



1. Ninhydrin turns purple in the presence of these compounds. Naturally, these compounds are found only in their L-enantiomeric forms. These compounds exist as zwitterions at neutral pHs because carboxyl groups are more acidic than ammonium. These compounds were synthesized from sulfur dioxide, carbon dioxide, nitrogen, and water, with the help of an electrical spark, in the Miller-Urey experiment. They form a special type of amide bond called a peptide bond. Two of them contain sulfur: methionine and cysteine. For 10 points, name these compounds, the constituents of proteins.

ANSWER: amino acids

190-13-76-05101

2. This leader was defeated in an election by the Janata Party and Morarji Desai. "Garibi Hatao," a phrase meaning "Stop Poverty," was used in several campaigns to elect this leader. The Smiling Buddha nuclear test was approved during this leader's tenure. After being indicted by her country's Supreme Court, this leader decided to call a State of Emergency in 1975. This woman ordered Operation Blue Star against Sikhs at the Golden Temple, which led to her assassination in 1984. For 10 points, name this daughter of Jawaharlal Nehru who was a female Prime Minister of India.

ANSWER: Indira Priyadarshini Gandhi [prompt on Gandhi]

192-13-76-05102

3. The site of this city's first university is on its "Illuminated Block" in the Monserrat neighborhood. Residents of this city are called porteños. The Pink House is the executive mansion near its central plaza, which was the site of the "Mothers of the Plaza" demonstrations. That site, Plaza de Mayo, is named for the 1810 May Revolution that started in this city. It borders the estuary of the confluence of the Paraná and Uruguay Rivers, the Río de la Plata. For 10 points, name this capital of Argentina.

ANSWER: Buenos Aires

121-13-76-05103

4. In one novel by this author, a photographer publishes a picture of a servant carrying schoolbooks in *Life* magazine. This author's "coded homage" to the lawyer Bram Fischer is a work in which the communist Lionel is Rosa's father. A different novel by this author of the *Burger's Daughter* ends with the title character running towards a helicopter and takes place during a war between the Blacks and Whites. In that novel, the Smales family moves to their servant's rural village. For 10 points, name this South African author who wrote *July's People*.

ANSWER: Nadine Gordimer

149-13-76-05104

5. Much of the source material for this opera came from Metastasio's work *Nitetti*. In the La Scala premiere of this opera, the title role was sung by the composer's favorite soprano Teresa Stolz. One character in this play confesses her love for a man after falsely hearing that he has died in battle. "O patria mia" and "Ritorna vincitor" are sung by the title character, the rival of Amneris and daughter of Amonasro. This opera ends in the Temple of Vulcan with the death of the protagonist and her lover, Radames. For 10 points, name this opera about an Ethiopian princess, by Giuseppe Verdi.

ANSWER: Aida

192-13-76-05105

6. Beethoven fused this genre with a piano trio in his "Triple" work of this type and introduced three recurring, improvisatory cadenzas in the fifth and last of a set of them. Eight bell-like chords open another of these works, dedicated to the hypnotist Nikolai Dahl, Rachmaninoff's second piece of this type for piano. Arcangelo Corelli composed twelve pieces in a similar form to this one called "grosso" ones. The first movements of these pieces often contain a sonata-allegro structure followed by a cadenza, and in general, they have a three-movement, fast-slow-fast form. For 10 points, name this type of piece in which a soloist "competes" against an orchestra.

ANSWER: **concertos** [or piano **concertos**; or **concerti**]

080-13-76-05106

7. This man scored 68 points in a 1977 game against the Knicks, the most points ever scored by a guard at the time. This man and Lou Hudson became the second pair of teammates ever to each score 2,000 points in a season, doing so for the Hawks. His father Press coached him in high school and college, and he scored an SEC-record 69 points in a game against Alabama in 1970 despite the absence of three-pointers at that time. This man died while playing a pickup game in 1989, nine years after retiring from the Jazz. 10 points, name this LSU basketball player who holds the NCAA Division I record for most points scored and was nicknamed "Pistol Pete."

