

## ACF Fall 2015

Edited by Richard Yu, Gaurav Kandlikar, Eddie Kim, Dylan Minarik, Ryan Rosenberg, Andrew Wang, and Nathan Weiser.

Packet by *Washington University in St. Louis A* (Patrick Butenhoff, Seth Ebner, and William Mason), *Johns Hopkins University A* (Eric Bobrow, Joseph Cleary, Rosalind Dempsey, and Cyrus Zhou), and *Texas A&M University A* (Lee Dunn, Carlo De Guzman, Will Linz, and Chris Price)

## Tossups

1. A D-minor piece in this genre is nicknamed for its opening sequence of half notes: a descending "A, D," followed by a descending "E, A." Six pieces in this genre were collected into a prolific composer's Opus 20 and published with a drawing of the title *Sun* on the cover. A second movement theme-and-variations on the melody of "Deutschland über alles" characterizes a piece in this genre part of a set nicknamed *Erdödy*. During the Classical period, this musical form was modeled after the symphony's four-movement design. Joseph Haydn is called the father of the symphony and of this genre. For 10 points, name this genre of chamber music for two violins, one viola, and one cello.

ANSWER: string quartet [prompt on "quartet"]

2. A siege led by this man is the subject of an epic poem by Voltaire. He defeated Anne, Duke of Joyeuse at the Battle of Coutras ["koot-RAH"]. An event that happened shortly after this man's wedding was prompted by the attempted assassination of Gaspard de Coligny ["COL-in-yee"]. In order to obtain one position, this survivor of the St. Bartholomew's Day Massacre said that a certain city was "well worth a Mass" and converted to Catholicism. He was assassinated by Francois Ravaillac, who was upset with him for giving the Huguenots too much freedom with the Edict of Nantes ["nant"]. For 10 points, name this victor of the War of Three Henrys, the first French king from the House of Bourbon.

ANSWER: Henry IV of France [or Henry of Navarre; or Henry III of Navarre; or the Green Gallant; or *le vert galant*; prompt on "Henry"]

3. This poet imagined lovers thinking "Life might last! we can but try!" upon hearing "Those commiserating sevenths." This poet wrote "God's in His heaven / All's right with the world!" in a drama about a girl who observes the happiest people in Asolo. This poet of "A Toccata of Galuppi's" and *Pippa Passes* described a gift of cherries from "some officious fool" to a woman whose "looks went everywhere" in one work. The speaker strangles the title character with "all her hair / In one long yellow string" in his "Porphyria's Lover." He wrote about a figure painted by Fra Pandolf who had a "heart too soon made glad." For 10 points name this English poet of "My Last Duchess".

ANSWER: Robert Browning

4. A city in this state is situated along the Maumee River and was originally part of this state's northern neighbor before a namesake war transferred nearly 500 square miles in 1836. A photograph in *Time* magazine in 1969 depicted a fire on this state's Cuyahoga River. This state is home to an I.M. Pei-designed museum that resembles a cylindrical tower attached to a pyramid, the Rock and Roll Hall of Fame. The second oldest amusement park in the United States, Cedar Point, is located on a peninsula in this state along the shores of Lake Erie. For 10 points, name this state whose major cities include Akron, Toledo, and Columbus.

ANSWER: Ohio

5. Nitroso containing compounds are used for analyzing these compounds by extending their lifetimes through the formation of a stable adduct. The previously mentioned spin-trap compounds are commonly used in E-S-R, which can detect these compounds due to their paramagnetism. Fishhook arrows often appear in reaction mechanisms involving these compounds, such as during homolytic cleavage. Glutathione ["glue-ta-THY-own"], superoxide dismutase, and vitamin C prevent the formation of these compounds, which Denham Harman proposed caused aging. For 10 points, name these reactive molecules which contain unpaired electrons and which are suppressed by antioxidants.

