1. The upper portion of this region is primarily made up of olivine and pyroxene. In the deepest part of this region, perovskite is compressed into post-perovskite. During earthquakes, seismic reflections occur when waves bounce off the upper boundary of this region. This layer is bounded on either side by the Gutenberg discontinuity and the Mohorovicic (MOE-huh-roe-VITCH-itch) discontinuity. For 10 points, identify this layer of the earth that lies between the outer core and the crust.
ANSWER: **mantle**

239-13-95-06101

2. An unfinished highway started in 1970 that was planned to travel along this river had its endpoint set for Benjamin Constant. This river is the namesake of a species of dolphin that is also called the pink dolphin. In 2011, the first bridge to cross a major part of this river system was constructed to link Iranduba (EE-ron-DOO-nuh) and Manaus (mah-NAH-oos) across the Rio Negro. For 10 points, name this river that has the largest drainage system in the world and is found in South America.
ANSWER: **Amazon** River

023-13-95-06102

3. A conversation between "Files-on-Parade" and "the Colour-Sargeant" structures this writer's poem about the hanging of a soldier who murdered a comrade, "Danny Deever." He described "new-caught, sullen peoples, half-devil and half-child" in his racist poem "The White Man's Burden." His most famous book of stories includes "Toomai of the Elephants" and "Rikki-Tikki-Tavvi." For 10 points, name this British author of *The Jungle Book.*
ANSWER: Rudyard **Kipling**

014-13-95-06103

4. This man was taught music by the German Julius Weiss. He may have named one of his pieces after a club in Sedalia, Missouri. The title character is saved from being thrown into a wasps' nest in this composer's opera *Treemonisha*. In the 1970s, one of his pieces became the theme song for the movie *The Sting*. This man wrote the compositions "The Entertainer" and "Maple Leaf Rag." For 10 points, name this African-American composer known as the "King of Ragtime."
ANSWER: Scott **Joplin**

052-13-95-06104

5. A character in this poem is searching for a man named Arthegall, whom she fell in love with by looking at his image in a mirror. At the beginning of this poem, the sorcerer Archimago attempts to cause the protagonist to fall by lust, conjuring up images of Una. The first book of this poem is about the quest of the Redcrosse Knight. In this poem, Elizabeth I is represented as Gloriana, the title character. For 10 points, name this unfinished allegorical poem by Edmund Spenser.
ANSWER: The ***Faerie Queene***

140-13-95-06105

6. This player left the Pittsburgh Pirates after winning the MVP award in 1992. At AT&T Park, this player holds the record for hitting the most "splash hits" into McCovey Cove. Marc Ecko spent three quarters of a million dollars to buy a ball hit by this man, which Ecko marked with an asterisk and gave to the Hall of Fame. For 10 points, name this baseball player who controversially broke Hank Aaron's home run record in 2007 after being linked to steroid use.
ANSWER: Barry Lamar **Bonds**

7. John Good testified that this person used "MMA-style" moves. Don West used a knock-knock joke to point out that almost everyone had heard of this man, who used the expression "cracker" when talking to Rachel Jeantel. Barack Obama remarked that his hypothetical son would look like this person. He was killed when returning from a trip to buy Skittles and fruit drink from a 7-11 in Sanford, Florida. For 10 points, name this African-American teenager killed by George Zimmerman in 2012.
ANSWER: Trayvon **Martin**

8. This organization was headquartered at the "Marble Palace," and its president repeatedly pleaded the Fifth before a Senate Select Committee chaired by Robert F. Kennedy. FDR's Fala Speech was delivered at a campaign dinner before this organization. A leader of this organization partnered with mobster Johnny Dio to unseat his rival Dave Beck and gave the reply "we'll see" after it was expelled from the AFL-CIO. For 10 points, name this blue-collar labor union led by the disappearing Jimmy Hoffa.
ANSWER: International Brotherhood of **Teamster**s, Chauffeurs, Warehousemen and Helpers of America [or **IBT**]

