1. The dual nature of these entities was confirmed by firing them at a nickel target in the Davisson-Germer experiment. The Balmer series describes the transitions of these entities. The Aufbau principle gives rules to the placement of these particles. According to Hund's rule, they should be arranged so as to maximize their spin. A compound gains these particles in a reduction reaction, and they can be found in ~s~ and ~p~ orbitals. For 10 points, name this negatively charged particle that orbits the nucleus.
ANSWER: **electron**

064-10-21-03101

2. This country's "National Rainbow Coalition" was ended by a 2005 referendum in which "yes" and "no" votes were represented by bananas and oranges respectively. That referendum spawned this country's Orange Democratic Movement, which is led by Prime Minister Raila Odinga. Odinga recently entered into a power sharing agreement with President Mwai Kibaki after the violent aftermath of the 2007 elections. For 10 points, name this African country with capital at Naiobi.
ANSWER: **Kenya**

015-10-21-03102

3. The speaker of this poem suggests rolling up sweetness "into one ball" to break through the "iron gates of life." This poem uses events like "ten years before the Flood" and "the conversion of the Jews" to mark the passage of time. Its speaker always hears at his back "time's winged chariot hurrying near." This poem begins "had we but world enough and time." For 10 points, name this poem in which the speaker begs his beloved to sleep with him, written by Andrew Marvell.
ANSWER: "**To His Coy Mistress**"

026-10-21-03103

4. Billy Crudup played this athlete in the film *Without Limits*, which focuses on his relationship with his coach, Nike co-founder Bill Bowerman. First competing for Marshfield High School, he gained fame at the University of Oregon where he won seven NCAA titles between 1970 and 1973. After graduation, he held the American record for every event over 2000 meters before dying in a car crash at the age of 24. For 10 points, name this American long-distance runner who is affectionately known as "Pre." (PREE)
ANSWER: Steve **Prefontaine** [or Steve Roland **Prefontaine**; prompt on **Pre** before it is read]

083-10-21-03104

5. As a response to this case, Stephen Douglas developed the Freeport Doctrine. It followed a case in which the plaintiff sued John Emerson, and the defendant in this case was John Sandford, the executor of Emerson's estate. The Missouri Compromise was ruled unconstitutional by Chief Justice Roger Taney in this case. For 10 points, name this 1857 Supreme Court decision which held that the plaintiff was not a U.S. citizen because he was born a slave.
ANSWER: ***Dred Scott** v. Sandford* [or the **Dred Scott** decision]

024-10-21-03105

6. This polity was led by the Agiad monarch Cleombrotus I when it lost to Epaminondas and the Theban Sacred Band at the Battle of Leuctra. This city was legendarily reformed by a lawgiver named Lycurgus. This city's economy was built on subjugated peasants called helots. Its general Lysander destroyed a fleet at the Battle of Aegospotami during the Peloponnesian War, which it fought against Athens. For 10 points, name this Greek *polis* which held off an army of Persians with 300 men at Thermopylae.
ANSWER: **Sparta**

015-10-21-03106

7. The destruction of this body part's namesake peroxidase by antibodies may be a cause of Hashimoto's Disease. This structure produces namesake hormones that are tyrosine derivatives. Those hormones are overproduced when this producer of calcitonin is afflicted with Graves' Disease. A lack of iodine may cause a swelling of it called a goiter. For 10 points, name this endocrine gland found in the neck.
ANSWER: **thyroid** gland

8. This man established a newspaper called *The Defender of the Constitution*. He established the Cult of the Supreme Being in opposition to the atheistic Cult of Reason championed by Jacques Hébert. Georges Couthon enacted the Law of 22 Prairial in support of this man. This leader of the Committee of Public Safety was arrested by a group led by Fouché and Barras on the 9th of Thermidor. For 10 points, name this leader of the Reign of Terror during the French Revolution.
ANSWER: Maximilien François Marie Isidore de **Robespierre**

9. Before a key battle, this man asked his opponent, "Am I a dog that you come to fight me with a stick?" This figure's mother, Orpah, gave birth to this man and his three brothers after she shed four tears. Born in Gath, this figure challenged the enemy camp every morning and night for forty days while they recited the *Sh'ma*. This figure's opponent refused to wear Saul's heavy armor, instead killing this man with a sling and pebble. For 10 points, name this nine-foot Philistine slain by David.
ANSWER: **Goliath**

