

Bulldog High School Academic Tournament 2017 (XXVI): Revenge of the BH-SAT

Written by Yale Student Academic Competitions (Stephen Eltinge, Adam Fine, Isaac Kirk-Davidoff, Moses Kitakule, Laurence Li, Jacob Reed, Mark Torres, James Wedgwood, Cathy Xue, and Bo You), Jason Golfinos, and Clare Keenan

Edited by Jacob Reed

Packet 13 Tossups

1. **While in exile, a king with this name became the commander of the Varangian Guard; that king with this name is often considered the last Viking raider. In England, Canute was succeeded by a son of this name nicknamed for his fast feet. The defeat of a king with this name was commemorated by (*) Battle Abbey. A Norwegian king of this name teamed up with Tostig to lose the Battle of Stamford Bridge, and was nicknamed “Hardrada.” The defeat of a son of Godwin with this name is depicted on the Bayeux Tapestry. For 10 points, give this name of the English king who took an arrow to the eye at the Battle of Hastings while fighting William the Conqueror.**

ANSWER: Harold [accept specific Harolds like Harold Godwinson] <JR>

2. **A group named for these shapes is often constructed as the quotient of the reals by the integers. These shapes are fractally packed in the Apollonian gasket. The area of a quadrilateral that intersects one of these shapes exactly four times can be computed with Brahmagupta’s formula. Parts of two of these shapes are (*) drawn in the classic construction of a perpendicular bisector. In the complex plane, the roots of unity lie on one of these shapes. These shapes are intersected by lines called secants and line segments called chords. These shapes consist of all points a fixed distance from a given point. For 10 points, name these shapes whose circumference is two-pi times their radius.**

ANSWER: circles <JR>

3. **A character in this man’s first novel finds the remains of a Jesuit’s attempts to convert rats to Catholicism while hunting alligators. That first novel by this man is about eternal Schlemil Benny Profane, who works for Yoyodyne. In a novella by this man the Peter Pinguid Society is part of the W.A.S.T.E postal network, which is found out actually to be part of Pierce Inverarity’s (*) “Tristero” conspiracy by Oedipa Maas. His most famous novel depicts the search for a Schwarzergerat V2 rocket and the effects of Imipolex G on Tyrone Slothrop, and begins “A screaming came across the sky.” For 10 points, name this reclusive author of *V.*, *The Crying of Lot 49* and *Gravity’s Rainbow*.**

ANSWER: Thomas (Ruggles) Pynchon <IKD>

4. **In a painting from this century, a woman in orange extends her right arm to the left, while a seated woman covers her face with a blue shawl. In this century, the “grand style” was advocated in fifteen *Discourses* and the “purity” of ancient sculpture was praised in the German book *The History of Art in Antiquity*. Johann Joachim (*) Winckelmann wrote in this century, when the Royal Academy was founded, and three armored brothers were painted raising their right arms to three swords held by their father. Joshua Reynolds was active in this century, whose paintings include *The Oath of the Horatii*. For 10 points, name this century when Rococo art was followed by Neoclassicism.**

ANSWER: 1700s [or 18th century] (The first painting is Jacques-Louis David’s *The Lictors Bring to Brutus the Bodies of His Sons*.) <JR>

5. *Sports Illustrated* dubbed a 1982 NFL playoff game between Miami and this team to be a “Game No One Should Have Lost,” and in 1978 this team was the victim of the Holy Roller play. Junior Seau played most of his career with this team, which is owned by Alex Spanos. Its only Super Bowl appearance was a blowout loss to the 49ers in 1995. This team drafted third overall in 2015, taking Defensive End (*) Joey Bosa. In 2016, this was the only NFL team to lose to the Browns, and Ladaian Tomlinson played for this team. This team’s longtime quarterback is Philip Rivers. For 10 points, name this non-Rams team that in 2017, moved from San Diego to Los Angeles.