ANSWER: free radicals

6. A poem set at a memorial to this war repeats variations on the phrase "leaves / flying, plunge and expire," and begins with the line "row after row with strict impunity." A novel set during this war ends with the description of sun shining through "the hosts of leaden rain clouds." The protagonist of that novel set during this war chucks a pine cone at a squirrel and encounters the Tattered Man. Allen Tate wrote an "Ode" to the dead of one side in this war. In a novel set during this war, Jim Conklin is survived by the cowardly Henry Fleming. For 10 points, name this war that provides the setting for Stephen Crane's *The Red Badge of Courage*.

ANSWER: the American Civil War

7. In one episode, this character sings a modified version of "Poker Face" with the lyrics "I don't give a crap about whales so go and hug a tree." This character pitches 800 films starring Adam Sandler while disguising himself as a cardboard robot named AWESOME-O. He takes revenge on a bully by killing his parents and serving them to him as chili. This sworn enemy of Scott Tenorman often says "screw you guys, I'm going home." This character constantly makes fun of his friends Kenny and Kyle for being poor and Jewish, respectively. For 10 points, name this fat, obnoxious brat, one of the main characters of *South Park*.

ANSWER: Eric Cartman [accept either underlined portion]

8. This person was crowned after his predecessor fell on his sword at the end of a battle at Mount Gilboa. He earned the respect of that predecessor by bringing back 200 foreskins. When he was a child, this son of Jesse was taken from his family by a man whose spirit was later summoned by the Witch of Endor. He had Uriah ["you-RYE-uh"] the Hittite killed to hide the fact that he had impregnated Uriah's wife Bathsheba, who then married him and gave birth to his son Solomon. The story of this successor of Saul is one of the main subjects of the Books of Samuel. For 10 points, name this author of the Psalms, a King of Israel who killed the giant Philistine Goliath.

ANSWER: David

9. The question of whether this country should enter World War I caused a "National Schism" between its monarchy and the Venizelist movement. This country mended relations with an eastern neighbor after several 1999 earthquakes, and that neighbor and this country both received aid against Soviet influence under the Truman Doctrine. This country has blocked EU membership of a former Yugoslav Republic because it disputes that country's name. This country's "regime of the colonels" collapsed after backing a coup against Archbishop Makarios III, causing Turkey to invade Cyprus. For 10 points, name this country also called the Hellenic Republic.

ANSWER: Greece [or Republic of Greece; or Hellenic Republic or Hellas until "Hellenic" is read]

10. In this city, one of Richard Serra's many weathering steel spirals can be found in the courtyard of a Tadao Ando-designed museum. Gyo Obata started this city's HOK architectural firm, which added a new wing to this city's namesake art museum, originally designed by Cass Gilbert. In this home city of the Pulitzer Arts Foundation and of the Jefferson National Expansion Memorial, a brewer hired Dankmar Adler and Louis Sullivan to design a red-brick skyscraper, the Wainwright Building. This city is home to a flattened catenary-shaped monument designed by Eero Saarinen. For 10 points, name this city whose Mississippi waterfront includes the Gateway Arch.

ANSWER: St. Louis, Missouri

11. A character in this novel advocates for a "strict style" echoed by his mentor's lecture concerning the "magic square". This novel's protagonist writes a secret manuscript after his friend Rüdiger Schildknapp leaves him. Durer's woodcuts influence a character in this novel to create a work titled *Apocalypsis cum figuris*. Its protagonist deliberately gets syphilis from a woman he calls Esmerelda. A performance of the protagonist's *Lamentation* of the title character concludes this novel narrated by Serenus Zeitblom. For 10 points, name this Thomas Mann novel about Adrian Leverkühn, a composer who trades his soul to the devil for twenty-four years of genius.