10. Heitler and London were the first to provide a quantum mechanical explanation of this type of bond, using the bond between the two atoms of molecular hydrogen. Varieties of this type of bond include sigma bonds, the strongest variety, and the weaker pi bonds. Depending on the electronegativity of the atoms involved, this type of bond can be polar or non-polar. For 10 points, name this type of bond in which electrons are shared, contrasted with ionic bonds.
ANSWER: **covalent** bonds

11. One character created by this man founds the Church of God the Utterly Indifferent and predicts the future of Malachi Constant. This author of novels such as *Galapagos* and *Timequake* wrote a novel taking place on San Lorenzo, the home of a religion known as Bokononism. In another of his novels, Montana Wildhack is imprisoned in a zoo along with the protagonist by the Tramalfadorians. That protagonist is Billy Pilgrim. For 10 points, name this author of *Cat's Cradle* and *Slaughterhouse-Five*.
ANSWER: Kurt **Vonnegut**

12. This organ contains the Cords of Billroth, which are found between its sinusoid vessels. Though it is not the kidney, this organ contains follicles called Malpighian Corpuscles, which contain germinal centers responsible for the production of lymphocytes. Sequestered by sickle-cell anemia, it is made up of red and white pulp. For 10 points, name this lymphoid organ responsible for storing and destroying red blood cells.
ANSWER: **spleen**

13. This author wrote a novel in which Tertuliano discovers an actor who is his exact physical duplicate. He also wrote a love story set against the backdrop of the construction of the Convent of Mafra, *Baltasar and Blimunda*. He wrote a novel in which the Iberian Peninsula breaks off of Europe, *The Stone Raft*, which is written using no quotation marks, like his novel in which the doctor's wife is not afflicted by the title epidemic. For 10 points, name this recently deceased Portuguese author of *Blindness*.
ANSWER: José **Saramago**

14. One process that involves these entities is Moller scattering, and the Davisson-Germer experiment used these entities and proved that they exhibit wave-particle duality. Certain movements of these particles are classified in Lyman and Balmer series, and those movements are transitions of these particles from one energy level of an atom to another. For 10 points, identify these subatomic particles that orbit an atom's nucleus and have a charge opposite that of a proton.
ANSWER: **electron**

15. In one of this man's novels, Jimmy Blevins is executed and Lacey Rawlins and John Grady Cole are imprisoned. That novel, *All the Pretty Horses*, is the first part of his Border Trilogy. He wrote about the extremely violent Judge Holden in a novel subtitled "The Evening Redness in the West," *Blood Meridian*. He wrote about a father and son walking in a post-apocalyptic world in one work, while another features the murderer Anton Chigurh. For 10 points, name this author of *The Road* and *No Country for Old Men*.
ANSWER: Cormac **McCarthy**

1A. What diacritical mark found in French and Portugese consists of a hook underneath the letter C and indicates a "soft" pronunciation of that letter?
ANSWER: **cedilla** or le **cedille**

1B. What name is given to methods and variables that work on a class as opposed to an object? Along with public and void, the main method in Java has this attribute.
ANSWER: **static**

2A. Name the experiment that disproved the plum pudding model of the atom and proved the existence of a nucleus because of the deflection of alpha particles.
ANSWER: Rutherford **gold foil** experiment [or **Rutherford** experiment; or **Geiger-Marsden** experiment]

2B. What psychologist who broke with Freud wrote *The Neurotic Constitution* and developed the theory of the inferiority complex?
ANSWER: Alfred **Adler**

3A. This is a 30-second calculation question. What is the minimal positive solution of x such that $2*\sin(5x) = -$square root of 3?
ANSWER: **4 pi / 15**

3B. This is a 30-second computation question. What is the approximate solution to one decimal place of x in $5x - 7y - z = 3$, $3.5x + 8 = t$, $t + z = y$, $t + 3 = x$.
ANSWER: x = **-4.4**

4A. Name this city which sits at the mouth of the Yellow River, the most populous city in China.
ANSWER: **Shanghai**