ANSWER: Los Angeles Chargers [accept San Diego Chargers; accept San Diego and prompt on Los Angeles until they’re mentioned] <LL>

6. This man envisioned his sheaf of grain standing up by itself, while several other bundles bow to it. This man encountered a woman traditionally called Zuleika. This man’s blind father crossed his hands when asked to bless this man’s children. After an attempted seduction, this man was accused of rape by (*) Potiphar’s wife. He used the images of lean and fat cows and grain to predict a famine. This man was beaten, thrown down a well, and sold into slavery out of jealousy. This man brought his family to Egypt after prophetically interpreting the Pharaoh’s dreams. For 10 points, name this first son of Rachel by Jacob, who gave this man a coat of many colours.

ANSWER: Joseph [or Yosef] <JR>

7. A specialized type of this tissue is joined up by intercalated discs. In this tissue, hydrolysis of ATP causes the “head” of a protein to snap forward, attach, and then snap back. This tissue gets an alternating light-dark appearance from its M and Z lines. In this tissue, signals transmitted along T-tubules activate the protein complex (*) troponin. Energy is provided to this tissue by creatine and glycogen. This tissue is activated by the neurotransmitter acetylcholine. This tissue is made of sarcomeres that contain “sliding filaments” of myosin and actin. For 10 points, name this tissue that contracts, allowing you to move.

ANSWER: (striated) muscles [prompt on heart tissue before “glycogen”] <JR>

8. Supposedly, boys in this state were only taught to “ride well, shoot straight, and speak the truth.” The girl Gorgo convinced Cleomenes I not to attack this state, despite the money offered by Aristagoras. This state, which was the first to consistently use the title “King of Kings,” was served by a 1700-mile Royal Road that ended at Sardis. This state conquered (*) Lydia after Croesus attacked it. This state, which conquered the Medes, was the first to be governed by satraps. It suffered the Ionian Revolt and was governed from Susa and Persepolis. For 10 points, name this victor of Thermopylae and loser at Marathon, a Near Eastern empire ruled by men like Cyrus and Xerxes.

ANSWER: Persian Empire [accept Achaemenid dynasty] <JR>

9. The protagonist of this novel is forced to pose with the title object while working as a nude model in an art school. Its protagonist buys a deli for his stepmother after going on a world tour organized by Bebra. A woman in this novel owns five “potato-colored” skirts, which she wears four at a time and uses to hide the protagonist’s grandfather. Its protagonist is convicted of murder after finding a (*) finger belonging to Sister Dorothea. This novel is written in an asylum by that protagonist, who can “singshatter” glass and decides to stop growing at age three. For 10 points, name this novel by Günter Grass, in which Oskar Matzerath plays the title toy instrument.

ANSWER: *The* Tin Drum <JR>

10. This place is the lower of two places described as “inside the fence.” This place’s “fence” was first made from the eyebrows of a being formed by the mixing of hot and cold in the Ginnungagap. Lif and Lifthrasir will re-populate this place, whose original residents were Ask and Embla. (*) Niflheim and Muspelheim are often depicted to this place’s north and south, and Ymir’s eyebrows separate this place from Jotunheim, the home of the giants. It is connected to Asgard by a rainbow bridge, and a namesake “serpent” encircles it. For 10 points, name this “middle enclosure” of Norse mythology, the world in which humans live.

ANSWER: Midgard [accept Middle Earth, Middle Enclosure or similar answers until it’s mentioned; prompt on answers like “the world”, “the human world”, or “the world in Norse mythology”—we need the specific name or a translation of it] <BY>

11. A boy “looks and looks” at this object, which is told to “run” in a “Ballad” that repeats its name twice. This object “drops anchor” in the eleventh of Neruda’s *Twenty Love Poems*, and it names the first of Lorca’s *Gypsy Ballads*. After moving his head to see this object, the speaker of an 8th-century, four-line poem lowers his head and gets homesick. An effect of this object is mistaken for (*) frost in a poem often translated as “Quiet Night Thought.” This object is invited by a “raised cup” that begins “among flowers.” Li Po wrote about drinking alone by the light of—for 10 points, what celestial body?

