



1. The rate-limiting step of the synthesis of this molecule involves the production of mevalonate. Unusually, mycoplasma requires this molecule to grow in culture. The synthesis of this molecule can be blocked by inhibiting the enzyme HMG-CoA reductase. This molecule, whose levels can be lowered using statins, is responsible for maintaining membrane fluidity. For 10 points, name this lipid that serves as the precursor for steroid hormones and can also be found in atherosclerotic plaques.

ANSWER: cholesterol

048-13-90-14101

2. This novel is set on the day of its author's first date with his future wife, Nora Barnacle. This novel's final episode is a virtually punctuation-less soliloquy delivered by the protagonist's wife Molly. In this novel, the intellectual Stephen Dedalus is the analogue of Telemachus in 1904 Dublin, while Leopold Bloom loosely resembles the title mythological figure. For 10 points, name this massive modernist novel written by James Joyce.

ANSWER: Ulysses

014-13-90-14102

3. A philosopher belonging to this school described a falsity to oneself as a kind of bad faith. A key part of this philosophy is the idea of the absurd, which can grow from viewing the world as being without design and lead to a state of anxiety. A writer given this label considered "the most urgent of questions" to be suicide in his essay, *The Myth of Sisyphus*. For 10 points, name this philosophy developed by Albert Camus and the author of *Being and Nothingness*, Jean-Paul Sartre.

ANSWER: existentialism [accept word forms]

023-13-90-14103

4. A light source placed at the focus of a mirror of this type will reflect all parallel rays. This curve can be defined as the locus of all points equidistant from the focus and directrix. This curve can be formed by intersecting a plane through just the top of a mirrored right circular cones, making it the only conic section that passes the vertical line test. For 10 points, identify this curve that corresponds to the graph of quadratic functions like  $y$  equals  $x$  squared.

ANSWER: parabola [or word forms]

066-13-90-14104

5. This author begins a novel with the murder of Ambassador Roj Sarton. In that book, Elijah Baley partners with this author's recurring character, R. Daneel Olivaw, to find the killer. This man created "three laws" for a type of character who could not injure a human being and who had to obey human orders. These rules apply to characters like the title entity in *The Positronic Man*. For 10 points, name this science fiction author who wrote the collection *I, Robot*.

ANSWER: Isaac Asimov [or Isaak Ozimov]

052-13-90-14105

6. This author divided a book into the sections “objects,” “food,” and “rooms,” and that book consists of what this writer called “word clusters.” Pablo Picasso noted this author would eventually resemble the aged, heavysset depiction that he painted of her. Along with partner Alice B. Toklas, this author of *Tender Buttons* maintained a Parisian salon that welcomed many Lost Generation members. For 10 points, name this female American poet who wrote the lines “Rose is a rose is a rose is a rose.”

ANSWER: Gertrude **Stein**

052-13-90-14106

7. This is the number of amino acids in the standard ER retention sequence. Streptavidin binds to this many molecules of biotin. The gene responsible for Huntington’s disease maps to this chromosome. This is the number of polypeptide subunits in hemoglobin, as well as the number of sperm generated from a single primary spermatocyte. For 10 points, give this number, which is also the number of bases in DNA and the number of legs a tetrapod has.

ANSWER: **four**

048-13-90-14107

8. In one novel from this country, a man escapes his family living in a big city to begin an affair with the denizen of a hot springs town. Another author from this country described the arson of one of its landmarks in *The Temple of the Golden Pavilion*, and killed himself on television after staging a failed right-wing coup. A story from this country describes a girl's attempt to fold a thousand paper cranes to cure her leukemia. For 10 points, name this Asian nation whose postmodern literary movement stems from the trauma of two atomic bomb attacks.

ANSWER: **Japan** [or **Nippon**-koku; or **Nihon**-koku]

020-13-90-14108

9. A documentary about people working in this medium follows Thierry Guetta through his transformation into Mr. Brainwash. This artistic medium depicted in *Exit Through the Gift Shop* is practiced by Banksy. During World War II, this medium was used with the phrase "Kilroy was here." For 10 points, name this artistic medium that can be signed with a tag, and which is frequently at odds with law enforcement because it can involve vandalizing public property with spray cans.