4B. Give the Alfred Hitchcock film starring Jimmy Stewart in which Stewart's wheelchair-bound character spies on his neighbor Thorwald and becomes convinced that Thorwald murdered his wife?
ANSWER: *Rear Window*

5A. This is a 10-second calculation question. Suppose the probability of Jake winning any given scholastic bowl match is one third. He must win the next three matches to ensure getting at least fourth place at the tournament. What is the probability he wins those three matches? Express your answer as a reduced fraction.
ANSWER: **1/27**

5B. This is a 10-second calculation question. If the standard deviation of a sample of 16 elements is 10, what is the standard error?
ANSWER: **2.5**

6A. What game for iPhone and Android developed by Rovio Mobile sees the title animals seek revenge on the pigs that took their eggs?
ANSWER: **Angry Birds**

6B. What American scientist was the first to develop a rocket with liquid fuel and has a space flight center named for him in Maryland?
ANSWER: Robert **Goddard**

7A. This is a 20-second calculation question. What is the remainder of $x^{10} - 8x^5 + 5x^2$ divided by x^3?
ANSWER: **5x²**

7B. This is a 20-second calculation question. What is the area of a hexagon with side length square root of two? Express your answer as a reduced radical.
ANSWER: **3 square roots of 3**

8A. What composer collaborated with his brother Ira to write the opera *Porgy and Bess* and included a clarinet glissando in the beginning of his *Rhapsody in Blue*?
ANSWER: **G**eorge **Gershwin** [prompt on **Gershwin**]

8B. What poem from William Blake's *Songs of Innocence and Experience* asks of the title creature, "What immortal hand or eye / Could frame thy fearful symmetry?"
ANSWER: "The **Tyger**"

9A. What is the largest freshwater lake in Florida? It marks the start of the everglades.
ANSWER: Lake **Okeechobee**

9B. What president was opposed by the so-called "Radio Priest" Father Coughlin and faced opposition from Alf Landon in a presidential election?
ANSWER: **F**ranklin Delano **Roosevelt** [or **FDR**; prompt on **Roosevelt**]

10A. What composer of *Nights in the Gardens of Spain* wrote the ballets *El Amor Brujo* and *The Three-Cornered Hat*?
ANSWER: Manuel **de Falla** y Matheu

10B. What character keeps herself alive by telling stories to her husband Shahryar in *The Arabian Nights*?
ANSWER: **Scheherezade**

1. When the potential of a free particle is zero, the eigenfunctions of this quantity are equal to the eigenfunctions of energy, and the quantum mechanical operator for this quantity is negative i h-bar times the gradient. In classical mechanics, the change in this quantity is represented by a quantity that is also the integral of force times time, which is impulse. This quantity is conserved in elastic collisions. For 10 points, identify this physical quantity defined as the product of mass and velocity.
ANSWER: **momentum**

081-10-21-03117

2. This city was legendarily founded by Queen Elissa after her exile from Tyre. After one defeat, its lands were sowed with salt to prevent it from rising again. Cato the Elder ended each of his speeches in the senate by demanding that this city be destroyed. This city's Magonid dynasty included several rulers named Hasdrubal and Hanno, and its leader Hamilcar was surpassed by a son who crossed the Alps with elephants. For 10 points, name this city led by Hannibal which rivaled Rome in the Punic Wars.
ANSWER: **Carthage**

015-10-21-03118

3. A special release reveals that this character attains the rank of "wizard," making him the greatest swordsman of the generation. This man encounters an opponent who employs Bonetti's Defense while working for Vizzini, and this man's archenemy is a six-fingered man named Count Rugen. For 10 points, name this expert swordsman portrayed by Mandy Patinkin in *The Princess Bride*, who introduces himself, "Hello... you killed my father, prepare to die."
ANSWER: **Inigo** **Montoya**

081-10-21-03119

4. This disease is theorized to be caused by abnormalities resulting from hyper-phosphorylation (fos-FAWR-uh-ley-shun) of tau proteins. Another hypothesis concerning the cause of this disease suggests that a buildup of beta-amyloid (AM-uh-loid) causes characteristic tangles and plaques in the brain. Other evidence suggests it is caused by a deficiency of acetylcholine (uh-seet-l-KOH-leen). For 10 points, name this disease that causes memory loss in its elderly sufferers.
ANSWER: **Alzheimer**'s disease

