

ACF Fall 2013

Packet by Wellesley

Edited by Stephen Liu, Tanay Kothari, Ankit Aggarwal, Adam Silverman, Stephen Eltinge, Lloyd Sy, John Lawrence, and Andrew Hart

1. This man reformed tax codes to include the assessed yields of rice fields, or kokudaka. One foreign campaign undertaken by this man was led by Kuroda Nagamasa, and the Council of Five Elders held the regency for his son. He codified laws that crystallized the hierarchy of samurai, peasant, artisan, and merchant as well as ordering the 1588 Great Sword Hunt, ostensibly to decorate a temple enshrining himself. He defeated Akechi Mitsuhide at the Battle of Yamazaki after the suicide of Oda Nobunaga, and ordered an invasion of Korea that was repulsed by Yi Sun-sin. For 10 points, name this second of Japan's three great unifiers who was succeeded by Tokugawa Ieyasu.

ANSWER: Tovotomi Hideyoshi

2. Deryck Cooke's completion of this composer's tenth symphony included a *Purgatorio* movement between two scherzos. The *Adagietto* from this composer's fifth symphony is frequently extracted and played separately. One of his works uses a two-part form pairing the hymn "Veni, creator spiritus" with excerpts from Goethe's *Faust*. "Of Youth" and "Of Beauty" are movements in his six-movement symphony inspired by Hans Bethge's translations of Chinese poetry, *Song of the Earth*. His 8th symphony was nicknamed for the immense number of musicians needed to perform it. For 10 points, name this Austrian composer of *Symphony of a Thousand* and the *Titan Symphony*.

ANSWER: Gustav Mahler

3. A song on this band's newest release opens with a quote from a Souls of Mischief song, paying further tribute in the line "actually Oakland but not Alameda." Another song by this band has a music video featuring an iPhone case with the letters "DY" written in rhinestones and begins, "You torched a Saab like a pile of leaves." This band behind "Step" and "Diane Young" mentioned how unnatural Peter Gabriel feels in a song about a young girl with Louis Vuitton products called "Cape Cod Kwassa Kwassa," from their self-titled debut. For 10 points, name this band formed at Columbia University, fronted by Ezra Koenig, that released *Modern Vampires of the City* in May.

ANSWER: Vampire Weekend

4. For charges in a dielectric, this quantity equals one-half the integral of the dot product of the displacement and electric fields. The amount of this quantity due to the expansion of a gas is equal to the integral of pressure with respect to volume. For a moving electric charge, this quantity is equal to the charge times the change in electric potential. According to a theorem named for this quantity and "energy," this quantity for a process is equal to the change in kinetic energy. It is given for a constant force by force times displacement. For 10 points, name this quantity, the amount of energy transferred by a force acting on a body.

ANSWER: work

5. This figure helped Taygete, one of the Pleiades, to escape from Zeus' pursuits by changing her into a doe with golden antlers. Because that doe, which lived in Cerynitia, was sacred to this deity, Eurystheus sent Heracles to hunt it so that she would be angry with him. Born on Mount Cynthus, this deity came to Aulis to replace Iphigenia with a fawn just as Agamemnon tried to sacrifice her. When this goddess was caught bathing by Actaeon, she turned him into a stag, leading to him being devoured by his own hounds. With Apollo, she assisted in killing Niobe's twelve children for insulting her mother Leto. For 10 points, identify this Greek goddess of the hunt and the moon.

ANSWER: Artemis [prompt on "Diana"]

6. In the Treaty of Saint-Clair-sur-Epte, Charles the Simple conceded Normandy to a group of these people under Rollo in exchange for an oath of fealty. One group of these people under Rurik ruled the Kievan Rus after capturing Novgorod. The poem *The Battle of Maldon* relates an attempt to fight off a group of these people, whose first major

incursion on the British Isles occurred in Lindisfarne in 793. These people included Ivar the Boneless and a group of them under Harald Hardrada were defeated at the Battle of Stamford Bridge. For 10 points, name these Norse seafarers who traveled on longships and went through Europe raiding and pillaging.