ANSWER: the Moon [or Luna; accept moonlight; accept half-moon] <JR>

12. One book by this philosopher begins with extensive comparisons of how a coat and 10 yards of linen are used and valued. This philosopher discussed the estrangement of people from objects they make, the act of making, from other people, and from their own “species-being” in his *Paris Manuscripts*. This philosopher “stood (*) Hegel on his head” by claiming that economic relations form a “base” and culture, politics, and society a “superstructure.” This philosopher wrote about alienation, historical materialism, and the exploitation of the worker with Friedrich Engels. For 10 points, name this author of *Das Kapital* and the *Communist Manifesto*.

ANSWER: Karl Marx <JR>

13. On an adiabat, “pressure times volume, raised to the ratio of two forms of *this* quantity” is constant. A solid is treated as a collection of 3D harmonic oscillators with the same frequency in a 1907 model of this quantity. The ratio of “this quantity at constant pressure” to “this quantity at constant volume” is called the adiabatic index. Einstein showed why this value for most crystalline substances is 3 times the (*) gas constant in the Dulong–Petit Law. Due to hydrogen bonding, water has an extremely high value for this quantity, at one calorie per gram per degree celsius. For 10 points, name this quantity, which is the amount of heat needed to raise the temperature of a substance.

ANSWER: specific heat capacity [prompt on “C_p” or “C_v”] <AF>

14. Verve Records was founded to release albums by this musician. This musician included a Charlie Parker-infused version of “How High the Moon” in a 1960 Berlin concert at which this artist improvised lyrics like “Oh what’s the next chorus / to this song now?” for “Mack the Knife.” This artist devoted albums to Cole Porter, Duke Ellington, and Irving Berlin as part of her series of Great American *Songbook* recordings. She recorded two albums with Louis Armstrong titled [*Her*] and *Louis*, as well as a 1938 recording of (*) “A-Tisket A-Tasket.” For 10 points, name this “First Lady of Song,” a jazz singer known for her scat singing.

ANSWER: Ella (Jane) Fitzgerald [prompt on Ella] <JR>

15. This man recently cancelled peace negotiations with a coalition in this country abbreviated CPP–NDA–NDF. This man refused to fire his country’s police chief after Korean businessman Jee Ick-Joo was kidnapped and murdered by his country’s police. This man was succeeded by his daughter in 2010 after being mayor of (*) Davao City for 22 years. At a 2016 rally, this man complained that he didn’t get the chance to be first in line to rape an Australian missionary. This man, who told Barack Obama to “go to hell,” has offered medals to people who shoot alleged drug dealers. For 10 points, name the current president of the Philippines.

ANSWER: Rodrigo (Roa) Duterte [or Rody Duterte; accept Digong] <BY/JR>

16. In this city, Latasha Harlins was shot while purchasing a bottle of Orange Juice. One event in this city started after Marquette Frye was pulled over for drunk driving. In the wake of an event in this city, its namesake asked “Can we all get along?” That event is referred to as “Sa-I-Gu” by this city’s Korean-Americans. Returning servicemen assaulted (*) Latinos wearing the titular outfit during this city’s Zoot Suit Riots. The acquittal of four police officers who were caught on videotape beating an African-American man on the ground led to 1992 riots in this city. The Watts and Rodney King riots hit—for 10 points—what large city in southern California?

ANSWER: Los Angeles [or L.A.] <LL>

17. This poem claims that there is “ample power / to chasten and subdue” in “the still, sad music of humanity.” This poem’s speaker claims “the sounding cataract / haunted me like a passion” as he tries to describe his younger days, with all their “aching joys” and “dizzy raptures.” The final section of this poem is addressed to “my dearest Friend, / my dear, dear Friend,” who is the poet’s (*) sister Dorothy. This poem calls a river “thou wanderer thro’ the woods,” and its speaker recounts “five summers, with the length of five long winters!” since seeing the “Sylvan Wye.” *Lyrical Ballads* ends with—for 10 points—what poem about a ruined monastery, by William Wordsworth?