9. This letter denotes an unusually left-handed tightly coiled form of DNA, and diagramming out electron flow in photosynthesis gives a "scheme" denoted by this letter. Slater's rules are used to compute a quantity denoted by this letter with the subscript "e f f". This letter also denotes a complex-valued generalization of the resistance, and also denotes the atomic number of a nucleus. For 10 points, name this letter, whose blackboard form denotes the set of all integers.
ANSWER: **Z**

10. This man ordered the hasty construction of the Sviyazhsk (svee-ESK) fort during his campaign against Kazan. In a movie about this man, a feast changes from black and white to color when some of his bodyguards begin to dance. This subject of a 1944 Sergei Eisenstein film celebrated his conquest of Kazan by having St. Basil's Cathedral built. This ruler founded the oprichniki (op-rich-NEE-kee) after his wife Anastasia died. For 10 points, name this tsar of Russia known for his extreme cruelty.
ANSWER: **Ivan the Terrible** [or **Ivan IV**; or **Ivan the Awesome**; prompt on **Ivan**]

11. This novelist wrote a novel narrated by Reverend Wicks Cherrycoke about an astronomer and a surveyor who mark out their namesake line. This author of *Mason & Dixon* created the fictional Tristero organization in a novel about Oedipa Maas (ED-uh-puh MAHS). The explosions of V-2 rockets are related to the sexual exploits of this author's character Tyrone Slothrop. For 10 points, name this postmodern American novelist of *The Crying of Lot 49* and *Gravity's Rainbow*.
ANSWER: Thomas **Pynchon**

12. This man's disguise as a princess was revealed when he drew a sword out of the various gifts prepared by Odysseus. This man fell in love with Polyxena (puh-LIX-ay-nuh), whose brother went on to kill him. He refused to fight after Agamemnon took Briseis away from him, but returned to avenge his best friend Patroclus. He fastened Hector's body onto his chariot and dragged it around Troy for twelve days. For 10 points, name this Greek warrior whose only weakness was his heels.
ANSWER: **Achilles**

13. In this novel, a woman receives a lock of her hair after being informed that her beloved is engaged to Miss Grey. This novel's central family is forced out of Norland Park after their patriarch dies. Willoughby woos one of the protagonists of this novel, who ends up marrying Colonel Brandon. A character in this novel is relieved to learn that Lucy Steele is not engaged to Edward Ferrars. For 10 points, name this Jane Austen novel whose title traits are embodied by Marianne and Elinor Dashwood.
ANSWER: *__Sense and Sensibility__*

14. Massaging a bulb named for these structures distinguishes types of tachycardia. Visceral fibers originating from bodies named for these structures go to the glossopharyngeal (GLAH-soh-fuh-RIN-jee-ul) nerve, and those bodies are chemoreceptors that monitor pO2 changes. Along with the subclavian arteries, they are the first structures to come off the arch of the aorta before dividing into external and internal branches in the neck. For 10 points, name these arteries that carry blood to the head.
ANSWER: **carotid** arteries

15. Often excluded from the list of casualties of this event is Roger Peterson, the pilot of the Beechcraft Bonanza involved. Not present for it were Tommy Allsup and Waylon Jennings, who ceded their seats to a coin toss and a sick J.P. Richardson. This event took place on February 1959 and killed The Big Bopper, Ritchie Valens and Buddy Holly. For 10 points, name this plane crash referred to repeatedly in Don McLean's "American Pie."
ANSWER: "The **Day the Music Died**" [or descriptive answers such as "the plane **crash** that killed Buddy **Holly**" until the relevant names are read in the question; check against the remainder of the question for correctness]

1A. What polyptych created by Hubert and Jan van Eyck shows the adoration of the bleeding Lamb of God in its bottom-center panel?
ANSWER: *Ghent Altarpiece*

1B. What epic novel by Leo Tolstoy follows the Bezukhov and Rostov families?
ANSWER: *War and Peace* [or *Voyna i Mir*]

2A. Oedipus unwittingly killed what father of his at a crossroads?
ANSWER: **Laius**

2B. What type of number is often written a plus b i?
ANSWER: **complex** numbers

3A. What Byzantine emperor was challenged by the Nika riots?
ANSWER: **Justinian** I [or **Justinian** the Great]

