1. This effect dominates in energy regimes under one mega-electron volt, while at higher energies Compton scattering and pair production are likely to occur. It was first observed by Heinrich Hertz while working with spark gaps. Mathematically, this effect is likely to occur when the threshold frequency of the electromagnetic radiation times Planck's constant is equal to the work function, usually represented by a lower case phi. For 10 points, name this effect where incident light on the surface of a metal releases electrons.
ANSWER: **photoelectric** effect

084-10-21-10101

2. This author wrote about a man who is strangled to death shortly after proclaiming "checkmate" in his tale of a murderous chess-playing robot, "Moxon's Master." He offered "a great change in the form of misgovernment" as the meaning of "revolution" and labeled a corsair "a politician of the seas" in his ironic reference work *The Devil's Dictionary.* He also created an Alabama farmer who attempts to sabotage a Union Army marching route, leading to his death and a hallucination of escape. For 10 points, name this writer of "An Occurrence at Owl Creek Bridge."
ANSWER: Ambrose Gwinett **Bierce**

019-10-21-10102

3. One rare type of these formations can be understood as solitons and are known as the "Morning Glory" type of them. The bases of these formations are home to "tags" or "scuds," which are considered the "fractus" type of these entities. One type of these formations are informally known as "mare's tails." Contrails are artificial versions of these formations, which may be "seeded" using silver iodide. For 10 points, name these formations that come in cirrus, cumulus, and nimbus types.
ANSWER: **cloud**s

026-10-21-10103

4. This man wrote the most emblematic novel of a literary movement that was named for a Frederick Klinger play about the American Revolution. A polymath, he also wrote scientific works such as the *Essays on the Metamorphosis of Plants* and a *Theory of Colors.* A homunculus suggests the idea of summoning Helen of Troy to Mephistopheles, who tempts Faust, in one of his plays. For 10 points, name this German *Sturm und Drang* author who wrote of the suicide of Lotte's lover in *The Sorrows of Young Werther.*
ANSWER: Johann Wolfgang von **Goethe**

019-10-21-10104

5. This national park has ocean views possible on its Enderts and Crescent Beaches. This national park also covers state parks named for Jedediah Smith, Prairie Creek, and the Del Norte Coast. Hyperion, the world's tallest living organism at 379 feet, is located inside of this national park. For 10 points, name this United States national park located along the coast of northern California, which is named for the tallest trees that live within it.
ANSWER: **Redwood** National and State Parks

023-10-21-10105

6. In one work, this thinker argued that there existed two forms of a concept which he divided into mechanical and organic solidarity. In addition to writing *The Rules for Sociological Method* he described anomie in his work *Suicide*. For 10 points, name this French sociologist and author of *The Division of Labor in Society*.
ANSWER: Emile **Durkheim**

084-10-21-10106

7. The two subclasses of extinct organisms within this class are Labyrinthodontia and Lepospondyli. These animals are the first to develop eardrums and use both buccal pumping and gas exchange on their skin for respiration. Some of these animals, such as axolotls, retain gills in the adult, though most organisms in this class eliminate gills in favor of lungs through the process of metamorphosis, which changes tadpoles to frogs. For 10 points, identify this class of ectothermic organisms that include salamanders.
ANSWER: **Amphibia**ns

8. This son of Robert the Devil began construction on the White Tower in London. This ruler's claim to the throne was backed by Pope Alexander II. This man ordered the creation of the Domesday Book. His queen was Matilda and Henry I was his son. This man's victory over Harold II began the Norman rule of England. For 10 points, name this ruler who won the Battle of Hastings and became King of England in 1066.
ANSWER: **William the Conqueror** [or **William I** of England; prompt on **William**]

9. In high school, this player won the state championship his senior year by beating Kettering Alter while playing for St. Vincent-St. Mary. This player once tried to have a video confiscated of him being dunked on by Jordan Crawford. During the 2010 offseason, this basketball player organized a special on ESPN called *The Decision* where he announced he would "take [his] talents to South Beach." For 10 points, name this basketball player originally drafted with the first pick in 2003 by Cleveland who now plays for the Miami Heat.
ANSWER: LeBron Raymone **James**