ANSWER: **Vikings** [or **Varangians**; prompt on ethnic terms like "Danes" or "Scandinavians"]

7. This artist painted *St. Mark Enthroned* and *The Descent of the Holy Ghost* within the Santa Maria della Salute, a building near his home town. He was commissioned by Philip II to produce at least two paintings of a reclining nude seduced by a golden shower in his *Danae* series. One of his works shows a god leading some revelers while on a chariot drawn by two cheetahs, while another shows two depictions of Aphrodite leaning on a stone sarcophagus. Besides *Bacchus and Ariadne* and *Sacred and Profane Love*, this artist painted a puppy curled up at the feet of a reclining nude in his best-known work. For 10 points, identify this Venetian painter of the *Venus of Urbino*.

ANSWER: **Titian** [or **Tiziano** Vecelli]

8. One character in this play is quickly rebuffed after mentioning that Sonny Boy Maxwell had made a pass at her. That character speaks about her romantic involvement with her husband's best friend before being interrupted by Dixie. Characters in this play threaten each other with the crutch of another character, who attributes his drinking to disgust at his family's "mendacity." In this play, the onset of a spastic colon for a family patriarch leads Gooper and Mae to scheme to get an inheritance also sought by a couple in a loveless marriage. For 10 points, name this Tennessee Williams play about Maggie and Big Daddy Pollitt.

ANSWER: **Cat on a Hot Tin Roof**

9. The northern extent of this range is demarcated by the Susan River and Fredonyer Pass. A lake in this mountain range near Lone Pine was the subject of "water wars" that led it to be drained at the urging of William Mulholland. A formation of columnar basalt, Devil's Postpile, is located on the western slope of this mountain range, which also contains Acrodictes Peak in Kings Canyon National Park. The giant sequoia is endemic to this mountain range, which contains the highest point in the contiguous US, Mount Whitney. For 10 points, name this American mountain range that contains Lake Tahoe and Yosemite Valley and straddles the California-Nevada border.

ANSWER: **Sierra Nevada** range

10. This mineral has the same structure as berlinite, and it has the lowest relative weathering potential on the Goldich dissolution series. One form of this mineral is formed from the high pressure of nuclear bomb explosions and meteor impacts, and is known as its "shocked" variety. Pierre Curie discovered a property of this mineral that led to its use in crystal oscillators. It combines with moganite to form chalcedony, which comes in types such as agate and onyx. This piezoelectric mineral made up of continuous silicon-oxygen tetrahedra is the second most abundant mineral in the Earth's crust. For 10 points, identify this silicate mineral of hardness 7 on the Mohs scale.

ANSWER: **quartz** [prompt on "silicon dioxide" or " SiO_2 "]

11. In one play by this author, two suitors dress their footmen as nobles to seduce the girls that rejected their marriage proposals. In another play by this author of *The Pretentious Young Ladies*, a hypochondriac tries to arrange a marriage between Thomas Diafoirus and Cléante in order to get free medical treatment. This author of *The Imaginary Invalid* wrote a play in which Harpagon agrees to let his son marry the girl he loves in exchange for his box of money, while another of his plays ends with the betrothal of Mariane to Valère after the title hypocrite tries to seduce Elmire, Orgon's wife. For 10 points, name this French playwright of *The Miser* and *Tartuffe*.

ANSWER: **Molière** [or Jean-Baptiste **Poquelin**]

12. Spectrin was discovered in these cells and was named because, when these cells are emptied of cytoplasm, they're called "ghosts." 2,3-biphosphoglycerate is principally found in these cells. Evans syndrome affects them and can be detected with a direct Coombs test. These cells stack in the rouleaux formation, and a protein found in these

cells exists in T and R conformations and is the classic model of enzyme cooperativity. When immature, these cells are called reticulocytes. The only cells in mammals without nuclei, these cells may express an antigen called the Rhesus factor. For 10 points, name these hemoglobin-containing cells that carry oxygen in the circulatory system.
ANSWER: **red blood** cells [or **RBCs**; or **erythrocytes**]

