



1. One of these events is the site of the first appearance of Mr. Hurst, his wife, and his sister-in-law, Caroline, the latter of whom disparages the possibility of one of these events occurring at Netherfield as a punishment, not a pleasure. A mischievous soldier does not attend one of them to avoid Georgiana's brother. During one of these events in Meryton, Jane is referred to as "the most beautiful creature" in the room by Mr. Bingley, while Jane's sister is derided as "tolerable, but not handsome enough to tempt me" by Mr. Darcy. For 10 points, name this type of social dance event common in the novels of Jane Austen. ANSWER: **balls** in *Pride and Prejudice* [or **dances** before it is read; prompt on **party** or obvious equivalents]

192-13-83-03101

2. A W897X mutation in the SCN9A sodium channel causes an inability to experience this phenomenon, which is carried by the tract of Lissauer. An initial form of this phenomenon is caused by activation of A-delta fibers. It's not thermoreception, but information about this phenomenon is carried via the spinothalamic and trigeminal pathways, and it is depleted via selective prolonged activation of TRPV1 binding via capsaicin. This sensation is carried by small, unmyelinated C- fibers. A "referred" form of this phenomenon occurs after insufficient oxygen reception at the heart, in the form of angina. For 10 points, identify this somatic sensation which is suppressed by endogenous opiates which produce strong analgesia. ANSWER: **nociception** [accept **pain** or **experiencing pain**]

189-13-83-03102

3. According to critics, the high trumpet part in one of these pieces was inspired by the virtuoso playing of bandleader Johann Altenburg. A G-F sharp-G motif opens another of these pieces, which is bridged by merely two chords forming a half-cadence. Yet another of them is scored for the mysterious "Fiauti d'Echo." The fifth of these works was a show-piece for an instrument that Michael Mietke delivered to the court of Koethen. The gamba players are given an unusual supporting role in the last of these pieces, which is scored for no violins. Fruitlessly composed for a job application, they included a French dedication to their eventual namesake. For 10 points, name this set of six pieces composed for a German margrave by Johann Sebastian Bach.

ANSWER: **Brandenburg Concertos** [or **Brandenburg Concerti**; or **Concerts Avec Plusieurs Instruments**; or **BWV 1046-1051**; prompt on **concertos by Bach** or **concerti grosso by Bach** and similar answers; prompt on **concertos** and **concerti grosso**]

023-13-83-03103

4. According to a theorem partially proven by Ostrogradsky, this operation yields zero if a vector field is divergent free. The determinant of the Jacobian is used as a multiplicative factor when changing variables for this operation. One of these operations is equated to a line integral around a simple closed curve by Green's theorem. This operation can sometimes be more easily evaluated by transforming to polar, cylindrical or spherical coordinates. The order in which this operation is performed can be changed as a consequence of Fubini's theorem. For 10 points, identify this operation that involves multiple Riemannian sums and can be used to find surface area or volume.

ANSWER: **multiple integrals** [or **double integrals**; or **triple integrals**; or **surface integrals**; or **flux integrals**; or word forms of "integral", such as **integration**; prompt on **integration**]

066-13-83-03104

5. This ruler wrote about the observatory and monastery Ulugh Beg Mirza built in a city he ruled, as well as the flora in the surrounding land. After praying for his son's illness to be cured, this man became gravely ill himself. A mosque this ruler built in Ayodhya was torn apart by angry Hindu rioters in 1992. This man lost control of land when he was defeated by Muhammad Shaybani. This ruler's namesake memoirs recount his conquests of Samarkand and exile to Afghanistan, which occurred after he was forced out of power at Fergana. This ruler defeated Ibrahim Lodi at the First Battle of Panipat and founded an empire that was later led by his grandson, Akbar. For 10 points, name this first emperor of the Mughal dynasty.