10. Cayley's Theorem states that every group is isomorphic to a group of these entities. They can be written as a product of transpositions. They are bijections from a set to itself and for a set of size n there are N factorial of them. The number of these that are of size k drawn from a group of n items is n factorial divided by quantity n minus k end quantity factorial. For 10 points, name these items which are different orderings without repetition of a list of items which should not be confused with combinations.
ANSWER: **permutation**s

11. ?This writer explained his avoidance of a seventeen-syllable rule "because American speech is bursting to pop" in a preface to his "American Haiku." He wrote a novel about a man who gets a job as a fire lookout on a mountain from Japhy Ryder. Another character in that novel, Cody Pomeray, represents Neal Cassady, who is likewise present in another of this author's novels as the narrator's companion in a journey to see Old Bull Lee in New Orleans. For 10 points, name this author who created Dean Moriarty and Sal Paradise in *On the Road.*
ANSWER: Jack **Kerouac** [or Jean Louis Lebris de **Kerouac**]

12. Thomas Kuhn's *The Structure of Scientific Revolutions* uses the question of when this element can be said to have been "discovered" to illustrate the concept of the accumulation of anomalies. One person who discovered this element, Carl Wilhelm Scheele, presumed that it could leech phlogiston out of a substance. Its name is Greek for "acid-former," and was given by Antoine Lavoisier. It was called "dephlogisticated air" by its third discoverer, Joseph Priestley. For 10 points, identify this element whose reactions with other substances were discovered to be the source of combustion.
ANSWER: **oxygen**

13. With Alfred Kroeber, this man studied the Yurok Indians of California, and he would later win a Pulitzer Prize for a book subtitled "On the Origins of Military Nonviolence." In addition to *Ghandi's Truth*, this psychologist also psychoanalyzed the life of a German theologian in *Young Man Luther*. He theorized that infants go through a stage of "Trust vs. Mistrust" and collected his essays in *Childhood and Society*. The term "identity crisis" was coined by, for 10 points, which German-born psychologist known for his eight stages of development?
ANSWER: Erik Homburger **Erikson**

14. One work by this poet breaks off after fifty-four lines during a stanza that starts by describing "an Abyssinian maid" playing a dulcimer. That poem by this writer describes the river Alph and the palace Xanadu. Another poem by this author starts with a Wedding Guest being stopped. That poem includes the lines "water, water, everywhere / Nor any drop to drink." For 10 points, name this collaborator with William Wordsworth on *Lyrical Ballads* and author of the poems "Kubla Khan" and "The Rime of the Ancient Mariner."
ANSWER: Samuel Taylor **Coleridge**

15. He used lily-pad columns for the "Great Workroom" of his Johnson Wax Headquarters, and designed several houses using the textile block system. One work of his in the "Maya Revival" style survived the 1923 Tokyo earthquake. This architect of the Imperial Hotel designed a house for Edgar Kaufman with cantilevered floors built over Bear Run, and a museum best known for its spiral gallery. For 10 points, name this American architect of New York's Guggenheim Museum and Fallingwater.
ANSWER: Frank Lloyd **Wright**

1A. What programming language created by Yukihiro Matsumoto has a MVC web development framework called "rails"?
ANSWER: **Ruby**

1B. What composer's symphony *Eroica* was originally dedicated to Napoleon before this composer grew disillusioned when Napoleon declared himself emperor?
ANSWER: Ludwig van **Beethoven**

2A. What Spanish word is the second person plural informal pronoun that is contrasted with the formal ustedes?
ANSWER: **vosotros**

2B. What author wrote the poem "Jabberwocky"?
ANSWER: Lewis Carroll [or Charles Lutwidge **Dodgson**]

3A. This is a 10-second computation question. What is the median of the list of numbers 80,10,20,11,21,22,100?
ANSWER: **21**

3B. This is a 10-second computation question. If one rolls two standard 6 sided dice, what is the probability that the sum of value the rolled dice is 2?
ANSWER: **1/36**