13. In one work, this philosopher rejected an earlier thinker's conception of "anticipation of nature" in favor of an "interpretation of nature" based on observation. He invented an ideal university called Salomon's House in a work set on the fictional island of Bensalem. He labeled the false notions we learn through received definitions of words as the "Idols of the Market," which appear alongside the Idols of the Tribe, Cave, and the Theatre in a work that attempts to replace Aristotelian syllogism with eliminative induction. For 10 points, name this 17th-century English author of *The New Atlantis* and *Novum Organum*, who contributed to the birth of the Scientific Revolution.
ANSWER: Sir Francis **Bacon**

14. This poet described a "glossy purple clot" and how "each year I hoped they'd keep, knew they would not" in a poem about youthful blackberry-picking. In another of his poems, the speaker comes home to see Big Jim Evans consoling a man who is described "[cutting] more turf in a day / than any other man on Toner's bog" and "could handle a spade" in another poem. This man wrote about "a four-foot box, a foot for every year" in a poem on the death of his brother, "Mid-Term Break," and noted how "the squat pen rests" between his fingers "Digging." For 10 points, name this late Irish Nobel Laureate of the collection *Death of a Naturalist*, who translated *Beowulf*.
ANSWER: Seamus **Heaney**

15. During this war, the fortress of Tonning was besieged twice, with the first siege being lifted by the Peace of Travendal. The leader of the losing side in this war was killed at the Siege of Fredriksten, and the victor attempted to invade the Ottoman Empire in the Pruth River Campaign. The Treaty of Altranstadt forced this war's participant Augustus the Strong to cede his claim to the Polish throne. This war ended with one side gaining Estonia and East Ingria in the Treaty of Nystad, and Ivan Mazeppa deserted during a significant victory for Russia at Poltava during this war. For 10 points, name this war that made Russia a major power after it defeated Charles XII's Sweden.
ANSWER: **Great Northern** War

16. At the beginning of this process, nine people are randomly chosen, including three scrutineers who poke pieces of paper with a needle. People over the age of eighty are not allowed to participate in this process. This process lasts between the *extra omnes* proclamation and the *Habemus Papam*. Before this process can occur, the Camerlengo must hit a corpse on the head with a silver hammer. The *sede vacante* results in one of these meetings, which is the subject of an Apostolic Constitution passed by John Paul II allowing a majority vote to eventually triumph. White smoke from the Sistine Chapel signals its end. For 10 points, name this gathering of cardinals to elect a new Pope.
ANSWER: papal **conclaves** [or the **election of the Pope** or equivalents before it is read]

17. Two forms of this quantity make up the horizontal and the curved axes of a psychrometric chart. For an ideal gas, the volume expansivity, symbolized beta, equals one over this quantity. The efficiency of a Carnot cycle equals one minus the ratio of this intensive quantity for the two reservoirs, while RMS velocity of a gas is directly proportional to the square root of this quantity. Entropy is zero for a crystal when this quantity is also zero, according to the third law of thermodynamics. This quantity varies directly with pressure and volume of an ideal gas. For 10 points, name this quantity measured in Kelvins or degrees Celsius.
ANSWER: **temperature** [or **T**]

18. This novel's protagonist falls in love with a woman whose ancestor Frans van der Groov killed all the dodos. A doctor in this novel creates Imipolex G, which is suggested as a source of the protagonist's talents during a chapter set in a casino named for Hermann Goering. In this novel, the statistician Roger Mexico discovers that one man's

sexual exploits are governed by the Poisson distribution. This novel begins with the sentence “A screaming comes across the sky,” and ends with the landing of a V-2 rocket. For 10 points, identify this lengthy postmodern novel about the paranoid Lieutenant Tyrone Slothrop, written by Thomas Pynchon.

ANSWER: **Gravity’s Rainbow**

19. One character in this opera frightens a group of policemen led by the Sergeant by singing “Go, ye heroes, and die!” After being challenged in the name of Queen Victoria, a group in this work decides not to kill the Major-General, whose daughter Mabel is spotted on a beach by this opera’s protagonist. Because Ruth misheard the word “pilot,” the protagonist of this work is forced into an occupation until his twenty-first birthday, but his release from that position is cut short once it is revealed that he was born on a leap day. For 10 points, name this opera in which Frederic works for the titular band of ship raiders, by Gilbert and Sullivan.