ANSWER: **graffiti** [or **urban** art; or **street** art; accept **tagging** before it is read]

023-13-90-14109

10. The distance from this object is a prominent component of the Milankovitch cycles. This object is studied by SOHO and THEMIS. The Homestake experiment only detected about a third of the expected neutrinos from this object. An eleven year cycle is displayed by lower temperature "spots" on the surface of this object. Pierre Janssen discovered helium by studying the spectrum of the chromosphere of this object. For 10 points, identify this star found at the center of the Solar System.

ANSWER: **Sun**

066-13-90-14110

11. This colony was home to a Frenchman who claimed "individuals...are melted into a new race" to answer the question "What is an American?" in his *Letters from an American Farmer*. At a 1754 meeting in this colony, Benjamin Franklin proposed a failed plan to unify the 13 colonies. This colony was renamed in honor of James II after its Dutch governor, Peter Stuyvesant, ceded it to the English. For 10 points, name this colony whose history includes the Albany Congress and the Battle of Long Island.

ANSWER: **New York**

080-13-90-14111

12. This poem's speaker states, "All went blind; all lame; drunk with fatigue," and later describes a "hanging face, like a devil's sick of sin." This poem refutes "the Old Lie" from Horace's *Odes*. This poem describes a group of men "bent double, like old beggars under sacks, knock-kneed, coughing like hags" before depicting the effects a gas attack in World War I. For 10 points, name this antiwar poem by Wilfred Owen with a Latin title.

ANSWER: "**Dulce et Decorum Est**"

014-13-90-14112

13. This man noted that many "red-blooded Americans" would go to Florida State after noticing Jenn Sterger. This broadcaster was criticized for ogling Alabama quarterback A.J. McCarron's girlfriend, Katherine Webb. In September 2013, he asked Eminem if the Detroit Lions would cover the point spread in an awkward interview. He is noted for using the catch phrase "You are looking live..." For 10 points, name this longtime college football announcer who currently teams with Kirk Herbstreit on ABC.

ANSWER: Brent **Musberger**

052-13-90-14113

14. In Lagrangian mechanics, a generalized coordinate is associated with a generalized one of these quantities, and its operator is negative  $i$  times  $\hbar$  times grad. The conservation of this quantity arises from the symmetry of spacetime under translation according to Noether's theorem. The change in this quantity is equal to the applied impulse, and this quantity is conserved in all collisions. For 10 points, name this quantity equal to mass times velocity.

ANSWER: linear **momentum** [or **p**]

048-13-90-14114

15. This poem describes the "turbid ebb and flow of human misery" in the mind of Sophocles. This poem's final stanza begins, "Ah, love, let us be true to one another!" before describing a "darkling plain" where "ignorant armies clash by night." The speaker of this poem notes how "the tide is full, the moon lies fair upon the straits" after beginning, "The sea is calm tonight." For 10 points, name this poem by Matthew Arnold.

ANSWER: "**Dover Beach**"

014-13-90-14115



1A. What physicist developed the path integral formulation and had his Caltech lectures compiled into an introductory physics textbook?

ANSWER: Richard **Feynman**

1B. House Republicans have voted over forth times to repeal what act that originally passed in the House in March 2010?

ANSWER: **Obamacare** [or Patient Protection and **Affordable Care** Act; or PP**ACA**]

2A. What functional group contains an oxygen atom single bonded to two alkyl chains?

ANSWER: **ether**

2B. Soldier Lee Rigby was gruesomely murdered on the streets of what European capital city in May 2013?

ANSWER: **London**

3A. This is a 20-second calculation question. What is the area of a right triangle which has hypotenuse 17 and one leg of length 15?

ANSWER: **60**

3B. This is a 20-second calculation question. The cotangent of theta is negative and the cosecant of theta is positive. In what quadrant is angle theta?