ANSWER: Pete **Maravich**

030-13-76-05107

8. The influence of Utagawa Hiroshige (hee-row-SHE-gay) on this artist can be seen in his *Bridge in the Rain* and in the background to his portrait of art dealer Pere Tanguy. This artist painted pictures of his bedroom and the Yellow House in which he lived in Arles. In one painting, this artist depicted a woman pouring coffee at the square table of the five title people, who are lit by a small oil lamp hanging from the ceiling. Another painting by this man shows Saint Remy under a swirling evening sky. For 10 points, name this Dutch Post-Impressionist who painted *The Potato Eaters* and *The Starry Night*.

ANSWER: Vincent Willem **van Gogh**

023-13-76-05108

9. This general captured modern-day Cartagena by sending 500 men in secret over an ebbing lagoon. He extended the battle lines on his flanks while holding his center back to win the Battle of Ilipa. Cato tried to destroy this man politically due to his affection for Greek culture. In another battle, this general opened gaps in his lines to let war elephants pass through and used Masinissa's Numidian cavalry to attack the enemy from behind. That strategy used by this man won the Battle of Zama. For 10 points, name this Roman general who defeated Hannibal to end the Second Punic War.

ANSWER: Publius Cornelius **Scipio Africanus** [or **Scipio Africanus** the Elder; or **Scipio Africanus** Major]

080-13-76-05109

10. James Michael Curley served four terms as mayor of this city despite being in prison for part of them. In the 1970s, this city experienced a series of race riots after Judge W. Arthur Garrity mandated a busing plan. The Lowell and Cabot families were part of the aristocracy dominating this city in the nineteenth century nicknamed its "Brahmins." In this city, which experienced a deadly molasses flood in 1919, Whitey Bulger was a prominent leader of the Irish Mob. For 10 points, name this city where, in 1773, the Sons of Liberty protested against British taxes during a Tea Party.

ANSWER: **Boston**

080-13-76-05110

11. The keyword auto is used with these things. These things can be passed to functions using the strategies call-by-value or call-by-reference. Camel case and Hungarian notation are two ways to name these things. When they are only available inside certain functions, instead of globally, their scope is said to be local. Statically typed languages require that these things have their type identified when they are declared; those types include int and float. For 10 points, identify these storage locations for data that have a symbolic name.

ANSWER: variables

066-13-76-05111

12. During this man's presidency, the first commemorative postage stamp was released by his Postmaster General, John Wanamaker. William Dudley wanted to use "floaters" to support this man's campaign in the "Blocks of Five" scandal. Levi Morton was the running mate of this President. He signed the McKinley Tariff and the Sherman Antitrust Act. This President worked with the Billion Dollar Congress. For 10 points, name this Republican President who served between the two terms of Grover Cleveland.

ANSWER: Benjamin Harrison [prompt on Harrison]

149-13-76-05112

13. This man's government created Project Merlin to increase lending to small businesses in 2011. In 2012, he met with Alex Salmond to discuss a possible devolution that Salmond advocates. In January 2013, he claimed he didn't want to "pull up the drawbridge" in a speech that proposed holding a referendum by 2017 on whether his country should remain in the EU. This man's party formed a coalition with the Liberal Democrats led by Nick Clegg after the 2010 general election. For 10 points, name this prime minister of the United Kingdom.

ANSWER: David Cameron

121-13-76-05113

14. This character describes "arms that are braceleted and white and bare" and laments how he is "pinned and wriggling on the wall." In a textbook example of synecdoche, he states, "I should have been a pair of ragged claws scuttling across the floors of silent seas." Twice he notes how "in the room the women come and go talking of Michelangelo." He begins by saying, "Let us go then, you and I, when the evening is spread out against the sky." For 10 points, name this character who declaims his own "love song" in a dramatic monologue by T. S. Eliot.