079-10-21-03120

5. One politician from this state suffered an awkward ten second pause during a debate before stating "we have did what was right" for this state. Terry Goddard lost the 2010 governor's race to that candidate, Jan Brewer. One politician from this state drew flak for forgetting how many houses he owned during an interview. This state recently passed legislation requiring police to examine the papers of people who look like immigrants. For 10 points, name this home state of John McCain.
ANSWER: **Arizona**

015-10-21-03121

6. This author noted that "when a man is tired of London he is tired of life." He included fifty-two critical biographies in his *Lives of the Most Eminent English Poets*. This man described one of his trips in *The Journal of a Tour to the Hebrides*. This man's life was the subject of an influential biography by James Boswell. This writer created a work which pioneered giving quotes as context for definitions. For 10 points, name this lexicographer and critic who authored *A Dictionary of the English Language*.
ANSWER: Samuel **Johnson**

015-10-21-03122

7. A member of this party who gave the Declaration of Conscience speech against Joseph McCarthy was Maine Senator Margaret Chase Smith. This party was led by Henry Cabot Lodge for much of the twentieth century. In the 1990s, leaders of this party authored the "Contract with America." Its unsuccessful candidates include Thomas Dewey, Barry Goldwater, and Bob Dole. For 10 points, name this party that has been led by Abraham Lincoln and Ronald Reagan, and which is currently rivaled by the Democratic Party.
ANSWER: **Republican** Party [or **GOP**; or **Grand Old Party**]

015-10-21-03123

8. A character from this author's *The Man Who Laughs* was the indirect origin of Batman's nemesis the Joker. In one novel, this author wrote about the character Eponine, whose parents are cruel innkeepers who mistreat the young orphan Cosette. In another novel, this author wrote of the Captain Phoebus, who is stabbed by Frollo while kissing the gypsy Esmeralda. For 10 points, name this French novelist who wrote about the thief Jean Valjean in *Les Miserables* and about Quasimodo in *The Hunchback of Notre Dame*.
ANSWER: Victor **Hugo**

015-10-21-03124

9. The "Appeal of June 18" was given to rally troops in this country. This country's general Gamelin was replaced with Weygand after the success of Operation Fall Rot. This country was the starting point of "Operation Dynamo," also called the Dunkirk Evacuation. This country was also the site of beaches nicknamed Gold, Juno, Omaha, Utah, and Sword during a landing in its region of Normandy. For 10 points, name this site of the Vichy puppet government during World War II.
ANSWER: **France** [or **French** Republic; or Republique **Francaise**]

015-10-21-03125

10. One literary example of a character with this profession is Joseph Rouletabille, whose interactions with a "yellow room" were written about by Gaston Leroux. Another man with this profession learns about the drowning of Marie Roget and finds an incriminating letter hiding in plain sight on a letter rack. That character with this profession deduces that an orangutan is responsible for some deaths on the Rue Morgue. For 10 points, Poe's C. Auguste Dupin is an early example of what crime-solving profession?
ANSWER: **detective**s

015-10-21-03126

11. This artist painted a barber's shop pole in front of several storefronts in his *Early Sunday Morning*. Another of his works depicts a sign for the titular food item outside of a window while two women with similar hats sit across from each other at a table. This painter of *Chop Suey* and other lonely city scenes also painted an advertisement for five-cent Phillies cigars hanging above the main scene of another work, which shows four people at a late night eatery. For 10 points, name this American artist of *Nighthawks*.
ANSWER: Edward **Hopper**

064-10-21-03127

12. This man secured the release of Thomas Paine from prison by claiming his American citizenship. States admitted to the Union during his presidency include Alabama, Illinois, and Missouri. This man was the last of the Virginia dynasty of presidents. His presidency lasted during the Era of Good Feelings and saw the Panic of 1819. For 10 points, name this President who succeeded James Madison and whose namesake doctrine stated that European countries should no longer colonize the Americas.
ANSWER: James **Monroe**