ANSWER: *The **Pirates of Penzance**; or, The Slave of Duty*

20. One negotiator of this treaty had just been released from the Tower of London two years earlier with the help of Richard Oswald, and was named Henry Laurens. This treaty indirectly led to mass settlement of New Brunswick, and set one national boundary at the St. Croix River. Article 6 of this agreement was violated when one nation failed to vacate forts on the Great Lakes, leading to Jay’s Treaty eleven years later. It set the American border at the Mississippi River to the west and Florida to the south, and this treaty was signed after a defeat for General Cornwallis at Yorktown. For 10 points, name this treaty which ended the American Revolution.

ANSWER: Treaty of **Paris** 1783

21. Most models in this school of economics are based on short-run price stickiness that does not satisfy the Barro critique. This school holds that the equilibrium level of output will occur where the desired total spending line intersects a 45-degree line. An increase in savings rate results in a decrease in total savings in the paradox of thrift, which was re-introduced by an early member of this school, whose advocates introduced the IS/LM model and the multiplier effect. This school advocates combating recessions with government spending. For 10 points, name this school of economics named for the British author of *The General Theory of Employment, Interest, and Money*.

ANSWER: **Keynesian** economics [accept John Maynard **Keynes**; accept **New Keynesian** economics or **Neo-Keynesian** economics]

X. One legendary figure in this country’s history was a wheelwright who founded the Piast dynasty. The *Nihil novi* was a 1505 act passed by its parliament, the *sejm*, and the Confederation of Targowica invited a Russian invasion after the adoption of a liberal constitution. One battle in this country saw its king ally with Grand Duke Vytautas to repulse the Teutonic Knights and took place at Grunwald. Tadeusz Kościuszko led this nation’s resistance to a Russian deal with Austria to partition this nation. More recently this country was home to the trade union Solidarity, led by Lech Walesa. For 10 points, name this European nation that was home to the Warsaw Ghetto.

ANSWER: **Poland**

X. One species in this phylum was the model organism Eric Kandel used to study a siphon-gill withdrawal reflex. That species is the *californica* species of a genus in this phylum. Though not platyhelminthes, members of this phylum serve as intermediates in transmitting schistosomiasis from trematodes to humans. *Aplysia* is a genus in this phylum, members of which, excluding bivalves, feed using an odontophore along with a toothed chitin ribbon called a radula. This phylum’s most numerous subclass are the cephalopods. For 10 points, identify this phylum of invertebrate mammals that includes squids and octopuses.

ANSWER: **molluscs** [or **Mollusca**]

X. Near the end of this novel, one character moves to an isolated air-lighthouse where he flogs himself, causing a crowd to assemble later and chant “We--want--the whip!” Platitudes in this work include “a gramme in time saves

nine” and “civilization is sterilization.” In this novel, Lenina Crowne is attracted to a man from Malpais whose mother, Linda, slept with the Director of Hatcheries and Conditioning. Including descriptions of soma consumption and the Bokanovsky Process for making different classes of humans, this novel ends with the exile of Bernard Marx to Iceland, while John the Savage hangs himself. For 10 points, name this dystopian novel by Aldous Huxley.

ANSWER: **Brave New World**

1. Mississippi representative Albert Brown coined this term to describe an Abraham Watkins Venable speech about American military intervention in Cuba. For 10 points each:

[10] Name this parliamentary procedure in which legislators “talk out a bill,” delaying or preventing a vote on that bill so that it cannot pass.

ANSWER: **filibuster** [accept word forms]

[10] In the U.S. Senate, Rule 22 covers this process, in which three-fifths of senators can vote to close debate.

ANSWER: **cloture** [accept **closure**; prompt on **guillotine**]

[10] The Byrd Rule governs which pieces of legislation can undergo this legislative process in the Senate, which limits debate over budget bills to 20 hours.

ANSWER: **reconciliation** [accept word forms]

2. According to the mythology of this civilization, most of humanity was wiped out in a great flood called Unu Pachakuti. For 10 points each:

[10] Name this Western Hemisphere civilization that worshipped the sun god Inti and the fertility and earthquake goddess Pachamama.

ANSWER: **Inca** Empire

[10] After performing his work, the Inca creator god Viracocha disappeared westward from Peru across this large body of water. Perhaps for that reason, the raft *Kon-Tiki* takes its name from an alternate name for Viracocha.