ANSWER: Doktor Faustus [or Doctor Faustus: *The Life of the German Composer Adrian Leverkühn, as Told by a Friend*; or Doktor Faustus: *Das Leben des deutschen Tonsetzers Adrian Leverkühn, erzählt von einem Freunde*]

12. A process that generates this compound is prevented by uncoupling proteins, such as thermogenin. Oligomycin binds to the "F-sub-o" subunit of an enzyme that synthesizes this compound. That enzyme that produces this compound contains three binding sites whose formations change as it rotates. The synthesis of this compound is driven by a proton gradient across which chemi-osmosis is used to generate this molecule via oxidative phosphorylation. On average, a molecule of N-A-D-H results in 2.5 molecules of this compound after going through the electron transport chain. For 10 points, name this energy currency of the cell.

ANSWER: ATP [or adenosine triphosphate]

13. In the *Metamorphoses*, the rainbow goddess Iris leads this hero's wife to a star that falls from the sky. This hero's sudden disappearance during a storm is later attributed to his rapture into the heavens and subsequent apotheosis as the god Quirinus. A rival mockingly leaps over a wall built by this man, who earlier witnesses the omen of twelve vultures flying overhead. He organizes a festival of Neptune as a ploy for his men to take the Sabine women as wives. As a baby, this hero and his short-lived brother are raised by a she-wolf after they are taken from their mother Rhea Silvia. For 10 points, name this twin brother of Remus and mythical founder of Rome.

ANSWER: Romulus

14. A painting of a person of this profession is titled for Jan Deijman ["die-man"]. Franklin West is taking notes behind a man of this profession in a painting that shows a woman recoil in horror from the central scene. A man of this profession is interacting with the criminal Aris Kindt in another painting. A portrait of a redheaded man of this profession shows him resting his head on his right hand and holding some foxglove with his left, and was created by Van Gogh. A man of this profession is holding a scalpel in Thomas Eakins' *The Gross Clinic*. For 10 points, name this profession of Paul Gachet ["gah-SHAY"] and Nicolaes Tulp, who Rembrandt depicted conducting an Anatomy Lesson.

ANSWER: doctors [or anatomists; prompt on "professors" or "teachers"]

15. This man's best-known company was taken over by the Oppenheimer family. This man hired Frederick Selous to scout a frontier region. His business partner Charles Rudd convinced King Lobengula to concede Matabeleland's resources to this man's company. A political cartoon depicted this man as a giant straddling a continent and holding up a telegraph line. This man, who wanted to build the "Cape to Cairo" railroad, had his reputation tarnished by his support for the Jameson Raid. For 10 points, name this British diamond magnate who was the namesake of the predecessor-state to Zimbabwe, as well as a scholarship to Oxford.

ANSWER: Cecil Rhodes [or Cecil John Rhodes; accept Rhodesia; accept Rhodes scholarships]

16. A section of a book by this philosopher praises Archbishop of Canterbury John Tillotson's concise argument against the real presence. Immanuel Kant credited this author with awakening him from his "dogmatic slumber" through a book that divides all reasoning into relations of ideas or matters of fact. This man joked that an early essay "fell dead-born from the press". This author included sections like "Of the Origin of Ideas" and "Of Miracles" in a book that contradicts the "copy principle" by describing a man who knows all but one shade of the color blue. For 10 points, name this Scottish philosopher who wrote *An Enquiry Concerning Human Understanding*.

ANSWER: David Hume

17. This quantity's shift under an applied electric field is has a quadratic relation to the electric field in the Kerr effect. The left-hand rule applies in metamaterials, which have negative values for this quantity. This quantity is equal to the square root of the product of relative permeability and relative permittivity. The arc-sine of the ratio of this quantity for two materials at a boundary gives the critical angle where total internal reflection occurs. This quantity for water at 20 Celsius is 1.333. This quantity is multiplied by the sine of the angle of incidence in Snell's law. For 10 points, name this quantity equal to the ratio of the speed of light in a medium to the speed of light in a vacuum.