ANSWER: “Tintern Abbey” [or “Lines Composed a Few Miles above Tintern Abbey, on Revisiting the Banks of the Wye During a Tour, July 13, 1798”] <JW>

18. One type of this quantity can be calculated as one-half the volume integral of the H -vector dotted with the B -vector. That type is periodically exchanged with another type of this quantity in an LC circuit. An electric field E contributes a density of this quantity equal to “one-half epsilon-nought times E -squared.” A capacitor holding a charge Q has a value of (*) “one-half Q -squared over C ” for this quantity. For a single charge, this quantity equals the charge times the voltage at which it is held, and it can be calculated as the work required to move that particle into its position. For 10 points, name this amount of energy stored in a system.

ANSWER: potential energy [prompt on energy until mentioned; do **not** accept or prompt on “(electric) potential”] <SE>

19. Criticism of this man was subject to a florally-named taboo, but that didn’t stop *The Sun* from writing “Let the Bastard Rot in Hell” when he died in 1989. One of this ruler’s prime ministers was assassinated by the ultra right-wing League of Blood in the May 15 Incident. This ruler established several puppet states after the (*) Mukden Incident. After admitting that he wasn’t a god, this man was kept in power by Douglas MacArthur. This ruler oversaw an economic miracle led by companies like Sony and Honda after the execution of his prime minister Hideki Tojo. For 10 points, name this World War II-era emperor of Japan.

ANSWER: Hirohito [or Emperor Showa] <JR>

20. This opera's Act III prelude is followed by a long English horn solo depicting a shepherd's pipe. The premiere of this opera supposedly killed the *Heldentenor* Ludwig Schnorr. In Act II of this opera, the main characters decide that death, the night, and love are all basically the same thing. In this opera's final act, (*) Kurwenal attacks Melot. The unusual spelling "F, B, D-sharp, G-sharp" forms this opera's namesake chord. It ends with the second title character singing "Mild und leise," her "Liebestod." In this opera, Brangäne gives a love potion to the title characters, one of whom is killed by King Mark. For 10 points, name this opera by Richard Wagner about a pair of lovers.

ANSWER: Tristan und Isolde [or Tristan and Isolde] <JR>

Tiebreaker

21. This author inspired Henry George with his idea of a "citizen's dividend," a form of universal basic income. He claimed that only "blood and ashes" come from government by "crowned ruffians" in his most famous work. This author of *Agrarian Justice* helped popularize deism with his *The Age of Reason*. This author defended the French Revolution from (*) Edmund Burke's *Reflections* in his book *Rights of Man*. He described "the summer soldier and the sunshine patriot" who shrink from "the times that try men's souls" in "The American Crisis." This man argued that a small island can't rule a continent in a 1776 pamphlet. For 10 points, name this author of *Common Sense*.

ANSWER: Thomas Paine <JR>

Bonuses

1. These designs are determined by the length of their ascenders and descenders, which are measured in points. For 10 points each:

[10] Name these letter designs, whose varieties include Times New Roman and Helvetica.

ANSWER: **typefaces** [or **fonts**]

[10] Helvetica is *this* kind of typeface, which *don't* have fancy little lines attached to the end of each stroke. Times New Roman is the *opposite* of this kind of typeface.

ANSWER: **sans-serif** [or **gothic**]

[10] Eric Gill's namesake sans-serif typeface was used on *this* publisher's book covers by typography pioneer Jan Tschichold. A series by this publisher is famed for its black spines, now with a white stripe and orange letters.

