

1. The function of this material was confirmed in the Avery-MacLeod-McCarty and Hershey-Chase experiments. Enzymes acting on this material travel in the five-prime to three-prime direction. Okazaki fragments are formed on this material's lagging strand during its replication. This substance is made of linking pyrimidines and purines, and two strands of it are held together by hydrogen bonds. For 10 points, name this substance that is tightly coiled in chromosomes, the genetic material of all living cells.

ANSWER: **DNA** [or **deoxyribonucleic acid**]

027-09-1-09101

2. Roland Barthes' *S/Z* is an analysis of this author's story "Sarrasine." He classified the novel *Lost Illusions* as one of his "scenes from provincial life," along with *Eugénie Grandet*. Eugène de Rastignac is a recurring character in his novels, which include *Cousin Pons* and *Cousin Bette* as well as a novel about a doting parent, *Pere Goriot*. For 10 points, name this prolific French author who wrote over one hundred works, which make up *The Human Comedy*.

ANSWER: Honoré de **Balzac**

024-09-1-09102

3. One emperor from this country delivered the "Cry of Ipiranga" speech. This nation's final emperor freed slaves via the Golden Law, which was signed in absentia by his daughter Isabel. This nation sent forces to its state of Mato Grosso to combat invaders and benefitted from the talents of the Duke of Caxias [CAH-she-es] when it fought with Argentina and Uruguay against Paraguay in a Triple Alliance. For 10 points, name this nation whose last emperor, Pedro II, ruled from Rio de Janeiro, and which more recently has had a capital constructed at Brasilia.

ANSWER: Federative Republic of **Brazil** [or República Federativa do **Brasil**]

022-09-1-09103

4. An azeotrope either minimizes or maximizes this quantity depending on whether the solution shows positive or negative deviations from Raoult's Law. Compared to a pure solvent, a solution will increase this quantity proportionally to its molality. Liquids for which this quantity is lower than the external temperature are called volatile. It is defined as the temperature at which the external pressure and the vapor pressure of a liquid are equal. For 10 points, name this point, which at one atmosphere of pressure is one hundred degrees Celsius for water.

ANSWER: **boiling** point

003-09-1-09104

5. This man drew criticism for his favoring of Pakistan during the Bangladeshi war of independence, and he served as a foreign policy advisor to Nelson Rockefeller during Rockefeller's failed 1968 presidential run. This man engaged in secret talks prior to the Shanghai Communiqué, and he prematurely stated, "Peace is at hand," during negotiations with Le Duc Tho during the Paris Peace Conference, for which he was to earn a Nobel Peace Prize. A pioneer of the détente policy, for 10 points name this man who served as secretary of state under presidents Ford and Nixon.

ANSWER: Henry Alfred Wolfgang **Kissinger**

030-09-1-09105

6. This term of a field extension K over F is the dimension of the vector space K . Formally, this concept may be extended to any function as the ratio of the limit as x increases of \log of the magnitude of f of x over $\log x$. The Abel-Ruffini theorem states that the highest this quantity can be for a polynomial equation to be soluble in radicals is four. For 10 points, identify this term that refers both to the highest power of the variable found in a term of a polynomial, and to a unit equal to π over one hundred eighty radians, used to measure angles.

ANSWER: **degree**

022-09-1-09106

7. WRITE MORE QUESTIONS, Particularly a Social Science-Sociology Tossup

00--20-09107

8. This man received help from Luis de Santangel in getting funding for one plan, and this man was also helped by a chief of the Taino named Guacanagari. This man started a colony whose garrison was massacred called La Navidad, and that colony's inhabitants were sailors from this man's wrecked flagship. This man chose to sail to the Canary Islands at the beginning of his first voyage, one of four he made. For 10 points, name this man who sailed for Ferdinand and Isabella with the Pinta, the Niña, and the Santa María, with which he discovered the New World.

ANSWER: Christopher **Columbus**

023-09-1-09108

9. The title character of one play by this author is a childless woman who kills her husband Juan. In one play by this author, Leonardo and the Groom kill each other. Those plays, *Yerma* and *Blood Wedding*, make up two-thirds of this author's "rural trilogy," along with a play about the sickly Angustias, the submissive Amelia, and the defiant Adela, all daughters of the title character. For 10 points, name this Spanish playwright of *The House of Bernarda Alba*.