4A. This is a 20-second computation question. For what positive value of x is the function $f(x)= (x^5 - 10x^3 + 2x^2 + 24x - 12) / (x^6 - 6x^4 + 2.2x^2 - 13.2)$ undefined?
ANSWER: **square root** of **6**

4B. This is a 20-second computation question. What is the period of sin(3cos(0.5x)) in radians?
ANSWER: **4pi**

5A. What fifth book of both the Torah and the Christian Bible features the death of Moses?
ANSWER: **Deuteronomy**

5B. What author created characters such as Jem, Atticus, and Boo Radley in her Pulitzer-winning novel *To Kill a Mockingbird*?
ANSWER: Harper **Lee**

6A. What breed of dog is notable for its legendary ability to rescue people who had been buried by avalanches?
ANSWER: **Saint Bernard** [or **St. Bernard**]

6B. What Spanish conquistador was inspired by the voyage of Cabeza de Vaca to sail to North America, where he became the first European to see the Mississippi River?
ANSWER: Hernando **de Soto**

7A. This is as 30-second computation question. For what negative value of x is the function $f(x) = (2x^9 - 8x^7 - 6x^3 + 24x) / (6x^6 - 24x^4 + 6x^2 - 24)$ undefined?
ANSWER: **-2**

7B. This is a 30-second computation question. Find the first positive value of x in sqrt(x/pi)*2*sin(x)=1.
ANSWER: **pi/3**

8A. The southern portion of what African country took a vote in January 2011 on whether to form an independent country?
ANSWER: Republic of **Sudan**

8B. What highest mountain in the Americas is located in Argentina's Mendoza Province near the Chilean border?
ANSWER: Mount **Aconcagua**

9A. What composer wrote music for the operas *Don Procopio*, *The Pearl Fishers*, and *Carmen*?
ANSWER: Georges **Bizet**

9B. Susano'o is the angry brother of what Japanese sun goddess that hid in a cave after her brother threw a horse through her hall?
ANSWER: **Amaterasu**

10A. Name the French author who created Pere Goriot and Eugene Rastignac in his long novel series *The Human Comedy*.
ANSWER: Honore de **Balzac**

10B. What Babylonian king created one of the earliest written law codes based on the principle of "an eye for an eye?"
ANSWER: **Hammurabi**

1. Ionic forces explain why lithium oxide is an exception to this theory, which divides compounds into different categories based on a property called the steric number. As a consequence of this theory, methane does not assume a square planar structure since that would space the bonds 90 degrees apart from each other rather than the 109 degrees in its actual shape. Common shapes generated by this theory include see-saw, trigonal bipyramidal, and bent. For 10 points, name this theory of chemical bonding which as its name suggests claims that electrons want to be as far apart as possible.
ANSWER: **valence shell electron pair repulsion** theory or **VSEPR** ["vesper"] theory

064-10-21-10117

2. The *Shu Jing* is translated as "The Classic of" this. Procopius wrote a secret one. One of these that spanned 40 books and discused the Roman constitution was written by Polybius, and Livy wrote one of Rome. Thucydides wrote one about the Peloponnesian War, while Herodotus wrote a notable one, causing him to be considered the father of the subject. For 10 points, name these works which recount past events and peoples.
ANSWER: **history** [or **histories**]

001-10-21-10118

3. In one part of this organ a process known as dehiscence occurs, which causes the release of pollen grains from the stomium. Basifixed and versatile describe two ways that part can be attached to the filament in this organ. This organ, the Latin name for which means "thread of the warp," contains the anther. For 10 points, name this male reproductive organ of a flowering plant.
ANSWER: **stamen**

084-10-21-10119

4. One poet who wrote about travelling to participate in this event described a place "washed by the rivers, blest by the suns of home" "that is for ever England." Many of the poets who wrote about this event were mentored by Siegfried Sassoon. One of those poets wrote about escaping this event via a tunnel to hell in "Strange Meeting" and about people "bent double, like old beggars under sacks" who believe "the old lie" in "Dulce et Decorum Est." For 10 points, Rupert Brooke, Wilfred Owen, and John McCrae were all poets who chronicled what devastating 1910s conflict?
ANSWER: **World War I**