ANSWER: index of refraction [or refractive index; prompt on "n"]

18. Elements called turtles slow down an algorithm for doing this task. The cocktail algorithm for performing this action is stable, meaning that similar elements preserve their relative order as the algorithm runs. An algorithm for performing this action recursively splits a certain data structure in half and interleaves the results from the left and right halves. Another algorithm to achieve this task recursively places elements on both sides of a pivot in an array. The performance of the "bubble" and "merge" algorithms for this task is superseded by a "quick" algorithm. For 10 points, name this task in which array elements are ordered.

ANSWER: sorting an array [or bubble sort; or merge sort; or quicksort]

19. This politician described his Herbert Croly-influenced philosophy in a campaign speech given in Osawatomie, Kansas. He coined the term “hyphenated Americans” and ran for president on the idea of “New Nationalism.” He was partially driven to enter a presidential election by the firing of Gifford Pinchot. He delivered a campaign speech in Milwaukee immediately after getting shot by John Schrank. This politician cut short a hunting trip to Africa to run as the Progressive Party candidate in the 1912 presidential election. For 10 points, name this “Bull Moose” who ran for a third term in office after growing disappointed with his successor, William Howard Taft.

ANSWER: Theodore Roosevelt [or TR; accept the Bull Moose until it is read; prompt on “Roosevelt”]

20. This author wrote a novel whose title character tries to reconnect with the group of friends that suddenly abandoned him in college. In another of this author’s novels, a former army lieutenant delivers a long monologue about being captured in Outer Mongolia. This author wrote a novel in which the Semiotecs compete with the Calcutecs. This author of *Colorless Tsukuru Tazaki and His Years of Pilgrimage* wrote a novel in which May Kasahara exchanges letters with Toru Okada, who searches for Kimiko, his wife. For 10 points, name this contemporary Japanese author of *Hard-Boiled Wonderland and the End of the World* and *The Wind-Up Bird Chronicle*.

ANSWER: Haruki Murakami [or Murakami Haruki]

#### Extra

A character created by this author repeats the line “such noise they make” every time she is interrupted by an offstage airplane. Another character created by this author berates her husband for not recognizing the Bette Davis quote “what a dump!” In a play by this author, Nancy and Charlie’s beach vacation is disrupted when two humanoid lizards walk out of the sea. One of his plays is split into sections like “Fun and Games” and “Walpurgisnacht.” In that play, a man shoots an umbrella out of a toy gun before he and Martha play “Get the Guests” with Nick and Honey. For 10 points, name this American author of *Seascape* and *Who’s Afraid of Virginia Woolf*.

ANSWER: Edward Albee [or Edward Franklin Albee III]

## Bonuses

1. While searching for Ludmilla, one character in this novel meets Professor Uzzi-Tuzzi, a scholar of Cimmerian. For 10 points each:  
[10] Name this novel whose odd-numbered chapters document You the Reader attempting to find the remainder of this novel.  
ANSWER: *If on a winter's night a traveler* [or *Se una notte d'inverno un viaggiatore*]  
[10] This Italian author wrote *If on a winter's night a traveler*. He also wrote a trilogy of novels titled *The Baron in the Trees*, *The Cloven Viscount*, and *The Nonexistent Knight*.  
ANSWER: Italo **Calvino**  
[10] Another Calvino novel is titled for cities that have this property. A novel by Ralph Ellison is about a man who metaphorically has this property, because of how society views black men.  
ANSWER: **invisible** [or *Invisible Cities*; or *Le città invisibili*; or *Invisible Man*]
2. In a myth of these people, an age of acorn-eating giants is wiped out by carnivorous jaguars. For 10 points each:  
[10] Name these people whose creation myth concerns a god whose foot is bitten off by the androgynous crocodile Cipactli ["see-PACT-lee"]. Their psychopomp is often seen with the head of a dog or the body of a skeleton.  
ANSWER: the **Aztec** people [or Colhua **Mexica** ["MAY-shee-ka"]; or **Mexica** Tenochca]  
[10] The Aztecs venerated this feathered serpent and are commonly thought to have considered the conquistador Hernán Cortés to be the second coming of this god.  
ANSWER: **Quetzalcoatl** ["KETZ-ul-coh-AH-tul"]  
[10] This Aztec god is conceived by a ball of string, bursts from his mother's womb fully-armed, and protects her from his four hundred elder brothers. This god is commonly depicted as a left-footed hummingbird.  
ANSWER: **Huitzilopochtli** ["WEET-sil-o-POCH-lee"]
3. One physicist with this surname names the point at which a ferromagnetic material becomes paramagnetic. For 10 points each:  
[10] Give this last name of Pierre and his wife Marie, who earned the first Nobel awarded to a woman for her work on radioactivity.  
ANSWER: **Curie** [or Marie **Curie**; or Pierre **Curie**; prompt on "Skłodowska"]  
[10] Marie Curie discovered radium, whose isotope 226 decays into this element. This element is the heaviest of the noble gases.  
ANSWER: **radon** [or **Rn**]  
[10] The Curies won their Nobel Prize with this French physicist, who names the S-I unit for radioactivity.  
ANSWER: Henri **Becquerel** [or Antoine Henri **Becquerel**]