ANSWER: Federico García **Lorca**

024-09-1-09109

10. One reaction to this period was an uprising led by Takamori Saigo known as the Satsuma Rebellion, and the work of Ito Hirobumi led to the creation of a constitution during this period. One document produced during this period called for the end of "evil customs of the past" as one of its five articles, and was known as the Charter Oath. This period brought about the end of feudalism in its country, and the end of the Tokugawa shogunate. For 10 points, name this "Restoration" that marked the return to power of the emperor in Japan.

ANSWER: **Meiji** Period

023-09-1-09110

11. He wrote about Sam, who works as a newsboy in Chicago after leaving his home in Iowa, and John Stockton changes his name to Bruce Dudley in a novel the Hemingway parodied in "The Torrents of Spring," *Dark Laughter*. The author of *Windy McPherson's Son*, he wrote about a berry picking former teacher named Wing Biddlebaum in one work. In that work, Kate Swift is admired by the Reverend Curtis Hartman, and the residents of a town are all observed by the reporter George Willard. For 10 points, name this author of *Winesburg, Ohio*.

ANSWER: Sherwood **Anderson**

027-09-1-09111

12. One system for performing this function is called ElGamal, and Shannon investigated the “One-time pad” form of it. Common algorithms and schemes include AES and RSA, and methods can be divided into block and stream types. Symmetric and asymmetric key types are used in the public key type. Central to the SSL protocol, techniques for it are called ciphers. For 10 points, identify this security technique of obscuring information so that others cannot read it.

ANSWER: **encryption** [or **cryptophy**; accept word forms]

001-09-1-09112

13. In one work by this writer, a soldier bitterly remembers his unrequited love for his shallow-hearted cousin Amy and asks that a thunderbolt fall on "Locksley Hall." Another work by this poet compares dying to setting out on the sea; the narrator of that work wishes to see his "Pilot face to face." He wrote an elegy for Arthur Henry Hallam, in which he famously noted that "Tis better to have loved and lost/Than never to have loved at all." For 10 points, name this author of *In Memoriam*, who wrote about a battle in the Crimean War in “The Charge of the Light Brigade.”

ANSWER: Alfred Lord **Tennyson**

034-09-1-09113

14. One member of this group, John Ross, led a delegation that selected William Wirt as its chief counsel in two Supreme Court cases. The writing system for the language of this people was invented by Sequoyah. These people were granted federal protection from state infringement on their sovereignty by a case which prompted the misattributed line, "John Marshall has made his decision, now let him enforce it!" For 10 points, name this Native American tribe that was forcibly relocated along the Trail of Tears.

ANSWER: **Cherokee**

003-09-1-09114

15. This author created the Zogoiby family, who are Jews that trace their ancestry back to King Boabdil of Grenada, in his novel *The Moor's Last Sigh*. He wrote about Parvati the Witch, who is killed during a raid by Indira Gandhi in a work that centers on the eventually-castrated Saleem Sinai. That character, who attempts to convene everyone born on the night of India's independence, appears in his *Midnight's Children*. He gained notoriety for a novel about two survivors of a fall from a hijacked plane. For 10 points, name this author of *The Satanic Verses*, for which he received a fatwa.

ANSWER: Sir Ahmed Salman **Rushdie**

027-09-1-09115

1A. Identify the mountain range that contains Yosemite National Park and Donner Pass, as well as Mount Whitney.

ANSWER: the **Sierra Nevadas** [prompt on **Sierras**]

1B. What poem by Joyce Kilmer includes the speaker claiming "I think that I shall never see / A poem lovely as" one of the title objects?

ANSWER: "**Trees**"

2A. Give the literary term that describes repeatedly using the same vowel sounds in verse, and is similar to alliteration.

ANSWER: **assonance**

2B. This failed Democratic candidate for the 2008 Presidential nomination is a Connecticut Senator. Name this colleague of Joe Lieberman who announced in July 2009 that he has cancer.

ANSWER: Christopher John **Dodd**

3A. What round type of lake is created when a block of ice falls off of a glacier, leaving an impact hole, and then melting to fill the hole?

ANSWER: **kettle** lakes

3B. This Italian inspired Otto von Guericke's Magdeburg hemisphere experiment by creating the first artificial vacuum. Name this man who invented of the barometer, which is why the unit for millimeters of mercury bears his name.

ANSWER: Evangelista **Torricelli** [prompt on **torr**]

4A. This is a 10-second calculation question. If in the formula $2a + 3b = c$, you are given that $a = 1$ and $c = 17$, what is b ?