019-10-21-10120

5. A paradoxical result associated with this object whose name was coined by Paul Ehrenfest in 1911 is in part due to the relationship between frequency and the emitted energy of this object defined by the Rayleigh-Jeans law. That result suggests that at high frequencies the radiated energy of this body goes to infinity. Known as the "ultraviolet catastrophe" other equations which govern this object's properties include Wien's displacement and Planck's Law. For 10 points, name this object which absorbs all electromagnetic radiation incident upon it.
ANSWER: **black-body**

084-10-21-10121

6. This god's heart became the planet Venus after he lept onto a funeral pyre. This god's conflicts with the "Smoking Mirror" caused the destruction of four earths. After the creation of the barren fifth world, this god retrieved bones from Mictlan and used his blood to create men to populate that world. This brother of Xolotl was tricked by his rival Tezcatlipoca into his immolation and he was said to have sailed east on a raft of serpents to eventually return to his people. For 10 points, name this feathered serpent revered by the Aztecs.

ANSWER: **Quetzalcoatl**

7. This is used as a solvent in the Jones reaction. Along with phenol, this is produced by the Cumene process. Another way to make it is by dehydrogenating 2-propanol. This can dissolve nitrocellulose as it is an organic solvent. It is used to clean laboratory glassware. This is the simplest ketone. For 10 points, name this compound found in nail polish remover.

ANSWER: **acetone**

8. This thinker divided philosophers into "tough-minded" and "tender-minded" categories. In one essay, this man analyzed an argument over whether a man chasing a squirrel around a tree is going around the squirrel. This thinker defined truth as "what is useful" in a book subtitled, "A New Name for Some Old Ways of Thinking." For 10 points, name this American philosopher, the author of Pragmatism and The Principles of Psychology.

ANSWER: **W**illiam **James**

9. In the 2010 elections, this state's voters approved the "Save Our State Amendment," which bans state judges from considering international law or Islamic Sharia codes in decisions. One of its Senators proposed a namesake amendment to make English proficiency a requirement U.S. citizenship, and, as the ranking Republican on the Environment and Public Works committee, is a prominent global warming skeptic. For 10 points, identify this state which sends Jim Inhofe and Tom Coburn to the Senate.

ANSWER: **Oklahoma**

10. Gamma Cassiopeiae variables such as Pleione, are known as this type of star as they throw off disks of gas. In UNIX, programs like Korn or Bash are this type of program as they allow one to execute commands. Those beloging to certain animals have an inner layer called nacre. One method for finding the volume of solids of revolutions that uses cylindrical elements are named for these. Many mollusks use these for protection and support. For 10 points, name this term that also names the levels in which electrons in an atom exist and objects commonly found on the beach.

ANSWER: **shell**s

11. This man named himself as governor of the settlement of Vera Cruz. He scuttled his ships to prevent his army from retreating to Cuba. Soldiers under this man were slaughtered in La Noche Triste. A translator for this man was a slave known as La Malinche, who was given to this man after his victory at Tabasco. This man was greeted as a guest in Tenochtitlan before taking Montezuma hostage. For 10 points, name this conquistador who overthrew the Aztec Empire.

ANSWER: Hernán **Cortés**

12. One action during this conflict involving the US Eighth Army and X Corps was known as the Home by Christmas Offensive. This war saw the largest humanitarian rescue by a single ship occur, which was captained by Leonard LaRue and led to the SS *Meredith Victory* being known as the "Ship of Miracles." Also known as the 6-2-5 War, this war included the Battles of Onjong, Changjin Reservoir, and Inchon. Described as a police action, for 10 points, name his 1950-1953 war that led to the creation of two nations on its namesake peninsula.