ANSWER: **Pacific** Ocean

[10] Coniraya was the Incan god of this domain. The Aztec god of this domain, Tecciztecatl, had a rabbit thrown at his face by Tlaloc. Chandra and Soma were also Hindu deities of this domain, as was Tsukuyomi in Japan.

ANSWER: the **moon**

3. One series of paintings by this man depicts a man in a boat riding through four stages of life. For 10 points each:

[10] Name this American artist of *The Voyage of Life* who showed a civilization’s rise, prosperity, and eventual decline in *The Course of Empire*.

ANSWER: Thomas **Cole**

[10] Cole was one of the founding members of this mid-19th century art movement, which painted romantic landscapes of the title region. Other members of this school included Frederic Church and Asher Durand.

ANSWER: **Hudson River** School

[10] This Asher Durand painting depicts Thomas Cole and William Cullen Bryant standing on a cliff overlooking a waterfall in the Catskill Mountains. It takes its title from a John Keats poem.

ANSWER: **Kindred Spirits**

4. He described poetry-writing by stating that “if it does not seem a moment’s thought, / Our stitching and unstitching has been naught.” For 10 points each:

[10] Identify this Irish poet of “Adam’s Curse,” who wrote of traveling to a place that is “no country for old men” in “Sailing to Byzantium.”

ANSWER: William Butler **Yeats**

[10] Yeats wrote that “Things fall apart; the centre cannot hold” in this poem, which discusses a “widening gyre” and ends with the image of a beast “[slouching] towards Bethlehem to be born.”

ANSWER: “The **Second Coming**”

[10] This Yeats poem describes a blue gemstone on which is carved the image of three Chinamen and a bird flying overhead. It opens with a description of “hysterical women” who are “sick of the palette and fiddle-bow.”

ANSWER: “**Lapis Lazuli**”

5. The Kol Nidre is recited before evening service on this holiday. For 10 points each:

[10] Name this Day of Atonement, the holiest day of the year in Judaism.

ANSWER: **Yom Kippur**

[10] The Ne’ilah service concluding Yom Kippur ends with the blowing of this instrument made from a ram’s horn. It’s also used on Rosh Hashanah.

ANSWER: **shofar**

[10] This prayer is also spoken at the end of the Ne’ilah. This prayer, which literally translates as “Hear, O Israel,” is traditionally the most important one in Judaism, and is often spoken by Orthodox Jews before they go to sleep.

ANSWER: **Shema** *Yisrael* [or the **Sh’ma**]

6. Their demands included universal male suffrage and payment for members of Parliament. For 10 points each:

[10] Name this working-class reform movement in England, led by Feargus O’Connor and others. It rallied around a namesake document written by a committee led by William Lovett.

ANSWER: **Chartist** movement [or **Chartism**; also accept **People’s Charter** of 1838]

[10] The Chartists published a newspaper named for a star in this cardinal direction. The island of Great Britain borders a sea named for this direction.

ANSWER: **north** [accept *The Northern Star* or **North Sea**]

[10] Chartists marched on Westgate Hotel to free fellow imprisoned Chartists in this uprising named for the town in which it took place. The Rhode Island town of this name houses Gilded Age mansions such as The Breakers.

ANSWER: **Newport** [or **Newport**, Monmouthshire; or **Newport**, Rhode Island]

7. Monica Ali was criticized for her scant knowledge of this language, the primary one spoken by the London-based immigrants she portrayed in *Brick Lane*. For 10 points each:

[10] Name this language used to write a melancholy play about the adopted child Amal, *The Post Office*. The use of names of endearment, or *daak naam*, by its speakers leads to Nikhil Ganguli being called “Gogol” in *The Namesake*.

ANSWER: **Bengali** [or **Bangla**]

[10] This foremost Bengali man of letters wrote the poetry collection *Gitanjali*, as well as the plays *Home and the World* and *The Post Office*.

ANSWER: Rabindranath **Tagore** [or Rabindranath **Thakur**]

[10] The introduction to *Gitanjali* was penned by this Irish poet, who wondered whether the deaths of “Connolly and Pearse” were “needless...after all” in “Easter, 1916” and wrote the line, “This is no country for old men.”