ANSWER: **5**

4B. This is a 10-second calculation question. If you drive 210 miles in four hours, what is your average speed for the trip?

ANSWER: **52.5 mph**

5A. What author of *The Signifying Monkey* is an African-American Harvard professor who was controversially arrested in his home in July 2009?

ANSWER: Henry Louis **Gates Jr.**

5B. Name the German-American painter who depicted a man hoisting the American flag behind a future President in his *Washington Crossing the Delaware*.

ANSWER: Emanuel Gottlieb **Leutze**

6A. This is a 20-second calculation question. How many ways are there to choose two committee members from a list of five candidates?

ANSWER: **10**

6B. This is a 20-second calculation question. 51 is 30% of what number?

ANSWER: **170**

7A. Name the baseball team that traded its ace Jake Peavy during the 2009 season, and whose historic stars have included Tony Gwynn and Brian Giles.

ANSWER: **San Diego** Padres [or San Diego **Padres**]

7B. This effect was first studied by Konrad Lorenz in graylag geese. What is this process, whereby recent hatchlings identify their mother?

ANSWER: **imprinting**

8A. What theory defines an acid as having the ability to donate a proton, and a base as having the ability to accept a proton?

ANSWER: **Brønsted-Lowry** theory

8B. What singer, who was featured on Timbaland's song "The Way I Are," features Kanye West telling listeners to "Keep rockin' and keep knockin'" in her song "Knock You Down?"

ANSWER: Keri Lynn **Hilson**

9A. This is a 30-second calculation question. The angle theta is defined as the angle from the x-axis counterclockwise to the ray through the origin and the point (4,3). Find tangent theta.

ANSWER: **3/4** [or **0.75**]

9B. This is a 30-second calculation question. If x varies inversely with y, and x is 10 when y is 10, find x when y is 25.

ANSWER: **4**

10A. What is the Spanish word for "wheat?"

ANSWER: el **trigo**

10B. This branch of biology depends on namesake organizations, which map a single organism's descendents. Identify this classification paradigm, whose namesake diagrams display monophyletic, paraphyletic, and polyphyletic groups.

ANSWER: **cladistics** [accept **clade**]

1. One derivation of this law uses the Lorentz Force Law without the magnetic field's presence, and one of Gauss's laws. Its namesake constant is the inverse of the product of 4 pi and the permittivity of free space, or approximately the product of 9 billion, the square of a Newton, and the inverse of its namesake unit. It is the electrical analog of Newton's Law of Gravitation. For 10 points, name this inverse-square law that relates an electric force to point charges, which is named after a French scientist.

ANSWER: Coulomb's Law

033-09-1-09117

2. In one of this author's novels, Wash Jones beheads the main character with a scythe, and Charles Bon is killed at Sutpen's Hundred. This man also wrote a book in which Vardaman repeats "my mother is a fish" during the Bundren family's arduous journey to Addie's grave. Quentin Compson kills himself at Harvard in another book by this author. The Snopes, Sartoris, and Compson families populate Mississippi's Yoknapatawpha County, in the works of, for 10 points, what author of *Absalom, Absalom, As I Lay Dying*, and *The Sound and the Fury*?

ANSWER: William Cuthbert Faulkner

019-09-1-09118

3. In one passage of this book, Jesus claims that he is the "true vine," while God is the "gardener." This is the only canonical gospel to mention that Jesus washed the feet of the disciples. It uniquely records Jesus as saying "verily" twice. Church tradition holds that the author of this book also authored the Book of Revelation. It is the only non-synoptic canonical gospel, and it begins by stating "In the beginning was the Word." It also contains the passage, "God so loved the world that he gave his only Son." For 10 points, name this fourth book of the New Testament, that comes after Matthew, Mark, and Luke.

ANSWER: The Gospel According to John [or Kata Ioannen]

026-09-1-09119

4. These groups are often called "phylotypes" when referring to parthenogenic organisms. New ones may be formed through processes encouraged by the Wallace effect; those processes may be peripatric or allopatric. Offspring of organisms in two different ones are typically infertile hybrids, since organisms within one of the groups generally can breed only with each other. For 10 points, give this term paired in binary nomenclature with the genus, whose "Origin" is the subject of a book by Charles Darwin.