3B. What husband of Clara Wieck composed symphonies nicknamed the "Rhenish" and "Spring"?
ANSWER: Robert **Schumann**

4A. What small, Teflon-coated magnetic rods are placed in solutions in order to mix them by spinning?
ANSWER: magnetic **stir bar**s [or **flea**s; or magnetic **stirrer**; prompt on magnetic **spinner**s]

4B. Different types of stars are organized in what chart that plots luminosity versus temperature?
ANSWER: **Hertzsprung-Russell** diagram [or **HR** diagram]

5A. What river forms the border between the U.S. and Mexico as it flows from Colorado to the Gulf of Mexico?
ANSWER: **Rio Grande** River

5B. What object-oriented language was originally developed by James Gosling at Sun Microsystems and uses a namesake virtual machine?
ANSWER: **Java**

6A. In what country did the Carnation Revolution take place in 1974?
ANSWER: **Portugal** [or **Portuguese Republic**]

6B. This is a 20-second calculation question. A fair coin is tossed four times in a row. What is the probability there will be at least 3 consecutive heads flipped?
ANSWER: **3/16**

7A. This is a 20-second calculation question. In a right triangle, if the leg opposite an angle of theta has length 6 and the triangle has area 24, what is the cosine of theta?
ANSWER: **4/5**

7B. Silla and Goguryeo (go-GUR-yo) were some of the early kingdoms on what Asian peninsula?
ANSWER: **Korea** [or the **Korean** Peninsula]

8A. What Comedy Central sketch comedy show starring *MADtv* alums has included sketches called East/West College Bowl, Substitute Teacher, and Continental Breakfast?
ANSWER: *Key & Peele*

8B. What wife of Uriah the Hittite became the mother of Solomon after marrying King David?
ANSWER: **Bathsheba**

9A. What American businessman founded the University of Chicago with money he earned from creating the Standard Oil Company?
ANSWER: John D. **Rockefeller**

9B. The Awami (ah-WAH-mee) League holds power in what Asian country where a 2012 factory fire killed 112 textile workers?
ANSWER: **Bangladesh**

10A. This is a 30-second calculation question. What is the result, in simplest form, when you divide the quantity 5 plus i by the quantity 1 plus i?
ANSWER: **3 minus 2i**

10B. This is a 30-second calculation question. An equilateral triangle and a hexagon have the same perimeters. If the area of the triangle is 18, what is the area of the hexagon?
ANSWER: **27**

1. Much commentary has been invited by this novel's intensely sexual chapter "A Squeeze of the Hand." A man named Elijah questions the protagonist about the state of his soul after hearing he has signed a contract along with his roommate, who along with Daggoo and Tashtego works as a harpooner. In this novel, the megalomania of Captain Ahab leads to the deaths of everyone but Ishmael. For 10 points, name this novel about the pursuit of a white whale written by Herman Melville.
ANSWER: **_Moby-Dick_**

014-13-95-06117

2. While testing this experiment, Ernest Marsden detected particles at angles more than ninety degrees. One result of this experiment showed that matter was mostly made up of empty space. The setup for this experiment involved an alpha particle emitter pointed at a thin layer of the namesake element. This experiment disproved the plum pudding model of the atom and showed the existence of a positively charged nucleus. For 10 points, identify this experiment conducted by Ernest Rutherford.
ANSWER: Rutherford **gold foil** experiment [or **Geiger**-Marsden experiment; or **Rutherford** gold foil experiment until "Ernest Rutherford" is read]

239-13-95-06118

3. This poem's speaker recalls a simple compliment as "cause enough for calling up that spot of joy" on another character's cheek. The speaker of this poem laments a heart "too soon made glad, too easily impressed." This poem's speaker calls attention to a portrait of the title woman painted by Fra Pandolf. This poem is spoken by the Duke of Ferrara, who accidentally implies he had her murdered. For 10 points, name this dramatic monologue written by Robert Browning.
ANSWER: "**My Last Duchess**"