ANSWER: William Butler **Yeats**

8. With his namesake Quartet, one player of this instrument released a song named for its time signature, “Take Five,” on the album *Time Out*. For 10 points each:

[10] Name this string-percussion instrument played by Dave Brubeck, as well as by the blind Art Tatum and the composer of “Round Midnight,” Thelonious Monk.

ANSWER: jazz **piano**

[10] This other jazz pianist, a frequent collaborator with Billy Strayhorn, had several stints performing at the Cotton Club. His orchestra’s hits include “Mood Indigo” and “It Don’t Mean a Thing (If It Ain’t Got that Swing).”

ANSWER: Edward Kennedy “Duke” **Ellington**

[10] Ellington worked with Strayhorn on this signature hit of the Duke Ellington Orchestra. This song’s title refers to a branch of the New York Subway that will get you to “Sugar Hill way up in Harlem.”

ANSWER: **“Take the “A” Train”**

9. The Brillouin zones of these structures can be constructed using Wigner-Seitz cells. For 10 points each:

[10] Give this term for the structures in which atoms or molecules are arranged in a periodic three-dimensional array. Ice and rock salt both take on this type of structure.

ANSWER: **crystals**

[10] A crystalline scattering condition named for this man sets the change in a wavevector equal to one of the crystal's reciprocal lattice vectors or, equivalently, sets $2d \sin \theta$ equal to an integer multiple of wavelength.

ANSWER: William Lawrence **Bragg**

[10] Wavefunctions in a crystal can be found via Bloch's theorem, which says that the wavefunction in this kind of regularly repeating potential can be decomposed into a complex exponential and a function of this type.

ANSWER: **periodic** [accept word forms]

10. Gloria's suicide after being dumped by Alton Scales leads a Brooklyn intellectual to resist local politician Wally O'Hara in one play by this author. For 10 points each:

[10] Name this playwright of *The Sign in Sidney Brustein's Window*. Joseph Asagai courts a woman he terms “alaiyo” in another of her plays, in which Karl Lindner represents a stubborn neighborhood association.

ANSWER: Lorraine **Hansberry**

[10] In this play, Hansberry's most famous, the Younger family refuses to be bought out by a financial offer intended to deter them from moving into a white neighborhood.

ANSWER: A **Raisin in the Sun**

[10] The title of *A Raisin in the Sun* is based on a Langston Hughes poem that wonders what would happen if one of these things were “deferred,” and suggests that it might “fester like a sore” or “explode.”

ANSWER: a **dream**

11. These subdivisions of a larger country, which are smaller than provinces, were partly ruled from “plantations” beginning in the 16th century. For 10 points each:

[10] Name these administrative divisions that include Tipperary, Kilkenny, Limerick, and Cork.

ANSWER: **counties** [accept word forms; or **contaetha**; or **coonties**]

[10] Those counties comprise this island country, once a colony of Great Britain, with capital Dublin.

ANSWER: **Ireland**

[10] This southernmost province of Ireland, which borders Connacht and Leinster to the north, contains the cities of Cork, Waterford, and Limerick.

ANSWER: **Munster**

12. In abstract algebra, the isomorphism theorems are usually stated with regards to two of these structures related by a homomorphism. For 10 points each:

[10] Identify these structures, which consist of a set, an invertible and associative law of composition on that set, and an identity element for the law of composition.

ANSWER: **groups**

[10] Abelian groups are further endowed with the fact that the law of composition has this property. When this property holds, the order of operands is irrelevant, such as when $a + b = b + a$.

ANSWER: **commutative** property

[10] One example of an abelian group is a group of this type, which consists of the positive and negative powers of a single generating element x . The smallest number n such that x to the n equals 1 is called the order of this group.

ANSWER: **cyclic** group

13. Sonya tells one character in this play about her love for Astrov, but Astrov kisses that character instead. For 10 points each:

[10] Name this play about a miserable middle-aged man who manages the rural estate of his brother-in-law, Serebryakov. He tries to seduce Serebryakov's young wife, Yelena, but notices Astrov doing the same thing.