ANSWER: Zahir-ud-din Muhammad **Babur**

140-13-83-03105

6. This quantity can be calculated as the product of density, free-stream velocity and circulation. A condition used to calculate this quantity fixes the rear stagnation point and is the Kutta condition. A spinning spherical projectile experiences this force in the Magnus effect. The coefficient for this force is typically plotted against the angle of attack. This force can be explained as the result of a pressure differential that results from a flow traveling a greater distance and faster speed over the top of a certain object, according to Bernoulli's principle. Because this force's direction is perpendicular to oncoming flow, it is often contrasted with drag. For 10 points, identify this upward acting force on an aircraft wing.

ANSWER: **lift** [prompt on mechanical **aerodynamic** force]

066-13-83-03106

7. A sonnet inspired by this work notes how "sorrow, and a care that almost killed, kept me from what I may accomplish yet." This work's plural titles a collection including "Lost in Translation" and the apocalyptic *The Book of Ephraim* that won the Pulitzer Prize for James Merrill. The first part of this work was recently translated into English by Robert Pinsky. The aforementioned sonnet takes its title from this work's first line and begins, "Half my life is gone, and I have let the years slip from me." That sonnet, "Mezzo Cammin," was written by the first American to translate this work, Henry Wadsworth Longfellow, who rendered one of its lines as "all hope abandon, ye who enter in!" For 10 points, name this three-part epic poem by Dante.

ANSWER: *The **Divine Comedy*** [or *La **Divina Commedia***; prompt on ***Inferno***]

020-13-83-03107

8. Ebehard II von der Mark was the builder of a chateau near where this battle took place. During this battle, an order to retreat was countermanded by one side's second change of command, which led that side to have weakened defenses along the Givonne. Prince George of Saxony attempted to break the defense at La Moncelle in this battle, which took place after the Battle of Beaumont. Felix de Wimpffen took control from Auguste Ducrot after he was given command of the Army of Chalons by Patrice MacMahon, who was injured in this battle. Napoleon III was captured following this battle. For 10 points, name this 1870 battle that was the decisive engagement of the Franco-Prussian War.

ANSWER: Battle of **Sedan**

192-13-83-03108

9. This essay quotes a line about "a drab of state, a cloth-o'-silver slut" after using the example of someone who steals a plank from a drowning man to refute William Paley. It asks why the majority "crucif[ies] Christ and excommunicate[s] Copernicus and Luther" after denouncing the "standing army...militia, jailers, constables" who act "not as men mainly, but as machines." This essay begins by endorsing the idea that "that government is best which governs least" and recounts its author's imprisonment for refusing to pay a poll tax. For 10 points, name this essay by Henry David Thoreau that advocates refusing to support unjust governments.

ANSWER: "**Civil Disobedience**"

080-13-83-03109

10. This monster is the namesake of Gyas' ship in the boat race from the fifth book of the *Aeneid*. The phrase "For Tinia" is inscribed on this creature's leg in a bronze Etruscan sculpture of it found near Arezzo. King Iobates dispatched a hero to kill this creature, which died after swallowing a lump of molten lead from a spear tip. It was defeated with the help of a golden bridle obtained from the temple of Athena. This fire-breathing monster ravaged the land of Lycia. For 10 points, name this monster with a serpent for a tail, a goat on its back, and a lion as a head, which was slain by Bellerophon.

ANSWER: **Chimera**

080-13-83-03110

11. This technique can use the CYANA algorithm for automatic structure assignment. One form of this technique requires evolution and mixing phases as well as a Fourier transform to create interpretable data. Two dimensional variations of this technique include COSY. Readouts from this technique can be complicated by J-coupling, which can be affected by relaxation processes. Tetramethylsilane is used as a standard for this technique, whose most common forms include hydrogen-1 and carbon-13. Using a phenomenon that is also used in MRIs, this technique measures the chemical shift of a molecule. For 10 points, name this spectroscopic technique, which uses an applied magnetic field to determine the structure of a molecule.