014-13-95-06119

4. The shift in this quantity in one process is equal to h over mc times quantity one minus cosine theta, and h over mc is often called the "Compton" type of it. For a particle in a box, it is equal to 2L over the principal quantum number. Its observed value divided by its emitted value gives one plus the redshift. It varies between 400 and 700 nanometers for visible light and is inversely proportional to the frequency. For 10 points, name this quantity, the distance between two peaks of a wave.
ANSWER: **wavelength**

048-13-95-06120

5. This author included the stories "You Can't Tell a Man by the Song He Sings" and "Defender of the Faith" along with the title novella in his early collection _Goodbye, Columbus._ The professor Coleman Silk passes as white in his novel _The Human Stain,_ which is narrated by his recurring character Nathan Zuckerman. For 10 points, name this Jewish-American novelist of _American Pastoral_ and _Portnoy's Complaint._
ANSWER: Philip **Roth**

014-13-95-06121

6. The diagonal terms of the stress-energy tensor represent this quantity. The change in this quantity is equal to 8 eta L Q over pi r to the fourth according to Poiseulle's equation. This quantity is equal to rho times g times h in one system, and this quantity is distributed throughout an incompressible fluid according to Pascal's principle. For 10 points, name this quantity often measured in millimeters of mercury, which is equal to force divided by area.
ANSWER: **pressure**

7. This man was defended by Francis Scott Key after beating William Stanberry with a cane on Pennsylvania Avenue. He became fluent in Cherokee after living with a tribe for a few years in his youth. As governor of Texas, he resigned instead of endorsing the secession of Texas from the Union. Earlier, he forced the Treaty of Velasco by defeating Santa Anna at San Jacinto (ha-SEEN-toe). For 10 points, name this first president of the Republic of Texas.
ANSWER: Sam **Houston**

8. One of these proteins extracted from M-MLV has an error rate of around one in thirty thousand, and this protein is encoded by long-terminal-repeat containing transposons. Efavirenz and nevirapine are members of one class of inhibitors of this protein, which is also inhibited by a drug that causes chain termination, called AZT. This protein is encoded by the pol protein of a certain lentivirus. For 10 points, name this protein encoded by HIV, which allows the synthesis of DNA from RNA.
ANSWER: **reverse transcriptase** [or **RT**]

9. Andy Warhol shot an eight hour silent film consisting of a single shot of this building at night. In 1945, it was seriously damaged when a B-25 crashed into it due to heavy fog. The firm of Shreve Lamb and Harmon originally designed this building to have a docking site for zeppelins. It competed for the title of world's tallest building against the 40th Wall Street and the Chrysler Building. For 10 points, name this building which is often used as a symbol for New York and is named after the state's nickname.
ANSWER: **Empire State Building**

10. This man theorized that the vitreous humour in his eyes was tinted blue when he discovered his color blindness. This scientist promoted a theory originally speculated by Democritus in the book *New System of Chemical Philosophy*. This scientist's studies of gases revealed that the components of a gas summed together yield the total pressure of the gas. For 10 points, name this early British chemist who developed an atomic theory of matter and devised a namesake law of partial pressures.
ANSWER: John **Dalton**

11. In one play by this author, which is set in Illyria, the communist Hugo is sent to assassinate his party's leader Hoederer on charges of betrayal. Another of this author's plays ends with a character getting stabbed, but that victim responds by laughing and remarking she is already dead. This author of *Dirty Hands* wrote a play in which Estelle and Inez join a room with Garcin, who exclaims "Hell is other people!" For 10 points, name this existentialist French playwright of *No Exit*.
ANSWER: Jean-Paul **Sartre**

12. Hats worn during this event are made of real or imitation goat hair. A right-wing geology student detonated an explosive at this event in 1980, injuring hundreds. This event is held on a field named for Princess Therese, whose marriage to Ludwig I was the basis for the first one. In one of its thirty-four tents, the mayor ceremonially yells "It's tapped!" after the first beer keg is opened. For 10 points, name this Munich festival which takes place on the first week of a fall month.
ANSWER: **Oktoberfest**