4. Answer the following about freedom of speech in America, for 10 points each.
 

[10] Freedom of speech is guaranteed by this constitutional amendment. It also protects freedom of the press and freedom of religion.  
 ANSWER: the First Amendment [or Amendment One]

[10] This Supreme Court case ruled that speech could be regulated if there was a “clear and present danger.” Its Oliver Wendell Holmes-penned opinion popularized the expression “shouting fire in a crowded theater.”  
 ANSWER: Schenk v. United States [or United States v. Schenk]

[10] In this 1925 case, the Supreme Court extended the First Amendment’s federal protection of free speech to the states through the Fourteenth Amendment’s due process clause.  
 ANSWER: Gitlow v. New York [or New York v. Gitlow]
  
5. This artist painted himself and his family holding up a drawing of a bone as workers dig around in the central pit in one painting. For 10 points each:
 

[10] Name this artist of *Exhumation of the First Mastodon*. A self-portrait shows this artist drawing back a curtain to reveal his eclectic collections and is titled *The Artist in his Museum*.  
 ANSWER: Charles Wilson Peale

[10] Peale made a few portraits of this American president and his first-lady Martha. This president is also the subject of the Landsdowne Portrait.  
 ANSWER: George Washington

[10] This artist painted the Landsdowne Portrait as well as the unfinished Athenaeum Portrait.  
 ANSWER: Gilbert Stuart [or Gilbert Charles Stuart]
  
6. This character kills himself rather than face trial in colonial court for killing a white man. For 10 points each:
 

[10] Name this character who had earlier killed his adoptive son Ikemufuna [“ik-ay-may-foona”] when the Oracle of Umuofia decides that the boy has to die.  
 ANSWER: Okonkwo

[10] Okonkwo and his adoptive children, including Ezinma and Nwoye [“un-WOH-yay”], appear in this novel by Chinua Achebe. Its title is taken from a line in the Yeats poem “The Second Coming”.  
 ANSWER: Things Fall Apart

[10] In this sequel to *Things Fall Apart*, Obi Okonkwo leaves his village to enter the Nigerian civil service.  
 ANSWER: No Longer at Ease
  
7. This musician’s signature piece is sometimes considered to be the opening prelude from the first of J.S. Bach’s six suites for unaccompanied cello. For 10 points each,
 

[10] Name this Chinese-American cellist who performed at Barack Obama’s first inauguration.  
 ANSWER: Yo-Yo Ma

[10] Jacqueline du Pré produced the definitive recording of the Cello Concerto in E minor by this English composer, who compared his friend Augustus Jaeger to the hunter “Nimrod” in another piece.  
 ANSWER: Edward Elgar [or Edward William Elgar]

[10] This English composer used a harp to imitate the Westminster Chimes in his *A London Symphony*. His fifth symphony follows up a third-movement Romanza with a majestic passacaglia.  
 ANSWER: Ralph [“rafe”] Vaughan Williams

8. Henry VIII was a big fan of executing people when they didn't let him get his way. For 10 points each:

[10] Name this "Man for All Seasons" and author of *Utopia* who was beheaded by Henry VIII after he refused to support the king's annulment of the king's marriage to Catherine of Aragon.