ANSWER: Uncle Vanya [or Dyadya Vanya]

[10] *Uncle Vanya* is a play by this Russian author. Trepilev's unrequited love for Nina causes him to commit suicide after killing the title bird of this author's play *The Seagull*.

ANSWER: Anton Chekhov

[10] In this play by Chekhov, the servant Firs dies in an abandoned house after Lopakhin buys Madame Ranevskaya's estate, which includes a fruit-filled forest area.

ANSWER: *The* Cherry Orchard [or Vishnevyy sad]

14. These bonds form parallel to the bonding axis, and two of them are found in a covalent triple bond. For 10 points each:

[10] Name these bonds that together with sigma bonds make up double bonds.

ANSWER: pi bonds

[10] Pi bonds result from the overlap of the *p* type of these regions, where the probability of finding an electron is high. Each one can hold a maximum of two electrons.

ANSWER: atomic orbitals

[10] This reaction mechanism proceeds by the interaction of a Lewis base with the sigma-star antibonding orbital on the substrate. In this mechanism, the leaving group leaves in a concerted, bimolecular transition state.

ANSWER: SN2 [pr. "S-N-2"; or bimolecular nucleophilic substitution; prompt on partial answer, as they must have some combination of "s" or "substitution"; "n" or "nucleophile"; and "2" or "bimolecular"]

15. This man visited England in order to give a performance for Victoria's jubilee, and Sitting Bull toured with him for a while. For 10 points each:

[10] Name this man who led a series of entertaining cowboy-themed Wild West shows in the late 19th century.

ANSWER: William Frederick "Buffalo Bill" Cody [accept either underlined part]

[10] One of the headliners at the Wild West shows was this sharpshooter who gained fame for her ability to shoot targeted holes in a playing card. An Irving Berlin musical asks this woman to "get your gun."

ANSWER: Annie Oakley [or Phoebe Ann Moses]

[10] Buffalo Bill made a fortune by setting up a Wild West show adjacent to this 1893 event in Chicago. The Ferris Wheel debuted at this event.

ANSWER: World's Columbian Exposition [or the 1893 World's Fair; or the Chicago World's Fair]

16. Identify the following about arguments for the existence of God, for 10 points each:

[10] This argument formulated by Anselm of Canterbury understands God as "a being than which no greater can be conceived" and claims that if we can imagine God in the mind, he must exist in reality as well.

ANSWER: ontological argument

[10] The argument from first cause and the teleological argument are among the Five Proofs for the existence of God, or *Quinque viae*, presented in this theologian's *Summa Theologica*.

ANSWER: St. Thomas Aquinas

[10] One of Aquinas' Five Proofs is this concept, postulated by Aristotle in his *Metaphysics*, of an original cause of all forces, uncaused by any prior force.

ANSWER: unmoved mover [or prime mover]

17. Answer some questions about historical firsts of the Soviet space program, for 10 points each:

[10] The 1957 launch of this object, the first artificial satellite, is generally regarded as the beginning of the Space Race between the US and USSR.

ANSWER: Sputnik 1

[10] This Soviet project of manned space flights was spearheaded by Sergei Korolev. The first of these missions on an R-7 model completed the first manned orbit of Earth with Yuri Gagarin, one of the Vanguard Six cosmonauts.

ANSWER: Vostok

[10] The launch of *Sputnik 2* saw this Soviet space dog become the first animal to orbit the earth. She unfortunately died a few hours into the mission from overheating.

ANSWER: Laika

18. Name some people who didn't win the 2013 US Open, for 10 points each:

[10] Chief among them is this Serbian player, who won an unnecessarily-long 54-shot rally in the finals before falling to Rafael Nadal in four sets. He's the current World No. 2.

ANSWER: Novak Djokovic [pronounced joke-uh-vitch]

[10] This men's doubles team missed out on the opportunity to win the Grand Slam in 2013, losing to Leander Paes and Radek Stepanek in the semifinals.

ANSWER: the Bryan brothers [or the Bryans; or Bob and Mike Bryan]

[10] Perhaps least surprisingly, this American former World No. 4 retired after losing to Ivo Karlovic. This player was essentially cheated out of a medal by Chile's Fernando Gonzalez at the 2008 Beijing Olympics.