ANSWER: **Penguin** Books [accept **Penguin Classics**] <JR>

2. "The Washington Consensus" was the practice of imposing these types of policies as conditions for loans. For 10 points each:

[10] Name this term for government policies of privatization, financialization, free trade, and deregulation. Proponents of this "third way" included Milton Friedman, and David Harvey wrote *A Brief History* of it.

ANSWER: **neoliberalism** [do **not** accept or prompt on just "liberalism"]

[10] The economic crises resulting from neoliberal policies led to this continent's "Pink Tide," which brought in leftist leaders like Rafael Correa, Evo Morales, and Hugo Chávez.

ANSWER: **South America**

[10] In 1999, global protesters arrived at this intergovernmental institution's meeting in Seattle, to protest its role in agreements like NAFTA. This institution replaced the GATT and focusses on things like harmonizing tariffs.

ANSWER: **World Trade Organization** [or **WTO**] <IKD>

3. In physics classes, rotational motion is often introduced using a set of analogies to linear motion. Answer some questions about them, for 10 points each.

[10] In rotational motion, velocity is replaced by angular velocity, which is typically measured in *these* units. These units differ from hertz by a factor of 2-pi.

ANSWER: **radians per second** [do **not** accept or prompt on "radians" or "seconds"; do not accept or prompt on "degrees per second"]

[10] Resistance to rotation is quantified by the moment of inertia, which is the rotational analogue of *this* quantity.

ANSWER: **mass**

[10] The magnitude of a rotational torque equals the magnitude of the linear force that caused it times *this* length, which is the perpendicular distance from the axis of rotation to the point where the force is applied.

ANSWER: **lever arm** <SE>

4. This poem asks why the "clay grew tall" and wonders why "fatuous sunbeams toil to break earth's sleep." For 10 points each:

[10] Name this poem, in which the speaker experiences the title state after dragging a friend's body into the sun fails to wake him up.

ANSWER: "**Futility**"

[10] "Futility" is a poem by Wilfred Owen, whose poem "Dulce et Decorum est" is titled for a phrase by this Latin poet. This Roman wrote the *Ars Poetica* and a number of *Satires* that are contrasted with Juvenal's.

ANSWER: **Horace** [or Quintus **Horatius** Flaccus]

[10] "Dulce et Decorum est" includes an attack of *this* kind of weapon, which inspires an "ecstasy of fumbling." A victim of this kind of weapon has "froth-corrupted lungs, obscene as cancer."

ANSWER: poison **gas** [accept specific answers like **mustard gas** or **chlorine gas**; or **chemical weapons**] <JR>

5. This project was almost entirely paid for by a federal gas tax. For 10 points each:

[10] Name this biggest public works project in U.S. history, which was started in 1956 under Dwight D. Eisenhower. This federal project built thousands of miles of roads, whose numbers end with zero if they go east-west.

ANSWER: **Interstate** Highway System

[10] This First Lady led the effort to pass the Highway Beautification Act. This native of Austin bought radio and TV stations with her inheritance to help fund the political career of her husband, who was also a Texas Democrat.

ANSWER: “Lady Bird” **Johnson** [or Claudia Alta **Taylor**]

[10] The “generic” appearance of interstates has often been unfavorably contrasted with older federal roads like *this* U.S. highway. Many victims of the Dust Bowl went west along this road, which runs from Chicago to Santa Monica.

ANSWER: U.S. **Route 66** <IKD>

6. This politician was due to become his country’s Chief of Staff in 2016, but a fraud investigation led to his appointment being blocked. For 10 points each:

[10] Name this politician, who was popular for programs like Bolsa Familia and Fome Zero. Dilma Rousseff succeeded this man as Brazil’s president in 2010.

ANSWER: (Luiz Inácio) **Lula** da Silva

[10] Lula’s house was raided as part of this massive corruption investigation. Dilma Rousseff’s 2016 impeachment was sparked by her involvement in this operation’s target company, Petrobras.