ANSWER: J. Alfred Prufrock [or J. Alfred Prufrock]

014-13-76-05114

15. This interaction explains why the boiling point for butane is higher than for isobutene despite both having the same molecular formula. Willem Keesom explained a type of this interaction that arises from molecules having elements with different electronegativities. This force can be caused by the temporary clustering of electrons at one end of a molecule, which can create an induced dipole. That dispersion type of this force was described by Fritz London. For 10 points, name this force that attracts molecules together more weakly than covalent and hydrogen bonds.

ANSWER: Van der Waals force [or dipole-dipole interaction before "dipole"; or London dispersion force before read; or London force before read]

023-13-76-05115



1A. What Spanish artist stated “Let me be your hero” and “tonight I’m lovin’ you” in two different songs?

ANSWER: Enrique **Iglesias**

1B. Identify the major division of Buddhism that believes in the possibility of becoming an "arhat," follows the Pali Canon, and is predominant in Southeast Asia.

ANSWER: **Theravada** Buddhism

2A. This is a 20-second calculation question. Find the cosecant of 5 pi over 4 radians.

ANSWER: the **negative** square **root** of **2** [or **minus root 2**; or **negative radical 2**]

2B. This is a 20-second calculation question. A circular dartboard has a radius of 5 inches and a bull's eye with radius of 1 inch. Assuming a dart hits the target at random, what is the probability of hitting the bull's eye?

ANSWER: **1/25** [or **4 percent**; or **0.04**]

3A. What name is given to the curve is traced by a rotating circle as it travels along a straight path?

ANSWER: **cycloid** [or **tautochrone**; or **brachistochrone**]

3B. What British author created the character Bernard Marx in his dystopian novel *Brave New World*?

ANSWER: Aldous **Huxley** [or Aldous Leonard **Huxley**]

4A. The numeral system that uses only zero and one is known by this term. What term is paired with fission in a type of asexual reproduction and cell division?

ANSWER: **binary**

4B. ? What type of psychological conditioning is based on Edward Thorndike's law of effect and uses reinforcement and extinguishing to modify behavior?

ANSWER: **operant** conditioning

5A. What element's 13 isotope is commonly used in NMR?

ANSWER: **carbon**

5B. What country experienced a revolution against Soviet influence in 1956 before the government of Imre Nagy (NAHJ) was put down in favor of Janos Kadar?

ANSWER: **Hungary** [or **Magyarország**]

6A. What kind of verbs, closely related to the "middle voice" of ancient languages, are often seen in Latin and are defined as verbs with active meanings but passive forms?

ANSWER: **deponent** verbs

6B. Francis II was the last person to hold what political position, which disappeared in August 1806 after the Battle of Austerlitz?

ANSWER: **Holy Roman Emperor**

7A. In January 2013, President Obama nominated which former US Senator to replace Leon Panetta as Secretary of Defense?

ANSWER: Charles Timothy "Chuck" **Hagel**

7B. What highly viscous layer of the upper mantle is the lower boundary of the lithosphere?

ANSWER: **asthenosphere**

8A. This is a 30-second calculation question. Calculate all roots, real and complex, of the polynomial $x^3 - 9x^2 + 4x - 36$.

ANSWER: **9**, **2i**, and **negative 2i** [or any other order; or **9** and **plus or minus 2i**]

8B. This is a 30-second calculation question. The angles of a pentagon are in arithmetic progression, with a common difference of 12 degrees. Find the smallest angle in the pentagon.

ANSWER: **84** degrees [or **7 pi / 15 radians**; do not prompt "7 pi / 15"]

9A. What allegory of Plato describes a group of prisoners watching shadows projected onto a wall, and not knowing whether anything besides the shadows exists?

ANSWER: allegory of the **cave**

9B. The time-independent form of which equation, used to calculate wavefunctions of quantum systems, can be expressed as " $H\psi = E\psi$ "?

ANSWER: **Schrodinger** equation

10A. What national park in Montezuma County, Colorado is famous for its cliff dwellings built by the Anasazi?