ANSWER: quadrant **II**

4A. Name the free and open source operating system whose kernel was originally designed by Linus Torvalds and which has many different distributions, such as Debian and Fedora.

ANSWER: GNU/**Linux**

4B. What European country was led for over 20 years by Communist dictator Nicolae Ceausescu (chuh-CHESS-cue)?

ANSWER: **Romania**

5A. What composer was influenced by gypsy music in composing his *Hungarian Rhapsodies*?

ANSWER: Franz **Liszt** [or **Liszt** Ferenc]

5B. What deadly compound, with formula "CN minus", inhibits cytochrome C in the electron transport chain?

ANSWER: **cyanide**

6A. What African river flows between the capital cities Kinshasa and Brazzaville?

ANSWER: **Congo** River

6B. What German author wrote about Hans Castorp in his novel *The Magic Mountain*?

ANSWER: Thomas **Mann**

7A. What painting by Jan Vermeer depicts a young woman with a blue and yellow turban and a piece of jewelry dangling above her shoulder?

ANSWER: ***Girl with a Pearl Earring***

7B. What Apostle originally known as Saul of Tarsus wrote letters to the Romans and Corinthians?

ANSWER: Saint **Paul**

8A. What Greek hero rescued Andromeda and beheaded the Gorgon Medusa?

ANSWER: **Perseus**

8B. What Asian country was ruled for six centuries by the Khmer Empire and for four years by the Communist Khmer Rouge?

ANSWER: Kingdom of **Cambodia** [or Preahreacheanachakr **Kampuchea**]

9A. This is a 30-second calculation question. Franklin eats one egg on the first day of a month, two eggs on the second day, three eggs on the third day, and so forth. How many eggs does Franklin eat in the whole month of September?

ANSWER: **465**

9B. This is a 30-second calculation question. If two distinct letters are selected from the alphabet, what is the probability that *neither* is found in the word bankruptcy? Express your answer as a fraction in simplest form.

ANSWER: **24/65**

10A. What instrument was played by jazz musicians Louis Armstrong and Miles Davis?

ANSWER: **trumpet**

10B. What insect is known as "papillon" (POP-ee-yon) in French and Schmetterling in German?

ANSWER: **butterfly** [or **butterflies**]



1. In a novel by this writer, the main character has her name changed to Mary by her racist boss and is abused by her mother's boyfriend. This author took a verse from Paul Dunbar to be the title of her autobiography. She recited her poem "On the Pulse of Morning" at the 1993 inauguration of Bill Clinton. This author's best known novel describes the racism she faced growing up in Stamps, Arkansas. For 10 points, name this African-American author of *I Know Why the Caged Bird Sings*.

ANSWER: Maya Angelou [or Marguerite Ann Johnson]

052-13-90-14117

2. Prior to an expedition, this man drew a line with his sword that was crossed by the Famous Thirteen. This man was accompanied on another expedition by the missionary Vicente de Valverde. That expedition led by this man captured a ruler during the Battle of Cajamarca (cah-hah-MAR-kuh) and killed that ruler after having the Ransom Room filled with gold. For 10 points, name this conquistador who overthrew Atahualpa (aa-tuh-WAL-puh) when he conquered the Inca empire.

ANSWER: Francisco Pizarro

023-13-90-14118

3. The hydrophobic effect is driven by the net increase in this quantity when nonpolar molecules aggregate. Generally, this quantity is greater for the side of an equilibrium with more moles of gas molecules or more solvated ions. This quantity has the same units of the gas constant, and is multiplied by temperature, then subtracted from enthalpy, to determine Gibbs free energy. This quantity for the universe increases in all spontaneous processes. For 10 points, name this quantity measuring disorder of a system.

ANSWER: entropy [or S]

190-13-90-14119

4. In one film, this actor plays a character who idolizes Thomas Edison and teams with Finley and China Doll. He played Oscar Diggs, who is swept away in his balloon to a magical land where he confronts three witches. This actor played a scientist who works with an animal named Caesar to find a cure for Alzheimer's in the film *Rise of the Planet of the Apes*. For 10 points, name this man who played the title role in *Oz the Great and Powerful* and Harry Osborn in the Spider-Man movies.