ANSWER: **NMR** spectroscopy [or **nuclear magnetic resonance** spectroscopy]

140-13-83-03111

12. This leader escaped from the top of his party's headquarters via helicopter the day after he gave his final speech denouncing a "minority of troublemakers," only for the entire crowd to boo him. Paul Goma was a dissident opposing this man's regime. During his time in power, weak children were brought to an orphanage at Cighid compared to death camps. Women who gave birth to ten children were given the title "heroine mothers." Ion Pacepa defected from the Securitate during the rule of this man, who succeeded Gheorghe Gheorghiu-Dej and made proposals influenced by Kim Il Sung and Mao called the July Theses. For 10 points, name this man who was executed in 1989 with his wife Elena after leading a brutally repressive regime in Romania.

ANSWER: Nicolae **Ceausescu**

192-13-83-03112

13. The protagonist of this novel claims that marriage "drinks up all of our power of giving" love and that it "stays with us like a murder." A banker in this novel used to be a pawnbroker selling stolen goods, a fact he tries to cover up by contributing to the death of Sir John Raffles. That banker is Nicholas Bulstrode. The protagonist's husband dies before he can complete *The Key to All Mythologies*. In this novel, the mayor's daughter, Rosamond Vincy, is attracted to the doctor, Tertius Lydgate. This novel ends with the protagonist announcing she will marry Will Ladislaw. For 10 points, name this George Eliot novel about Dorothea Brooke set in the title town.

ANSWER: **Middlemarch: A Study of Provincial Life**

052-13-83-03113

14. Sylvanus Morley excavated the "Complex of a Thousand Columns" in this country, making careful sketches of the sites calendrical inscriptions. Alfonso Caso discovered monumental carvings of contorted men or "danzantes" while excavating Monte Albán here. That site contains at least one ball court, and ball courts are also present at this country's site of Chichen Itza. This country's Museum of Anthropology contains an artifact most anthropologists now believe to be not a calendar but an altar, the Stone of the Sun. For 10 points, name this country once home to the Maya and Aztecs.

ANSWER: **Mexico**

121-13-83-03114

15. One of this man's operas first premiered in the United States along with the world premiere of Menotti's *Amelia Goes to the Ball*. This composer wrote "Paysandu," one of twelve dances for piano dedicated to Paul Claudel, who collaborated with this man on an opera titled *Christophe Colomb*. One of this man's works, subtitled "The Nothing-Doing Bar," is named after a Brazilian tango. Fernand Leger designed the set and costumes for the 1923 introduction of one of this man's works performed by the Ballet Suedois; that work, with sections called "The Desire of Man and Woman" and "The Man and Woman Kiss," was inspired by jazz and African folk myth. For 10 points, name this member of Les Six who composed *The Ox on the Roof* and *The Creation of the World*.

ANSWER: Darius **Milhaud**

189-13-83-03115

16. This good led Hadrian to change the official symbol of Hispania to reflect its production along the Ebro River. The trade in this substance resulted in a pile of broken containers a hundred meters high at Monte Testaccio in Rome. An ancient-world tool called the strigil was used to remove this substance. The winner of the Panatheneaic Games obtained a lot of this substance as a reward, and a machine to create it in Miletus made the poor philosopher Thales rich. This good, a product of a gift from Athena, was, like wine, extracted at villas with screw-presses and stored in amphorae. For 10 points, name this liquid used in classical antiquity for washing and lighting, a plant product later used for seasoning food.

ANSWER: **olive oil** [prompt on **oil**; prompt on **olive branch**]

104-13-83-03116

17. Migmatites found in areas where this process occurred include core complexes and gneiss domes. Some types of this process can create nappes. The Sevier, Nevadan and Laramide instances of this process are grouped under the Cordilleran. The results of this process are distinguished from the process that creates cratons. The formation of a foreland basin and fold and thrust belts often accompanies this process. This process can result from subduction or collision with an island arc or another continent. For 10 points, identify this creation of mountain belts by tectonic activity.

ANSWER: **orogeny** [or **orogenesis**; prompt on **mountain formation** or reasonable equivalents]

066-13-83-03117

18. In one of this artist's drawings, a girl watches from a window as the 112 ark crashes into her house. This artist painted a monochromatic sad face covered with a black X in reaction to being singled out as a Jew and fired from his job as a teacher at Dusseldorf Academy. This painter of *Miraculous Landing* and *Struck From the List* gave up painting with models after a life-changing trip to Tunisia. He described painting as taking "an active line on a walk" in a pile of lecture notes that Walter Gropius assembled into the *Pedagogical Sketchbook*. Against a blue background, a wire connects to a hand-crank and shackles several birds in his masterpiece. For 10 points, name this Swiss artist who painted *Twittering Machine*.