ANSWER: **Mesa Verde** National Park

10B. Name the South African river which powers the Hartbeespoort Dam, is known at the start of its course as the Krokodil, and forms the border with Botswana and Zimbabwe.

ANSWER: the **Limpopo** River



1. One literary work in this genre was written as a sequel to one by Matteo Maria Boiardo, and includes Astolfo's trip to the moon to recover the title character's wits. Besides Ludovico Ariosto's *Orlando Furioso*, other works in this genre include one in which Alde dies of grief after the title character is killed at Roncesvalles. Another work in this genre begins by asking a goddess to sing of the rage of Achilles. For 10 points, name this type of narrative poem exemplified by *The Song of Roland* and the *Iliad*.

ANSWER: **epic** poems [or **epics**]

014-13-76-05117

2. One statement named for this man indicates that the sharing of edges and faces in anion polyhedra decreases stability in an ionic structure. He published an erroneous three helix structure of DNA and helped elucidate the structure of the alpha helix. This man developed a formula for a certain physical quantity which accounts for valence bond theory and dissociation energies; hydrogen has a value of 2.20 on that scale. He proposed that defects in hemoglobin cause sickle cell anemia. For 10 points, name this man who developed a scale for electronegativity and won Nobels in Chemistry and Peace.

ANSWER: Linus **Pauling**

189-13-76-05118

3. The protagonist of this novel, who suffers from a varicose ulcer above his ankle, fixes Mrs. Parson's sink by removing a clot of hair. This novel contains an Appendix that discusses "A," "B," and "C" vocabularies. It opens with the line, "It was a bright cold day in April, and the clocks were striking thirteen." This novel ends with its protagonist drinking Victory Gin after being betrayed by Julia. This novel introduced the phrase "We've always been at war with Eastasia," the language "Newspeak," and the term "Big Brother." For 10 points, name this dystopian novel by George Orwell.

ANSWER: **Nineteen Eighty-Four**

015-13-76-05119

4. Repertoire cloning can be accomplished by PCR on individual ones of these cells. These cells express CD19 and C20 on their membranes. These cells proliferate in the germinal center of a lymph node. These cells rearrange their variable, diversity, and joining genes in order to create their namesake receptor. They differentiate in the bone marrow, and after activation can further differentiate into plasma and memory types. For 10 points, name these lymphocytes that secrete antibodies.

ANSWER: **B** lymphocytes

048-13-76-05120

5. Hermes turned Chelone (keh-LOE-nee) into a tortoise for failing to attend this goddess's wedding. Pausanias (pow-SAY-nee-us) claims she married her husband after taking pity on him when he turned into a cuckoo. She promised Aeolus a nymph in exchange for battering the ship of Aeneas with wind. This goddess is the mother of the cupbearer Hebe. She sent snakes to attack an infant Heracles, and later sent the spell of madness that caused him to kill his family. This goddess transformed Echo, and turned Io into a cow out of jealousy caused by her husband's affairs. For 10 points, name this wife of Zeus.

ANSWER: **Hera**

015-13-76-05121

6. This process is either free or forced depending on the Richardson number, which is equal to the Grashof number over the square of the Reynolds number. When driven from below, this process produces Benard cells. This process occurs at high values of the Rayleigh and Prandtl numbers. Sunspots occur where the sun's magnetic field inhibits this process. Seafloor spreading is caused by this process' namesake currents in the upper mantle. The air around a fire or another heat source is warmed by this process. For 10 points, name this process of heat transfer occurs in fluids.

ANSWER: convection

149-13-76-05122

7. In this novel, a psychic named Landau urges one character to reject a plea for divorce. One character in this novel is scolded by her husband after an emotional outburst during an accident involving Gladiator and Frou-Frou at a racetrack. The protagonist reconciles Dolly and Stiva following Stiva's affair with their children's governess in this novel, in which Konstantin Levin attempts to create a model farming community in this work with his wife Kitty. For 10 points, name this novel in which the title character has an affair with Count Vronsky, a work by Leo Tolstoy.