ANSWER: James Edward Franco

052-13-90-14120

5. This man was inspired by his study of gall wasp reproduction to develop a 0 to 6 scale; his ranking on his own scale is affected by his affair with student Clyde Martin. Paul Gebhard normalized the data collected by this man to eliminate skews caused by over-relying on prisoners and prostitutes. For 10 points, name this Indiana University researcher who scandalized postwar America with his reports *Sexual Behavior in the Human Male* and *Sexual Behavior in the Human Female*.

ANSWER: Alfred Kinsey

019-13-90-14121

6. Despite a novelty song claiming it is Delaware, this state is home to the lowest highest point in the United States at Britton Hill. This state's official state song refers to a river misspelled by songwriter Stephen Foster. It was named after a Spanish explorer landed there during the Easter season and it contains the southern portion of the Suwannee River. This state is home to the oldest city in the continental U.S., St. Augustine. For 10 points, name this state, the home of the Everglades.

ANSWER: **Florida**

052-13-90-14122

7. This author wrote "Sacco and Vanzetti must not die" and "I am the Scottsboro boys" in his poem "America." In another poem, this man addresses psychiatric patient Carl Solomon by saying "I'm with you in Rockland." That poem also references the pagan god Moloch. This man wrote a poem after the death of his mother called "Kaddish." His best known poem begins by saying he saw "the best minds of my generation destroyed by madness." For 10 points, name this Beat poet who wrote "Howl."

ANSWER: (Irwin) Allen **Ginsberg**

052-13-90-14123

8. Carl Woese proposed that the first step of this process should be based on 16s RNA differences. In recent decades, this process has sought to eliminate paraphyletic groups, instead focusing on evolutionary relationships through the cladistic approach. This process now begins with three "domains," including archaea and eukaryotes. For 10 points, identify this process which uses Linnean nomenclature and taxons such as kingdoms and orders to organize all forms of life.

ANSWER: biological **classification** of species

019-13-90-14124

9. The founder of the colony that became this state won the Battle of Bloody Marsh. After a Supreme Court case about this state, Andrew Jackson said "John Marshall has made his decision; now let him enforce it!" That 1832 case dealt with Indian lands and vacated the conviction of Samuel Worcester (WOO-ster). For 10 points, name this state founded as a colony by James Oglethorpe as a haven for English debtors and a buffer state between British territory and Spanish Florida.

ANSWER: **Georgia**

052-13-90-14125

10. In this play, a physician is said to have "tuberculosis of the spine," a euphemism for his venereal disease. This play's protagonist is blackmailed by the bank worker Nils Krogstad, who gives up the plot when he is reunited with Christine Linde. In this play's final scene, a door slam punctuates the protagonist's decision to leave her husband Torvald and their children. For 10 points, name this play about Nora Helmer written by Henrik Ibsen.

ANSWER: A **Doll House** [or A **Doll's House**; or **Et Dukkehjem**]

014-13-90-14126

11. The Hardinge Bridge was built over this geographical object. This geographical entity was mythologized as the wife of King Shantanu brought down to earth by Shiva's hair. It flows through the cities of Patna and Farakka. This river flows through Varanasi, where the ashes of the dead are thrown into it. The Padma is a distributary of this river, which meets the Yamuna at Allahabad and flows into the Bay of Bengal. For 10 points, name this sacred river of India.

ANSWER: **Ganges** River [or **Ganga**]

080-13-90-14127

12. For a matrix A, this thing is equal to the adjoint of A divided by the determinant of A. A function does not have one of them if it fails the horizontal line test. Variables have this kind of proportion if their product is constant. Trigonometric functions that have this property are prefixed with "arc". For a number a, it is negative a for addition and one over a for multiplication. For 10 points, identify this operation typically denoted with a superscript negative one.