024-10-21-03128

13. This author described a "plank in reason" breaking and hitting a "world at every plunge" in a poem which opens "I felt a funeral in my brain." She wrote that "the stillness round my form was like the stillness in the air" in "I heard a fly buzz when I died." She wrote about a scarecely visible roof and a cornice that was "but a mound" in a poem about a carriage ride with Immortality and Death. For 10 points, name this reclusive "Belle of Amherst" who wrote "Because I could not stop for Death."
ANSWER: Emily **Dickinson**

015-10-21-03129

14. A classic text of free-market economics by William Graham Sumner analyzes the question of what these groups "owe each other." Frederic Engels wrote a report on the condition of one group of this type in England. Thorstein Veblen wrote a theory about the "leisure" one of these, and another theorist identified the chiefly important ones as the proletariat and bourgeoise (BUJ-wah-zee). For 10 points, identify this groups which are arranged in a hierarchy within society, according to Karl Marx.
ANSWER: social **class**es

019-10-21-03130

15. The Jacobian type of these structures is often used when changing between coordinate systems while the Hessian variety is used in analyzing the critical point of a multivariable function. Eigenvalues can be found by solving the characteristic polynomial of square ones, which sets their determinant equal to zero. Two of them can be multiplied if the number of columns in the first one equals the number of rows in the second. For 10 points, name these rectangular arrays of numbers encountered in mathematics.
ANSWER: **matrix**

064-10-21-03131

1. One of this man's poems begins "Shut, shut the door, good John!" since "All Bedlam, or Parnassus, is let out." This man wrote a mock epic in which Colley Cibber becomes the prince to the goddess Dulness. This author wrote the "Epistle to Dr. Arbuthnot" and *The Dunciad*. In another of his works, Belinda, based on Arabella Fermor, has her "favorite curl" stolen by the Baron. For 10 points, name this English satirist who wrote *The Rape of the Lock*.
ANSWER: Alexander **Pope**

080-10-21-03132

2. This deity transformed Medusa's hair into serpents, and the head of Medusa was placed on this goddess's shield, the aegis. In many stories, this goddess accidentally killed a childhood friend named Pallas before taking her name. The Parthenon was dedicated to this grey-eyed goddess, who served as a guide to Odysseus. She was the daughter of Metis although was born fully armed from the head of her father Zeus. For 10 points, name this analogue of Minerva, the Greek goddess of wisdom and war.
ANSWER: **Athena** [or **Minerva** until mentioned]

015-10-21-03133

3. In this novel, a prediction that one character will be killed by hemp rope is correctly made by the mysterious Fedallah. The narrator of this novel travels to New Bedford, where he is surprised to be sharing a bed at the Spouter-Inn with the tattooed Polynesian prince Queequeg. In a symbolic scene, one character in this novel throws his pipe overboard. For 10 points, name this novel which opens "Call me Ishmael" and which chronicles Captain Ahab's obsessive search for the title white whale, a work of Herman Melville.
ANSWER: ***Moby Dick***

015-10-21-03134

4. A work based on this play opens with two minor characters from this play flipping a coin, which repeatedly comes up heads. One character in this play advises another character to "neither a borrower nor a lender be." The title character mourns a "fellow of infinite jest," Yorick, in this play's "graveyard scene." He also kills Laertes in a swordfight and tells Ophelia to "get thee to a nunnery." For 10 points, name this Shakespearean tragedy in which "something is rotten in the state of Denmark."
ANSWER: ***Hamlet***

024-10-21-03135

5. "Rogue" types of these entities might be created by spatio-temporal focusing and modulational instability. Shallow ones have velocities that are approximately the square root of depth and gravitational acceleration. Their size is dependent on fetch. They can be plunging or spilling. Smooth, long ones are called swell. Like the tides, work has been done on generating electrical energy from these. These can break near the shore. For 10 points, name these undulations in the ocean.
ANSWER: ocean **waves** [or wind **waves**; or surface **waves**]

001-10-21-03136

What title character of a Charlotte Bronte novel is the governess of Thornfield Hall and ultimately marries Mr. Rochester?
ANSWER: **Jane Eyre** [accept either name]

001-10-21-03137

This is a 10-second calculation question. What is the circumference in terms of pi of a circle with radius 6?
ANSWER: **12** pi

001-10-21-03137