ANSWER: James Blake

19. After writing the score for a movie about Robert Scott's expedition, this composer was inspired to write *Sinfonia antartica*. For 10 points each:

[10] Name this composer who based *The Lark Ascending* on a George Meredith poem. His works inspired by folk themes include *Fantasia on "Greensleeves"* and *Fantasia on a Theme of Thomas Tallis*.

ANSWER: Ralph Vaughan Williams [do not accept incomplete last name]

[10] Ralph Vaughan Williams and Thomas Tallis were composers from this nation, where Handel's *Zadok the Priest* has been played at every coronation ceremony since the one for George II.

ANSWER: United Kingdom [accept Great Britain or England]

[10] This other British composer frequently collaborated with Edith Sitwell in his early career. He is best known for a piece based on the Book of Daniel, *Belshazzar's Feast*.

ANSWER: William Walton

20. Environmental cues which help synchronize these cycles are called zeitgebers. For 10 points each:

[10] Give this term for the biological temporal rhythm which, in humans and many other organisms, is a 24-hour oscillation. It determines at what time of day someone is most alert, has the highest body temperature, etc.

ANSWER: circadian rhythms

[10] The levels of this drowsiness-inducing hormone fluctuates in a daily cycle, helping regulate the sleep-wake cycle. It's produced in the pineal gland and its secretion is a good way of measuring the circadian rhythms.

ANSWER: melatonin

[10] During the night, melatonin regulates the action of this other hormone, known as a hunger suppressant. This was the first protein hormone discovered to be derived from adipose tissue.

ANSWER: leptin

21. The most famous leader of these people united many of the Nguni into his kingdom. For 10 points each:

[10] Identify these southern African tribal people led by Cetshwayo during their war against the British, which saw the Battles of Isandlwana and Rorke's Drift.

ANSWER: Zulu people

[10] This unifier and greatest ruler of the Zulu was originally a vassal under Dingiswayo. He battled the Ndwandwe state and instituted conscripted regiments called amabutho.

ANSWER: **Shaka** kaSenzangakhona [or **Shaka** Zulu]

[10] Shaka's military reforms also included an invention of a new melee broad-bladed version of the assegai, which was one of these weapons.

ANSWER: throwing **spears**

X. The French expeditionary forces at this incident were led by Jean-Baptiste Marchand. For 10 points each:

[10] Identify this 1898 diplomatic crisis in which France and Britain vied for control of the title location in East Africa, which the French hoped would push Britain out of the region.

ANSWER: **Fashoda** Incident [or **Fashoda** Crisis]

[10] The British flotilla that reached Fashoda was led by this man who had just won the Battle of Omdurman. He was War Secretary during World War I and his face appeared with the words "Wants You" on recruitment posters.

ANSWER: Horatio Herbert **Kitchener**, 1st Earl Kitchener

[10] The Battle of Omdurman took place not far from Khartoum in this modern-day nation.

ANSWER: **Sudan**

X. This character's interactions with a blind poet called "the Shaper" are examined in a novel by John Gardner. For 10 points each:

[10] Name this beast whose mother is killed with the sword Unferth. He himself is also killed by the same hero when he is mortally wounded after his arm is ripped off.

ANSWER: **Grendel**

[10] Grendel and his mother are killed by this warrior, who titles an Old English epic.

ANSWER: **Beowulf**

[10] Grendel's repeated invasions of Heorot torment this king of the Danes. His best warrior, Aeschere, is killed by Grendel's mother when she attacks Heorot in revenge for her son's death.

ANSWER: **Hrothgar**

X. It proposes that species remain in stasis for long periods of time, before rapidly evolving. For 10 points each:

[10] Name this theory that superseded phyletic gradualism as a model for the creation of new species over time.

ANSWER: **punctuated equilibrium**

[10] This evolutionary biologist proposed the theory of punctuated equilibrium with Niles Eldredge. He attacked intelligence tests in *The Mismeasure of Man*, and his essays were collected in books such as *The Panda's Thumb*.

ANSWER: Stephen Jay **Gould**

[10] Much of Gould's experimental research was done on these gastropods, in particular the Bermudan *Poecilozonites* and the West Indian *Cerion* genuses, which display unusual geographic diversity.

ANSWER: land **snails**