ANSWER: Anna Karenina

030-13-76-05123

8. At the Landau critical form of this quantity, excitations first gain negative energy. In an irrotational fluid field, this quantity is related to pressure by the Bernoulli equation. The partial derivative of angular frequency with respect to wavenumber gives one form of this quantity. Wavelength over period gives the "phase" type of this quantity, which is different from the "group" form. For an object in free fall and in a perfect vacuum, this quantity equals the local gravitational constant times time, as it is the antiderivative of acceleration. For 10 points, name this vector quantity whose magnitude equals an object's speed.

ANSWER: velocity

149-13-76-05124

9. In one poem, this man questioned the pride of landowners "who steer the plow, but cannot steer their feet clear of the grave." In addition to "Hamatreya," this author wrote a poem that states, "Here once the embattled farmers stood and fired the shot heard round the world." Plato, Swedenborg, and Napoleon were among the subjects of this author's *Representative Men*, and this man delivered a speech to the Phi Beta Kappa Society calling for an independent American culture entitled "The American Scholar." For 10 points, name this transcendentalist who wrote "Self-Reliance."

ANSWER: Ralph Waldo Emerson

030-13-76-05125

10. This political group ascribed to the strange "ruin value" theory, which states that buildings should be designed so that they leave aesthetically pleasing ruins when they collapse. One member of this group wears an armband and burns down a building in Marc Chagall's painting *White Crucifixion*. They decried modern art as "degenerate," showcasing the worst offenders in a 1937 exhibition. A large rally of this political group was depicted in the propaganda film *Triumph of the Will*. An atrocity perpetrated by this group is depicted in Pablo Picasso's *Guernica*. For 10 points, name this political group whose symbol was the swastika.

ANSWER: Nazis [or National Socialists; prompt on Germans]

020-13-76-05126

11. This molecule is usually found bonded to a divalent cation such as magnesium, as it has a minus-four charge in neutral solutions. This compound is converted to 3,5 cAMP by the enzyme adenylyl cyclase. The synthesis of this molecule is coupled to the facilitated diffusion of protons into the inner membrane. This molecule binds to sodium-potassium pumps to allow active transport of ions, and around thirty-six molecules of it are produced in oxidative phosphorylation in the electron transport chain. For 10 points, name this end product of cellular respiration, the "energy currency" of the cell.

ANSWER: **ATP** [or **adenosine triphosphate**]

190-13-76-05127

12. After one battle in this war, dozens of people who were unable to walk to Fort Malden were brutally killed in the Raisin River Massacre. Sir Isaac Brock was killed at this war's Battle of Queenston Heights. The Battle of Bladensburg occurred during this war and led to one side's capital being burned. Jean Lafitte helped a commander in this war win a pivotal battle two weeks after a peace treaty had already been signed at Ghent. For 10 points, name this war that included the Battle of New Orleans between the US and England and which started in its namesake year.

ANSWER: War of **1812**

190-13-76-05128

13. This man played Bette Midler's scheming husband Sam Stone in the 1986 movie *Ruthless People*. In another movie, he plays a character who Max Shrek attempts to make mayor and later attempts to kill the first-born sons of Gotham City. He currently plays a character who sings doowop as a member of the Yellow Jacket Boys and is the father of Dennis, Dee, and possibly Charlie. His breakout role came as the dispatcher Louie De Palma in *Taxi*. For 10 points, name this actor who played the Penguin in *Batman Returns* and currently stars as Frank Reynolds on *It's Always Sunny in Philadelphia*

ANSWER: Danny **DeVito**

030-13-76-05129

14. The knowlesi form of this disease can infect macaques and, like the vivax type, uses Duffy antigens as a receptor. The agents that cause this disease have merozoite and sporozoite stages. A deficiency in glucose 6 phosphate can protect you against this disease. Another substance that protects against this disease comes from the bark of the cinchona tree and is called quinine. The alleles for sickle cell anemia confer resistance to this disease that is caused by Plasmodia. For 10 points, what disease, prominent in Africa, is commonly carried by mosquitoes?