ANSWER: **inverse** [or word forms]

066-13-90-14128

13. Coin tokens are included with the "Guilds" and "Seaside" expansions to this game. Another expansion to this game called "Alchemy" includes the use of potions. Each turn in this game is made up of three phases called action, buy, and clean-up. Players of this game use copper, silver, and gold to purchase estates, duchies, and provinces, which are each worth a certain number of victory points. For 10 points, name this deck building card game.

ANSWER: **Dominion**

023-13-90-14129

14. This scientist created latitude and longitude and founded the discipline of geography. For his most famous achievement, he used the fact that sunlight only struck the bottom of a deep well at Syene on the summer solstice. A technique due to this scientist involves iteratively marking out multiples of primes, starting with two, until only prime numbers are left, and is known as his "sieve". For 10 points, identify this Greek scientist who was the first person to calculate the circumference of the Earth.

ANSWER: **Eratosthenes** [or **beta**]

066-13-90-14130

15. Working with one of these companies, John Jervis created the *Stourbridge Lion*. Another of these companies survived the Panic of 1873 under Jay Gould's leadership. The ICC was created to regulate prices set by these companies. Another of these companies was financed by the "Big Four," a group of philanthropists including Leland Stanford. For 10 points, the Union Pacific and Central Pacific were what kind of company that worked on a "transcontinental" transport system?

ANSWER: **railroad** companies [or **railway** companies]

080-13-90-14131



1. This is the most common disease that can be diagnosed with the nuchal translucency test. People with this disease show small aggregates of tissue on the iris called Brushfield spots, and this disease can be caused by a Robertsonian translocation. People with this disease often suffer from acute lymphocytic leukemia and have short stature, a flattened nasal bridge, small chin, and an IQ around 50. For 10 points, name this common genetic disease caused by trisomy of chromosome 21.

ANSWER: **Down** syndrome

048-13-90-14132

2. It's not Attorney General, but this was the position held by the man who said "Now he belongs to the ages" after Abraham Lincoln was killed. Andrew Johnson's attempt to remove a man in this post violated the Tenure of Office Act and led to his impeachment. Held by Edwin Stanton and first held by Henry Knox, it was until 1947 third in the line of succession to the presidency. For 10 points, name this Cabinet position supplanted by the Secretary of Defense, which controlled military affairs.

ANSWER: Secretary of **War**

052-13-90-14133

3. The most widely used classification system for this substance is a taxonomy published by the USDA. Pedologists study this substance. During an earthquake, this substance can lose stability by a process known as liquefaction. Nutrients can be leached from this substance and redeposited in lower horizons by precipitation. This substance can be classified based on the amount of silt, sand, and clay. For 10 points, identify this layer of finely ground particles that overlays bedrock and is colloquially known as dirt.

ANSWER: **soil** [or **regolith**; prompt on **dirt** until it is read]

066-13-90-14134

4. During this battle, a detachment of Phocians were surprised by the arrival of troops led by Hydarnes. Before this battle, a comment about the arrows of the other side led Dienekes to say that this battle would be fought in the shade. Ephialtes betrayed the losing side of this battle by showing the other side a flanking mountain path. For 10 points, name this pyrrhic victory for the Persians in which their advance in Greece was delayed in a narrow pass by troops under the Spartan king Leonidas.

ANSWER: Battle of **Thermopylae**

023-13-90-14135

5. One character in this novel notes the shipment of fifty boxes of earth to a chapel in Carfax. Children in this novel go missing after the appearance of a "Bloofer Lady." A captain's log tells of strange events that happen on the ship *Demeter*. With the sacrifice of Quincey and the help of van Helsing, the title creature, who was visited by real estate agent Jonathan Harker, is defeated. For 10 points, name this epistolary novel about a vampire, written by Bram Stoker.

ANSWER: **Dracula**

140-13-90-14136

What author discussed the "master-slave dialectic" in *Phenomenology of Spirit*?

ANSWER: Georg Wilhelm Friedrich **Hegel**

This is a calculation question. In a circle of radius 13, a chord of length 24 is drawn. How far from the center of the circle is the midpoint of the chord?

ANSWER: **5**