ANSWER: species

022-09-1-09120

5. The Valle (VAY-ay) de las Vacas is located at the base of this mountain, and large glaciers on this mountain include the Gussfeldt and the Horcones Inferior. Konstanty Narkiewicz-Jodko (nar-KAY-vitz YOD-ko) was the first to use the Polish Route to the summit of this mountain, and a commonly used base camp for ascents of this mountain is Puente del Inca. Matthias Zurbriggen was the first to climb, for 10 points, which mountain located in the Mendoza Province of Argentina, the highest peak in the Americas?

ANSWER: Cerro Aconcagua

038-09-1-09121

6. Daniel Burnham and James Phelan worked to make this city the "Paris of the West" after much of it was leveled in a 1906 earthquake. This city was the site of the 1945 conference that created the United Nations. This city's city hall was the location of a double murder by Dan White, who killed this city's mayor George Moscone and supervisor Harvey Milk in 1978. This city's mayors have also included Willie Brown and Dianne Feinstein. For 10 points, name this California city which contains the famous Haight-Ashbury district and the Golden Gate Bridge.

ANSWER: **San Francisco**

030-09-1-09122

7. The protagonist of this novel tears up the number of a woman in Rome who calls him a pig but sleeps with him anyway, Luciana. One character's incessant nightly howling is prompted by the cat of his roommate Huple and brings comfort to a character deathly afraid of having his throat slit. The protagonist is traumatized by Snowden's death and sleeps in a tent with the belongings of a dead man. The crafty Milo Minderbender serves as mess hall officer in this novel, whose title concept is explained by Doc Daneeka to Yossarian, who is stuck flying bombing missions. For 10 points, name this Joseph Heller novel.

ANSWER: **Catch-22**

012-09-1-09123

8. This phenomenon can be measured via the TORRO scale, and relative velocity images can identify convergence boundaries where these form. Rear flank downdrafts are responsible for this feature's signature hook echo on Doppler radar imagery. Most commonly found as satellite, rope, and wedge types, strong ones often descend from wall clouds in mesocyclones, and may feature multiple vortices. The "enhanced" version of the scale currently in use ranks these from zero to five. For 10 points, name this weather phenomenon, a destructive rotating column of air.

ANSWER: **tornadoes**

001-09-1-09124

9. Archbishop Trolle helped organize a 1520 event in this country's capital nicknamed that city's "Bloodbath." Several kings of this country were advised by members of the Oxenstierna family. This former member of the Kalmar Union had a king who won the Battle of Breitenfeld while fighting in the Thirty Years' War on the Protestant side. During an 1809 war with Russia, this country lost control of its neighbor, Finland. For 10 points, name this home of Gustavus Adolphus, whose capital is Stockholm.

ANSWER: Kingdom of **Sweden** [or Konungerikat **Sverige**]

021-09-1-09125

10. This thinker's nature writing is collected in *The Earth Has a Soul*. He rose to prominence after publishing *The Psychology of Dementia Praecox*, and he called the alignment of masculine and feminine principles "syzygy." This psychologist edited *Man and His Symbols* and originated the ideas of extroversion and introversion in *Psychological Types*. This thinker enumerated the persona, shadow, self, and the gender-determined animus and anima, which are collectively known as his four archetypes. For 10 points, name this developer of the "collective unconscious."

ANSWER: Carl Gustav **Jung**

022-09-1-09126

11. This artist of a portrait of Madame Recamier also painted Pope Pius VII crowning the the title French emperor in *The Coronation of Napoleon*. This artist of *Napoleon Crossing the Alps* also painted a cup of hemlock at the center of his painting *The Death of Socrates*. His classical scenes include one where three brothers raise their swords. This painter also depicted a French revolutionary murdered by Charlotte Corday in his bath. For 10 points, name this French neoclassicist painter of *The Oath of the Horatii* and *The Death of Marat*.

ANSWER: Jacques Louis **David**

015-09-1-09127

12. In the second act of one of this man's plays, a character recites the Ten Commandments but leaves one out, and later in that act Francis Nurse's wife is accused of murdering Thomas Putnam's babies. That play by this author features the death of Giles Corey, who asks for "more weight" as he is crushed by rocks. In another play by this man, the protagonist hallucinates about his dead brother Ben, who found diamonds in Alaska; that man's funeral after his car-related suicide is attended by Linda, Happy, and Biff. For 10 points, name the author who wrote about Salem Witch Trials in *The Crucible* and Willy Loman in *Death of a Salesman*.