13. This language is regulated by the "Allgood Law," which was used to crack down on a Georgia Tech branch campus for using English on its website. A variant of this tongue spoken by Asian servants was called "Tay Boi," and a version in the Americas is called "Acadian." This is the predominant language in Wallonia, and a majority of the world's speakers of it live in Africa, in such countries as Gabon. For 10 points, name this Romance language, spoken as the first language in Quebec.
ANSWER: **French** [or le **francais**]

14. This man created a namesake hierarchy to categorize "context-sensitive" and "context-free" languages. He argued that a "poverty of the stimulus" discredited behaviorist explanations for language development. This man composed the sentence "colorless green ideas sleep furiously" in *Syntactic Structure* as an example of a sentence that was grammatically correct, but made no sense. For 10 points, name this MIT linguist who established the concept of generative and universal grammar.
ANSWER: Noam **Chomsky**

15. Molecules loosely associated with this structure are removed using carbonate extraction while molecules embedded in it are removed using Triton X-100. This structure is separated into the N and P faces by freeze fracture, and contains microdomains called rafts. This structure, modeled by Singer and Nicolson's fluid mosaic model, consists of amphipathic phospholipid molecules arranged in a bilayer. For 10 points, name this structure which separates the inside and outside of a cell.
ANSWER: plasma **membrane** [or cell **membrane**; or cytoplasmic **membrane**]

1. A special council that included Attlee Pomerene and Owen Roberts was appointed by Congress to investigate this scandal. Thomas Walsh led the investigation into this event, which sparked the Supreme Court case of *McGrain v Daugherty*. In this scandal, land in the Elk Hills, which contained oil reserves, was leased to a petroleum company, and a bribe was received by Secretary of the Interior Albert Fall. For 10 points, name this scandal of the Harding administration.
ANSWER: **Teapot Dome** Scandal

140-13-95-06132

2. This author irked his country's dictator by exposing the negligence of the navy in his nonfiction series *The Story of a Shipwrecked Sailor.* In one of his novels, Dr. Juvenal Urbino courts Fermina Daza and combats the title epidemic. In another of his novels, set in Macondo, he traces seven generations of the Buendia (bwen-DEE-uh) family. For 10 points, name this Colombian author of *Love in the Time of Cholera* and *One Hundred Years of Solitude.*
ANSWER: Gabriel **Garcia Marquez** [prompt on **Marquez**]

014-13-95-06133

3. An example of these things developed by Paul Offit replaced one blamed for several cases of intussusception. Several units of another example had to be recalled after the Cutter Incident, and yet another one was contaminated by SV40. Albert Sabin developed an oral one of these things, while the first of them was inspired by the fact that milkmaids appeared to be resistant to smallpox. For 10 points, name these drugs developed by Edward Jenner and Jonas Salk, which confer immunity to a particular disease.
ANSWER: **vaccine** [accept more specific answers]

048-13-95-06134

4. A character created by this author works as a bellboy in a classy Kansas City hotel before moving to Lycurgus, New York, to work in his uncle's collar factory. Another character created by this author runs away with George Hurstwood to Canada. This creator of Clyde Griffiths caused controversy with his depiction of the eventual Broadway star Caroline Meeber. For 10 points, name this naturalist who wrote *An American Tragedy* and *Sister Carrie.*
ANSWER: Theodore **Dreiser**

014-13-95-06135

5. Due to lyonization, which inactivates an X chromosome, and the fact that color is an X-linked trait in this animal, its females can feature a black-and-orange patterning known as calico. One of these animals in a box with a flask of poison and a radioactive source can be both alive and dead in a thought experiment of Erwin Schroedinger. For 10 points, identify these domestic, carnivorous animals that appear to violate the conservation of angular momentum by always landing on their feet.
ANSWER: domestic **cat**s [or house**cat**s; or **feline**s; or *Felis* silvestris *catus*]

066-13-95-06136

What experiment confirmed the de Broglie hypothesis by firing a beam of electrons at a sheet of nickel and measuring the scattering angles?
ANSWER: **Davisson-Germer** experiment

This is a calculation question. If four letters addressed to four people are given out randomly, one to each person, what is the probability no one ends up with their letter?
ANSWER: **3/8**