ANSWER: Saint Thomas **More** [or Sir Thomas **More**]

[10] This other man survived the reign of Henry VIII, but was executed by the Catholic Mary I. Works of this Archbishop of Canterbury include the *Thirty-Nine Articles*.

ANSWER: Thomas **Cranmer**

[10] Cranmer also compiled this book, which consists of a complete liturgy for the Anglican Church. Several famous phrases spoken at wedding services, such as "till death do us part," actually come from this book.

ANSWER: **Book of Common Prayer**

9. In this system of sex-determination, males are homozygous for the sex chromosome, while females are heterozygous. For 10 points each:

[10] Name this form of sex determination found in some birds and reptiles.

ANSWER: **Z-W** sex-determination [prompt on just "Z" or "W"]

[10] In reptiles such as alligators and tuatara, sex is determined by this environmental factor. This factor in the body can be regulated by mechanisms like sweating and panting.

ANSWER: **temperature**

[10] This structure is overrepresented in patients of Klinefelter's syndrome. Barr bodies are formed in cells of human females when one of these structures is inactivated.

ANSWER: **X** chromosome

10. A 13th-century treatise recounts 24 ancient individuals who exemplified this ideal. For 10 points each:

[10] Name this virtue in traditional Chinese belief that refers to good conduct toward one's parents and elders.

ANSWER: **filial piety** [or **xiao** shun; prompt on alternative translations like "family reverence"]

[10] This god in Chinese folklore oversees family conduct, is often depicted alongside his wife, and is traditionally burnt in effigy to make a report to the Jade Emperor.

ANSWER: **Kitchen** God [or **Zao** Jun; or **Zao** Shen; accept words like **stove**, or **hearth**, or **furnace** in place of "Kitchen"]

[10] Images of the Kitchen God are burned during this two-week long holiday in January or February that also involves cleaning the home, eating dumplings or sticky rice cakes, and dancing in lion costumes.

ANSWER: **Chinese New Year** [or **Spring Festival**; or **Chun Jie**; prompt on "Lunar New Year"]



11. Answer the following about Southeast Asia in the aftermath of World War II, for 10 points each.

[10] Mohammad Hatta declared this nation's independence during the last days of its Japanese occupation from its capital city of Jakarta.

ANSWER: Indonesia [or Republic of Indonesia]

[10] This first president of Indonesia once collaborated with the Japanese along with Hatta. This man instituted "Guided Democracy" and was overthrown in a military coup by the "New Order" in 1967.

ANSWER: Sukarno [or Koesno Sosrodihardjo; or Kusnasosro Sosrodihardjo]

[10] In the Philippines, these Marxist rebels switched from fighting the Japanese to waging a guerrilla war against the Filipino government. They were finally defeated during Ramon Magsaysay's presidency.

ANSWER: the Huks [or the Hukbalahap; or Hukbong Bayan Laban sa mga Hapon; or the Nation's Army Against the Japanese; or similar translations like "the People's Anti-Japanese Army"]

12. A man is framed by William Dane and banished from Lantern Yard at the beginning of this novel. For 10 points each:

[10] Name this novel whose title character adopts the illegitimate child of Molly and Godfrey.

ANSWER: Silas Marner; *The Weaver of Raveloe*

[10] The author of *Silas Marner* wrote about Dorothea Brooke, who marries Will Ladislaw after the death of her boring first husband Edward Casaubon, in this novel that is a "Study of Provincial Life."