ANSWER: Arthur **Miller**

022-09-1-09128

13. This leader created a ten-point strategy for his countrymen in his *April Theses*, which were written by this man during his "sealed train" journey. Another strategy was outlined by this man in *What Is to Be Done?* As a national leader, this man was persuaded to abandon the strict War Communism plan in favor of the New Economic Policy. This man was supported by the Red Army as formed by Leon Trotsky. For 10 points, name this leader of the Bolsheviks who was eventually succeeded by Joseph Stalin as head of the Communist Party in the Soviet Union.

ANSWER: Vladimir Ilich **Lenin** [or Vladimir Ilich **Ulyanov**]

023-09-1-09129

14. This composer used themes from the 150th cantata of Bach for his fourth and final symphony in E minor. He wrote the *Four Serious Songs* for his dying friend Clara Schumann. Another of his works written in memory of his mother uses Martin Luther's translation and is entitled the *German Requiem*. This composer created a work for the University of Breslau, (BRESS-lauw) the *Academic Festival Overture*. Though not Hungarian, he also wrote the *Hungarian Dances*. For 10 points, name this composer of a certain "lullaby," who is ranked as one of the "three Bs" with Bach and Beethoven.

ANSWER: Johannes **Brahms**

019-09-1-09130

15. This man's political philosophy is alleged to promote totalitarianism in Karl Popper's *The Open Society and Its Enemies*. This philosopher relayed how a man taught a slave to double a square; that is part of this man's argument that knowledge is innate. He describes the arguments of Thrasymachus in a work that contains the "Allegory of the Cave." That work of his claims that philosophers would rule the title place. For 10 points, name this author of the dialogues *Meno* and *Crito*, who relayed Socrates's defiance in the *Apology* and wrote the *Republic*.

ANSWER: **Plato** [or **Platon**]

026-09-1-09131

1. One message in this play is undelivered because its deliverer is stuck in a quarantine house for plague. One character in this play is called "the prince of cats," witnesses the drawn swords of the servants Abraham and Balthazar, and engages Benvolio on the spot. One protagonist of this play is initially infatuated with Rosaline and later ventures to a great tomb where his lover, the other title character, is kept-near death on Friar Lawrence's advice. For 10 points, identify this tragedy set in Verona, concerning the title "star-crossed lovers" of the Montagues and Capulets, written by William Shakespeare.

ANSWER: Romeo and Juliet

022-09-1-09132

2. He's not John Stuart Mill, but this economist wrote a work entitled *Principles of Political Economy*, and he also wrote *The Nature of Rent*. His most famous work contains six chapters of commentary on William Godwin's theories, and notes that population increases geometrically while food supply only increases arithmetically, leading to his namesake catastrophe. For 10 points, name this economist who wrote *An Essay on the Principle of Population*.

ANSWER: Thomas Malthus

024-09-1-09133

3. This entity's functions include synthesizing sphingomyelin and adding sulfate groups to tyrosine. It creates clathrin-coated vesicles that send proteins to other parts of the cell. This organelle has cis and trans faces, and consists of stacked, flattened disks called cisternae. For 10 points, name this organelle, which is found near the endoplasmic reticulum, packages and sorts newly created proteins, and is named after an Italian scientist.

ANSWER: Golgi apparatus [or any reasonable synonyms for "apparatus," e.g. Golgi body or Golgi entity]

026-09-1-09134

4. For carbon, this quantity increases as the *s* character of a bond increases. Z. R. P. Iczkowaski and J. L. Margrave defined it as the derivative of energy with respect to the derivative of charge. The average of the valence ionization potential and the electron affinity is how this quantity is measured on the Mulliken scale. On the Pauling scale, the highest value for it is assigned to fluorine. This property increases as one moves up and to the right on the periodic table. For 10 points, name this property of an atom to pull electrons towards itself in a bond.

ANSWER: electronegativity

001-09-1-09135

5. Asclepius (as-CLEH-pee-us) gained the ability to resurrect the dead from a potion given by this goddess. This goddess gave Bellerophon (bel-AIR-oh-fon) a bridle to tame Pegasus. This figure carried a shield, made from Pallas's skin, that displayed Medusa's head. Along with Hera, this goddess was passed over in favor of Aphrodite by Paris. After her father ate her mother, Metis, she sprang fully-armored out of Zeus's head. For 10 points, identify this virgin Greek goddess of wisdom and namesake of a major Greek city.

ANSWER: Athena [or Athene]

005-09-1-09136