ANSWER: **Korean** War [or **Fatherland Liberation** War; accept **6-2-5** War before it is read]

13. In one of this director's movies, Christie Collins, portrayed by Angelina Jolie, finds her missing son only to suspect that the boy the police claim to be her child is in fact an impostor. His most recent film includes characters such as the journalist Marie Lelay and two twins named Marcus and Jason, one of whom is killed in a car accident. That film, which also includes the clairvoyant George Lonnegan, is called *Hereafter*. His other movies include two films about the Battle of Iwo Jima. For 10 points, name this director who also acted in his 2008 movie *Gran Torino*.

ANSWER: Clint **Eastwood**

14. During the War of 1812, this man was victorious at the Battle of the Thames. An earlier victory in that war played a role in this man's successful "log cabin and hard cider" campaign for the presidency. This victor at the Battle of Tippecanoe won the election of 1840 with John Tyler as his Vice President. For 10 points, name this first Whig President who became the first President to die in office after catching a cold from giving a two hour inaugural address.

ANSWER: William Henry **Harrison**

15. At the bottom center of this painting, a tree that appears to be glowing is grasped in the hand of one of the central figures. Its left hand side shows a woman milking a goat, while two more people, a farmer in black holding a scythe and a woman playing a violin, appear near the top. That woman, as well as two different colored houses, is upside-down. Meant to be a depiction of the artist's hometown of Vitebsk, this painting's main image is one of a green skinned man looking into the face of an animal. For 10 points, name this painting by Marc Chagall.

ANSWER: *I and the Village*

1. In the USSR this was done by Glavit and samizdat was one way to circumvent this occurrence. The word comes from the title of a Roman official whose duties included taking an accounting of the people and overseeing public views on morality. This is done on an internet-wide scale in the People's Republic of China. For 10 points, name this practice of regulating books and other forms of expression and communication to suppress ideas harmful to the public or government such as banning inappropriate words from television.
ANSWER: **censorship** [accept word forms like **censor** or clear equivalents]

001-10-21-10132

2. This poem describes "the hills," "the vales," and "the venerable woods" as only "solemn decorations." The reader of this poem is advised to "go not, like the quarry-slave at night,/ Scourged by his dungeon." Instead, this poem concludes that one should "approach thy grave" like a person who "lies down to pleasant dreams." For 10 points, name this poem that serves as a meditation on death by the writer of "To a Waterfowl," the American poet William Cullen Bryant.
ANSWER: "**Thanatopsis**"

023-10-21-10133

3. This Supreme Court case resulted in Section 13 of a fourteen year old Judiciary Act being called unconstitutional. That section allowed the Court to write writs of mandamus, for which the plaintiff in this case asked so that he could receive a commission as a justice of the peace. That commission had been one of the "midnight appointments." For 10 points, name this 1803 case decided by John Marshall in favor of the Secretary of State under Thomas Jefferson, which created the concept of judicial review.
ANSWER: *__Marbury__ v. Madison* [or *__Madison__ v. Marbury*]

023-10-21-10134

4. In the sliding filament theory of muscle contraction, the binding of this molecule allows myosin to detach from actin. The second messenger cyclic AMP is synthesized from this molecule by adenylyl cyclase. Pyruvate kinase is involved in the transfer of a phosphate group from PEP to ADP, which yields one molecule of this as well as one molecule of pyruvate in glycolysis. For 10 points, name this molecule which is a primary energy source for cells.
ANSWER: **ATP** [or **Adenosine-5'-triphosphate**]

084-10-21-10135

5. The 1832 electoral loss by this man to Andrew Jackson led to the eventual death of the Second Bank of the United States. That bank was started as a part of this man's plan known as the American System. This man became Secretary of State through the alleged "corrupt bargain" of the election of 1824. This politician played a role in getting bills passed in 1820 and 1850. For 10 points, name this Kentuckian politician whose ability to negotiate tricky bills led to his being nicknamed the "Great Compromiser."
ANSWER: Henry **Clay**

023-10-21-10136

Name the higher-order counterparts of scalars and vectors that are comprised of a multidimensional array of numbers, examples of which include the stress and stress-energy ones.
ANSWER: **tensor**s

023-10-21-10137