ANSWER: Operation **Car Wash** [or Operação **Lava Jato**]

[10] Petrobras, as its name might suggest, is a company that mostly works with *this* commodity. Russia’s Rosneft produces this commodity, as does Secretary of State Rex Tillerson’s former company, ExxonMobil.

ANSWER: crude **oil** [or **petroleum**] <MK>

7. For 10 points each—answer the following about American music in the 19th century:

[10] At the end of the 19th century, this genre of piano music swept the nation through pieces like Scott Joplin’s “The Entertainer.” Joplin’s biggest hit was an 1899 piece in this genre named for a Maple Leaf.

ANSWER: **ragtime**

[10] This American songwriter scored massive hits in 1850s America with songs like “Jeanie with the Light Brown Hair” and “Camptown Races,” which were often performed in blackface.

ANSWER: Stephen (Collins) **Foster**

[10] This Charles Ives piece liberally quotes Stephen Foster tunes in its fourth movement, “Thoreau.” This piano piece quotes the opening of Beethoven’s fifth in every movement, and has the pianist play with a block of wood.

ANSWER: **Concord Sonata** [or **Piano Sonata No. 2, Concord, Mass., 1840–60**; prompt on piano **sonata**]

<JR>

8. This quantity is equal to the sum of internal energy and pressure times volume. For 10 points each:

[10] Name this thermodynamic quantity symbolized H . Its change is negative for a system undergoing an exothermic reaction.

ANSWER: **enthalpy**

[10] Since enthalpy is a state function, this law shows that the total enthalpy change during a multi-step reaction equals the sum of the changes during the individual steps. This law allows one to calculate lattice energies using a Born-Haber cycle.

ANSWER: **Hess**’s law

[10] Enthalpy is held constant during this “throttling” process discovered by two British scientists, in which a sudden change in pressure causes a dramatic change in temperature.

ANSWER: Joule–Thomson process [or Joule–Kelvin process; accept names in either order; accept “effect” in place of “process”] <SE>

9. This philosopher suggested that many categories are best discussed in terms of “family resemblances,” not set criteria. For 10 points each:

[10] Name this 20th-century philosopher, who originated the notion of “language-games” and argued that a private language is impossible.

ANSWER: Ludwig Wittgenstein

[10] Part of Wittgenstein’s argument in the *Philosophical Investigations* is that the meaning of a word is determined by *this* other aspect of the word. A description is fine.

ANSWER: use [accept word forms like how people use it or usage]

[10] Wittgenstein’s *Philosophical Investigations* opens by attacking a view of language-learning discussed in this Catholic author’s *Confessions*. This Church Father coined the term “just war” in his *City of God*.

ANSWER: Saint Augustine of Hippo <JR>

10. For 10 points each—answer the following about Jorge Luis Borges [“HOR-hay loo-EESS BOR-hayss”]:

[10] Borges is possibly most famous for a story describing one of these places “of Babel.” Borges directed the National one of these institutions in Argentina, even after his blindness left him unable to read its holdings.

ANSWER: library [or bibliotecas]

[10] At the end of “Pierre Menard,” Borges suggests rereading *The Imitation of Christ* as if it had been written by *this* author. This man wrote a story in which Gabriel Conroy meditates on the lasting impact of deceased people.

ANSWER: James (Augustine Aloysius) Joyce (the story is “The Dead” from *Dubliners*.)

[10] Borges’s story “The South,” or “El Sur,” ends with the protagonist, Juan Dahlmann, walking out of a bar and holding one of *these* object.

ANSWER: a knife <JR>

11. For 10 points each—answer the following about city walls in Greek mythology:

[10] Using a combination of good music and brute force, Zethus and Amphion built the walls of this city, which was originally founded by Cadmus.

ANSWER: Thebes

[10] According to Strabo, the residents of Tiryns contracted these beings to build their walls. The Greeks also credited the walls of Mycenae, not to mention Zeus’s thunderbolts, to *these* one-eyed beings.