ANSWER: **malaria**

149-13-76-05130

15. This poet described a train as "punctual as a star" and "docile and omnipotent" in a poem which begins "I like to see it lap the miles." In another poem, she wrote that "to comprehend a nectar requires sorest need." Much of her innovative punctuation and capitalization was edited out of her poems in an edition published by her mentor Thomas Wentworth Higginson. She wrote "The stillness in the room was like the stillness in the air" in a poem beginning "I heard a fly buzz when I died." For 10 points, name this reclusive Massachusetts poet of a poem that opens, "Because I could not stop for Death."

ANSWER: Emily **Dickinson**

015-13-76-05131



1. In one of this author's stories, a coalmining accident kills Elizabeth's husband Walter, while in another, a boy can predict the outcome of horse races. This author of "Odour of Chrysanthemums" and "The Rocking-Horse Winner" wrote about the relationship of Ursula Brangwen and Rupert Birkin in his *Women in Love*. Another novel by this author follows the relationship between the gamekeeper Oliver Mellors and the upper class lady Constance. For 10 points, name this British novelist of *Lady Chatterley's Lover*.

ANSWER: D. H. Lawrence [or David Herbert Lawrence]

149-13-76-05132

2. A U-shaped one of these devices was designed by James Six to record maximums and minimums over a certain time period. A sealed cylinder of water with glass bulbs of differing densities makes up one of these devices named for Galileo. Santorio Santorio is usually credited with the invention of the "clinical" one of these things, which was placed a patient's tongue. The most common type of this device today uses mercury, which was invented by Daniel Fahrenheit. For 10 points, identify this device used to measure temperature.

ANSWER: thermometer [or thermoscope]

066-13-76-05133

3. One person with this last name led the "Great Raid of 1863," which resulted in the only pitched battle of the Civil War in Indiana. A different man with this last name financed Tesla's Wardenclyffe Tower and bought up the Tennessee Coal and Iron Company as part of a move that helped avert the Panic of 1907. That man with this last name purchased Carnegie Steel to create the United States Steel Corporation. For 10 points, Chase Manhattan Corporation merged with a company named after a JP with what last name?

ANSWER: Morgan [or John Hunt Morgan; or JP Morgan; or John Pierpont Morgan]

149-13-76-05134

4. A modification made to this equation focusing on the concentrations of potassium, sodium, and chlorine ions is named for Goldman, Hodgkin, and Katz. This equation can be rewritten to include a log base ten multiplied by 0.0592 instead of a natural log when a system is kept at twenty-five degrees Celsius. That 0.0592 in this equation comes from multiplying the temperature by the ideal gas constant and Faraday's constant. For 10 points, name this equation that uses the log of a system's reaction quotient to discover the value of E, the potential of an electrochemical cell in volts.

ANSWER: Nernst equation

023-13-76-05135

5. This poet wrote a poem whose line "Thus in silence in dreams' projections" is inscribed in the Dupont Circle Metro Station in DC. He claimed he was drunk when he wrote his temperance novel *Franklin Evans*. In one poem, he responds, "I guess it is the handkerchief of the Lord" when asked, "What is the grass?" This poet wrote, "For you they call, the swaying mass," in a poem which begins by noting that "our fearful trip is done; the ship has weathered every rack, the prize we sought is won." For 10 points, name this poet of "O Captain! My Captain!" and the collection *Leaves of Grass*.

ANSWER: Walt Whitman [or Walter Whitman]

015-13-76-05136

This is a calculation question. For the set {2, 8, 18, x}, the mean is equal to the median. Find all possible values of x.

ANSWER: -8, 12, and 24 [or any other order of the same numbers]

What literary term, similar to synecdoche, refers to the substitution of something associated with an entity for the entity itself?

ANSWER: **metonymy**