ANSWER: Middlemarch, *A Study of Provincial Life*

[10] This author wrote *Silas Marner* and *Middlemarch*, as well as *A Mill on the Floss*.

ANSWER: George Eliot [or Mary Ann Evans]

13. Ingmar Bergman's film *Smiles of a Summer Night* inspired this composer's musical *A Little Night Music*. For 10 points each:

[10] Name this Broadway composer and lyricist of *Into the Woods*, *Company* and *Sweeney Todd*.

ANSWER: Stephen Sondheim [or Stephen Joshua Sondheim]

[10] Sondheim wrote the lyrics to this Leonard Bernstein-composed musical. Tony and Maria love each other despite being on different side of a feud between the Sharks and the Jets in this adaptation of *Romeo and Juliet*.

ANSWER: West Side Story

[10] In *West Side Story*, this song is sung in Act II as Tony and Maria imagine a hypothetical place in which their love will be accepted. It begins with the line "there's a place for us."

ANSWER: "Somewhere" [or "Somewhere (There's a Place for Us)"; prompt on "There's a Place for Us"]

14. NOTE: DO NOT READ ALTERNATE ANSWER TO FIRST BONUS PART

If the F-statistic computed from this test deviates significantly from the null, a post-hoc Tukey test can be used to perform pairwise comparisons. For 10 points each:

[10] Name this statistical method that tests for differences between multiple groups. It can be used to avoid performing multiple T-tests.

ANSWER: ANOVA [accept, but DO NOT MENTION, analysis of variance]

[10] When there is data of this form, an ANOVA is modified into a MANOVA ["man-ova"]. The dimensionality of this type of data can be reduced with a PCA.

ANSWER: multivariate [accept multiple responses or multiple variables; prompt on "multi-dimensional"]

[10] A basic ANOVA assumes that the data are homoscedastic, which means that this statistic is equal for all groups. This value is equal to the square of standard deviation and measures the spread of data.

ANSWER: variance [prompt on "sigma squared"]

15. The protagonist of a novella by this author kills his wife after finding out about her affair with a violinist with whom she plays the title piece. For 10 points each:

[10] Name this Russian author of *The Kreutzer Sonata*. He wrote about the title character's decline after a fall from a ladder in *The Death of Ivan Ilyich*.

ANSWER: Leo Tolstoy [or Lev Nikolayevich Tolstoy]

[10] Tolstoy wrote about Natasha Rostova's marriage to Pierre Bezukhov, who is obsessed with the thought of assassinating Napoleon, in this lengthy book.

ANSWER: War and Peace [or Voyna i Mir]

[10] This novel was Tolstoy's last. In this novel, Dmitri Ivanovich Nekhlyudov, who as a young man had impregnated Maslova, follows Maslova into a harrowing prison and on a long march to Siberia.

ANSWER: Resurrection [or Voskreseniye]

16. This ruler led a victorious coalition at Heraclea, and he was killed by a falling roof tile at Argos. For 10 points each:

[10] Name this king of Epirus, who names a type of victory that is as costly as a defeat.

ANSWER: Pyrrhus of Epirus

[10] Pyrrhus was an early enemy of this government. Another enemy of this government was Mithridates VI of Pontus, who fought against its leaders like Sulla and Gaius Marius.

ANSWER: Rome [or the Roman Republic; or SPQR; or Senatus Populusque Romanus]

[10] The term "Pyrrhic victory" comes from Plutarch's account of this battle, after which Pyrrhus said that with one more victory "we will be utterly ruined". It was the second Pyrrhic victory after the Battle of Heraclea.

ANSWER: Battle of Asculum

17. The cover of one of this band's albums depicts two men shaking hands, one of whom is on fire. For 10 points each:

[10] Name this band that also released an album whose cover art shows a beam of light travelling through a triangular prism and leaving as a rainbow.

