht [or Eugen Berthold Friedrich Brecht]

[10] Arturo is repeatedly compared to this non-Brecht character throughout the play. Arturo’s seduction of Ignatius Dullfeet’s wife Betty mirrors a scene in which this man bares his chest and demands that a woman stab him if she does not forgive him for murdering her husband.

ANSWER: Richard, Duke of Gloucester [or Richard III; prompt on “Richard”]

13. This man frequently spoke at a spot known as “The Sandlot,” and he was lampooned in a work titled *Why I am a Heathen*. For 10 points each:

[10] Name this labor organizer and notable racist who founded the Workingmen’s Party of California.

ANSWER: Denis **Kearney**

[10] Kearney’s speeches helped lead to the passage of this piece of legislation, signed by Chester Arthur in 1882, which banned the immigration of all laborers of a certain ethnicity. It was extended by the Geary Act.

ANSWER: **Chinese Exclusion** Act

[10] Kearney visited Boston to try to get on the ballot as the Vice Presidential nominee to this man, the author of the KKK Act of 1871, which gave the government authority to suppress the Klan. This man later ran for President as the final candidate of the Greenback Party in 1884.

ANSWER: Benjamin Franklin **Butler**

14. This hero sailed to the Kingdom of Dreams, a location where the maws of Hell stand next to the gates of Heaven. For 10 points each:

[10] Name this hero who earns his nickname by ripping apart a certain animal’s jaws. He dies fighting a Teutonic Black Knight who cuts off his furry ears, which grant him strength.

ANSWER: **Lacplesis** [or **Bear-Slayer**]

[10] Lacplesis owns a sacred mirror that reflects the image of one aspect of this Balto-Slavic god of lightning and thunder, who in other stories kills the dragon Veles.

ANSWER: **Perun** [or **Perkunas**; or **Perkons**; or **Perkuons**]

[10] The witch Spidala attempts to kill Lacplesis by throwing him off the cliff of Staburadze into one of these places. In Greek myth, the monster Charybdis formed one of these things that proved hazardous to sailors.

ANSWER: **whirlpools** [accept synonyms like **vortex** or **maelstrom**]

15. The originators of this theory used a term coined by Raymond Leslie Buell in 1925 as its name. For 10 points each:

[10] Name this two-word term used by Joseph Nye and Robert Keohane to describe the detailed web of connections between societies and states, where the role of military is diminished, and there exist multiple channels by which regimes can facilitate cooperation with one another.

ANSWER: **complex interdependence** [prompt on partial answer]

[10] Nye and Keohane established the neo-version of this international relations school, which is often contrasted with realism, and advanced the democratic peace theory.

ANSWER: **liberal** [or **liberalism**]

[10] This thinker criticized Keohane’s reliance on outsider agencies like NATO in his article “The False Promise of International Institutions.” He wrote a recent book on *Why Leaders Lie*, but may be best known for his *The Tragedy of Great Power Politics*.

ANSWER: John J. **Mearsheimer**

16. A cactus-like pole extends upward towards an amorphous gray-black cloud in the foreground of this man's painting *Mama, Papa is Wounded!*, which also features his characteristic use of faint lines tying together various objects. For 10 points each:

[10] Name this French painter whose other works include *Indefinite Divisibility*.

ANSWER: Yves **Tanguy** [or Raymond Georges Yves **Tanguy**]

[10] Yet more unidentifiable objects are scattered around a Tanguy painting titled for the *Furniture* of this concept. Rene Magritte depicted a train emerging from a fireplace in a painting titled for this concept "transfixed."

ANSWER: **time** [or la **duree**; accept *The Furniture of **Time*** or ***Time** Transfixed*]

[10] Tanguy's wife Kay Sage painted a self-portrait called *Le Passage* in which the central figure is in this position. In Magritte's *Not To Be Reproduced*, both the figure representing Edward James and that figure's reflection are positioned in this way.

ANSWER: **facing away** from the viewer [accept word forms or synonyms like **looking away**; **not facing** the viewer; showing their **back to the viewer**]

17. This philosophical position is advocated by Colin McGinn, who believes that cognitive closure explains why a certain concept will never be resolved. For 10 points each:

[10] Name this philosophical position, coined by Owen Flanagan in his book *Science in the Mind*, which denies the possibility of human beings ever unraveling the "hard problem" of a certain concept.

ANSWER: New **Mysterianism**

[10] That concept is this state of awareness, which is supposedly "explained" by Daniel Dennett in a book analogizing it to humans "writing down" information, called the multiple drafts model.

ANSWER: **consciousness**

[10] Such books as *Neurophilosophy* and *Matter and Consciousness* advance this other position of consciousness, which holds that "folk psychology," or commonplace conceptions of the mind, are incorrect.

ANSWER: **eliminative materialism** [accept word forms; do not accept or prompt on "materialism"]

18. The Frank-Starling law states that this quantity increases as the end-diastolic volume or "preload" increases. For 10 points each:

[10] Name this measure of heart performance equal to the amount of blood expelled by the left ventricle in systole. This value is around 70 mL in adults, and dividing it by the end-diastolic volume gives the ejection fraction.

ANSWER: **stroke volume** [or **SV**]

[10] Multiplying this value by the stroke volume gives the cardiac output. At rest, this value is usually equal to 60 to 100 beats per minute, and it is elevated in tachycardia

ANSWER: **heart rate** or **pulse** or **HR** [prompt on things like "how fast your heart beats"]

[10] In patients with mitral regurgitation or dilated cardiomyopathy, too-rapid filling of the ventricle causes this finding on auscultation. This sound occurs during early diastole.

ANSWER: **S3** [or **third** heart sound or **ventricular gallop** or **protodiastolic gallop**; prompt on "gallop"]

19. During one of these tours, the speaker used his opponent's new title of Lord Beaconsfield to condemn him for "Beaconsfieldism," which he claimed produced nothing but financial waste. For 10 points each:

[10] Name these series of speeches which unified the Liberal Party, some of which may have been written by its speaker's campaign director, the Earl of Rosebery.

ANSWER: Midlothian campaign or tour of William Ewart Gladstone [prompt on just Gladstone]

[10] This later British Liberal leader launched the policy document "We Can Conquer Unemployment!" He's also remembered as one of the Big Four who attended the Paris Peace Conference of 1919.

ANSWER: David Lloyd George, 1<sup>st</sup> Earl Lloyd-George of Dwyfor

[10] This leader of the Liberal Party from 1956 to 1967 is remembered for successfully campaigning for Britain to abandon nuclear weapons, and writing books like *The Liberal Future*. He succeeded Clement Davies and gave way to Jeremy Thorpe as party leader.

ANSWER: Jo Grimond [or Joseph Grimond, Baron Grimond]

20. Secondary characters in this novel include the uninhibited French girl Anna le Page and the flamboyant Julian Ormerod, who hosts several parties. For 10 points each:

[10] Name this comic novel in which the proper Northerner Jenny Bunn attempts to fend off the amorous advances of Patrick Standish.

ANSWER: Take a Girl Like You

[10] *Take a Girl Like You* was written by this author of *Jake's Thing*, who won a Booker Prize for *The Old Devils*.

ANSWER: Kingsley William Amis [prompt on "Amis", do not accept "Martin Amis"]

[10] The protagonist of this Kingsley Amis novel realizes Margaret Peel faked her suicide attempt, and he ends up moving to London with Christine Callaghan after mocking Professor Welch during a lecture about "Merrie England."

ANSWER: Lucky Jim