ANSWER: the Cyclopes [or Cyclops; accept Cyclopeses]

[10] This father of Priam refused to reward Poseidon and Apollo for building the walls of Troy. Heracles and his sons saved this man’s daughter Hesione from the monster sent in revenge.

ANSWER: Laomedon <CX>

12. This man underwent the “Inferno Crisis,” a series of psychotic attacks that led him to develop small-scale plays that feature talking mummies and other spooooooky happenings. For 10 points each:

[10] Name this playwright who wrote about Agnes’s descent to Earth. In another of his plays, a count’s daughter has sex with a servant on Midsummer’s Eve.

ANSWER: (Johan) August Strindberg

[10] Strindberg still found time to write some nice, normal history plays about this kind of person, including Erik XIV and Karl XII. Shakespeare wrote a play about one of these guys named Lear.

ANSWER: kings [prompt on monarchs]

[10] Strindberg’s play about Agnes, who’s the daughter of Indra, is titled for *this* kind of experience. Another play titled for this kind of experience features characters named Peaseblossom and Mustardseed.

ANSWER: dreams [accept *A Dream Play* or *Ett drömspiel*; accept *A Midsummer Night’s Dream*] <LL>

13. An appalling 82% of the crew of these ships died by the end of World War II. For 10 points each:

[10] Name this kind of ship that moved in “wolf packs.” One of these ships sank the *Lusitania*.

ANSWER: U-boats [or Unterseebooten; accept “German submarines”]

[10] A U-boat-laid mine destroyed the HMHS *Britannic*, which was one of three *Olympic*-class ocean liners.

Another of those liners was *this* ship, which hit an iceberg en route to New York City in 1912.

ANSWER: RMS Titanic

[10] This man created the “wolf pack” tactic, and also advocated unrestricted submarine warfare. As if that weren’t bad enough, this man took power in 1945 as Hitler’s designated successor.

ANSWER: Karl Dönitz <LL>

14. This kind of immunity includes the complement system. For 10 points each:

[10] Name this kind of immunity that includes the presentation of antigens to cells from the adaptive immune system.

ANSWER: innate immunity [or innate immune system; accept non-specific immune system or in-born immunity system]

[10] Even before the complement system, the body has lines of defense like *this* substance, which is secreted from namesake membranes at body openings like the nose.

ANSWER: mucus

[10] These receptors form a major component of innate immunity. These receptors recognize specific bits of pathogenic protein or nucleic acid and then activate cells like macrophages.

ANSWER: Toll-like receptors [or TLR] <JR>

15. For 10 points each—answer the following about the early history of Sikhism:

[10] The founder of Sikhism, Nanak, was given this title, which is Sanskrit for “teacher.” In Hinduism and Jainism, this term applies to wise religious experts and counselors in general.

ANSWER: gurus

[10] Early on, the Sikhs were heavily persecuted by *this* empire, which executed Gurus Arjan and Tegh Bahadur.

ANSWER: Mughal Empire

[10] On the other hand, the Mughal emperor Akbar was widely tolerant of minority religions like Sikhism. Akbar tried to fuse the best bits of all faiths as *this* religion, but it died out, having never had more than twenty adherents.

ANSWER: Din-i Ilahi <JR>

16. For 10 points each—answer the following about what *Vogue* promised me are the hot fashion trends for 2017:

[10] This kind of fabric was the star of several Spring 2017 outfits from Ralph Lauren and Prada. This kind of fabric has an extremely short and dense pile, and its varieties include devoré and nacré.

ANSWER: velvet

[10] Like last year, jumpsuits are “in” this year. Jumpsuits are definitionally *this* kind of outfit, which is contrasted with separated items like bikinis.

ANSWER: one piece

[10] This fashion leader famously ushered in the jumpsuit fad by wearing a black one on Jimmy Fallon’s show. This woman often wears sleeveless dresses and is probably the most famous client of Jason Wu.