ANSWER: Pink Floyd

[10] The tracks "Speak to Me" and "Money" appear on this landmark 1973 Pink Floyd album. Some people like to play it synchronously with *The Wizard of Oz*.

ANSWER: *The Dark Side of the Moon*

[10] This track on *Dark Side of the Moon* mostly consists of wordless vocal vamping performed by Clare Torry over a keyboard progression. It begins and ends with non-singing voices reading statements about death.

ANSWER: "The Great Gig in the Sky"

18. Answer the following about literature related to California, for 10 points each.

[10] The Trask and Hamilton families settle in California's Salinas Valley in this author's *East of Eden*. Tom Joad and his family travel west from Oklahoma to California during the Dust Bowl in his *The Grapes of Wrath*.

ANSWER: John Steinbeck [or John Ernst Steinbeck, Jr.]

[10] This author depicted the conflict between California wheat farmers and the railroad companies in *The Octopus*. The titular San Francisco dentist ends up handcuffed to Marcus' corpse in his *McTeague*.

ANSWER: Frank Norris [or Benjamin Franklin Norris, Jr.]

[10] This Lawrence Ferlinghetti-operated bookstore in San Francisco was at the center of the Beat Movement. It was sued for publishing Allen Ginsberg's supposedly indecent "Howl."

ANSWER: City Lights Bookstore

19. Answer the following about a type of learning, for 10 points each.

[10] This type of learning primarily takes place in a "critical period" shortly after birth. The Westermarck effect is an example of this type of learning.

ANSWER: imprinting [or word forms like imprinted]

[10] This student of Oskar Heinroth popularized the study of imprinting through experiments on greylag geese.

ANSWER: Konrad Lorenz

[10] The Westermarck effect proposes that familiarity during childhood results in a lack of sexual attraction to prevent this activity. The prevalence of this activity among European nobility caused many genetic abnormalities.

ANSWER: inbreeding [or word forms like inbred; or incest]

20. These compounds have a score of less than negative 12 on the Hammett scale. For 10 points each:

[10] Give this term for acids with strengths greater than that of sulfuric acid. One example of these compounds is fluoro-antimonic acid.

ANSWER: superacids

[10] George Olah developed this superacid commonly used to study carbocations ["carbo-cat-ions"]. This 1-to-1 mixture of fluoro-sulfuric acid and antimony pentafluoride was given its name after it dissolved a paraffin candle.

ANSWER: magic acid

[10] Magic acid can protonate these compounds, which the term paraffin sometimes refers to. Methane and ethane are examples of these saturated hydrocarbons, which have formula  $C_nH_{n+2}$  ["C n, H n plus 2"] when linear.

ANSWER: alkanes

### Extra

A transition between two values of this phenomenon causes the 21 centimeter line. For 10 points each:

[10] Name this property of electrons and other fundamental particles that represents an intrinsic angular momentum. Bosons have integer values and fermions have half-integer values of it.

ANSWER: spin

[10] This 1922 experiment observed only discrete deflections of silver traveling through an inhomogeneous magnetic field instead of continuous deflections, thus demonstrating that spin is quantized.

ANSWER: Stern-Gerlach experiment

[10] Spin is quantized with respect to the reduced form of this man's namesake constant, known as h-bar. This man proposed a law of black-body radiation which resolved the ultraviolet catastrophe.

ANSWER: Max Planck [or Max Karl Ernst Ludwig Planck]

Answer the following about the Five Great Mountains in China known as the Wu Yue, for 10 points each.

[10] None of the Five Great Mountains are located in this mountain range located at the border of Tibet and China that contains K2 and Mt. Everest.

ANSWER: Himalayas

[10] The westernmost mountain of the Wu Yue is this one that is traditionally associated with martial arts and sword duels.

ANSWER: Mount Hua [or Hua Shan; or the Splendid Mountain]

[10] Mt. Hua is located very close to this capital of Shaanxi province, where the Terracotta Army can be found.

ANSWER: Xi'an