ANSWER: Michelle (LaVaughn Robinson) Obama <JR>

17. For 10 points each—answer the following about how old Italian paintings were made:

[10] Before oils were introduced in the 1400s, panel paintings usually used *this* medium, which often included egg as a binder.

ANSWER: egg **tempera**

[10] There's no need for tempera if you paint a mural right onto wet plaster; that technique is given this Italian name.

ANSWER: **fresco** [do **not** accept or prompt on "al fresco"]

[10] This fool tried to invent a new kind of fresco, which has caused his *Last Supper* to peel right off the wall. This man later showed that he wasn't really a fool by painting cool things like the *Mona Lisa*.

ANSWER: **Leonardo da Vinci** [accept either underlined part] <JR>

18. A character acquires this state after suffering a burst appendix during a Boy Scouts camping trip, For 10 points each:

[10] Identify this state of characters like Wally Webb and Julia Gibbs in the third and last act of a 1938 play. In that play, characters in this state reside in a cemetery outside of Grover's Corners.

ANSWER: being **dead** [accept being a **ghost** or anything remotely indicating they are **no longer alive**]

[10] Emily Webb, one of the dead, decides to revisit *this* event in her life, after which she asks the Stage Manager "Do any human beings ever realize life while they live it?"

ANSWER: her twelfth **birthday**

[10] Emily Webb, Julia Gibbs, and the Stage Manager all appear in this Pulitzer-prizewinning play.

ANSWER: **Our Town** (by Thornton Wilder) <LL>

19. For 10 points each—answer the following about the science of automobile manufacturing regulations:

[10] Ever since 1975, cars have been required to include these devices, which take poisonous carbon monoxide and unburnt hydrocarbons and turn them into water and carbon dioxide.

ANSWER: **catalytic converters**

[10] "Three-way" catalytic converters can even reduce nitrogen oxides, which are a major contributor to this kind of damaging precipitation. This precipitation forms when compounds like sulfur dioxide lower the pH of rain.

ANSWER: **acid** rain

[10] In 1975, Congress also put in place *these* basic regulations on fuel efficiency. These standards have successfully raised baseline gas mileage by about 15 miles per gallon.

ANSWER: **CAFE** standards [or **Corporate Average Fuel Economy** standards] <JR>

20. For 10 points each—answer this following about people Winston Churchill insulted:

[10] Churchill called this man "a modest man, with much to be modest about." This man got his revenge by defeating Churchill in the 1945 general election.

ANSWER: Clement (Richard) **Attlee**

[10] Churchill compared this man to "a female llama who has just been surprised in her bath." This man published three volumes of *War Memoirs*, and established a "dirigist" economy that led to the "Thirty Glorious Years."

ANSWER: Charles (André Joseph Marie) **de Gaulle**

[10] Churchill described Bernard Montgomery as "in defeat unbeatable, in victory unbearable" after British forces helped win this war. Montgomery fought Erwin Rommel and commanded ground forces at D-Day during this war.

ANSWER: **World War II** [accept reasonable equivalents like **Second World War**] <LL>

Tiebreaker

21. Wolfgang Pauli proposed the existence of these particles to explain beta decay. For 10 points each:

[10] Name these tiny, uncharged particles which were once believed to be massless. They come in three “flavors,” one each for the electron, muon, and tau particle.

ANSWER: **neutrinos**

[10] Neutrinos are now known to have miniscule but nonzero masses, which means that they are forbidden from reaching or exceeding this “universal speed limit” equal to about 300 million meters per second.

ANSWER: speed of **light** [prompt on c]

[10] In 2011, researchers on this experiment in Gran Sasso, Italy claimed to have measured neutrinos produced at CERN travelling faster than the speed of light. The results of this experiment were later blamed on faulty equipment.

ANSWER: **OPERA** experiment [or **Oscillation Project with Emulsion-tRacking Apparatus** experiment] <SE>