ANSWER: Paul **Klee**

192-13-83-03118

19. The commander of this operation was the subject of the film *Above and Beyond* and was chosen over Frank Armstrong and Roscoe Wilson. *The Great Artiste* and *Straight Flush* were parts of the 509th Composite Group that carried out this operation. George Marquadt commanded *Necessary Evil* during this event, which missed the Aioi Bridge and instead hit the Shima Surgical Clinic. This mission's perpetrators left from Tinian in the Marianas. This operation's leader, Paul Tibbets, dropped "Little Boy" from the *Enola Gay*. For 10 points, name this event, the first utilization of the products of the Manhattan Project.

ANSWER: **bombing of Hiroshima** [or **Special Mission 13**; accept synonyms for "bombing of" such as **attack on**; prompt on atomic **bombing of Japan** until "first" is read]

192-13-83-03119

20. In one work, the creator of this idea said that it could not be directly extended to seeing and walking. In another work, the description of this idea is followed by the author discussing perfections he knows he does not have but that must be held by someone. This phrase was called the most certain thing to occur to someone who philosophizes in an orderly fashion in a list appearing in its creator's *Principles of Philosophy*. This phrase was considered the first principle by its creator after he arrived at it by using his system of methodic doubt. This phrase was originally written in French when it appeared in the *Discourse on Method*. For 10 points, give this phrase that served as the most basic assumption of Rene Descartes.

ANSWER: **I think, therefore I am** [accept alternate phrasings; or **cogito, ergo sum**; or **je pense, donc je suis**]

023-13-83-03120

21. One of the highest points in this city, Sparrow Hills, is located near the Luzhniki Stadium. The main building of the state university in this city, as well as the Ministry of Foreign Affairs, are part of a complex known as the "Seven Sisters" built from 1947 to 1953. During a modernization period, it demolished such landmarks as the Sukharev Tower. It is home to an amusement park that once displayed mock-ups from the Buran space shuttle program. This city's Cathedral of Christ the Saviour is the tallest Orthodox Christian church in the world, although the onion-domed St. Basil's Cathedral is also found here. For 10 points, name this city, the site of Red Square and the Kremlin.

ANSWER: **Moscow**

052-13-83-03121

22. In a scene in this novel, a character thinks about the varying altitudes of ginkgo leaves while his instructor watches him have sex with his instructor's wife. Another scene in this novel ends with a youth in a straw hat declaring, "I am Faustino Higuera. Defend yourself." The protagonist of this novel meets with professor Uzzi Tuzzi, and the Cimmerian language features prominently in this novel. The diary of Ermes Marana forms part of this novel, whose protagonist loves Ludmilla. This novel alternates between the first chapters of fiction novels and a second-person narrative. For 10 points, identify this novel by Italo Calvino.

ANSWER: **If on a winter's night a traveler** [or **Se Una Notte d'Inverno un Viaggiatore**]

189-13-83-03122

23. Bosley Crowther's opposition to this film led to his replacement by Renata Adler as film critic for the *New York Times*. Theodora van Runkle's costume design for one character in this film included a beret set at a rakish angle and a separate skirt and blouse combination. After displaying black and white credits over thirty-two sepia tinted photographs, this film opens with an extreme close-up of a woman's lips as she applies lipstick. One character in this film is told that he'd "best keep running." Its title characters take a picture of themselves with Frank Hamer, long before being ambushed by Texas Rangers and killed in a fusillade of gunfire. For 10 points, identify this Arthur Penn film about the title duo of bank robbers.

ANSWER: **Bonnie and Clyde**

066-13-83-03123



1. This man served under Zakhar Chernyshov during the Seven Years' War. For 10 points each:

[10] Name this leader of a 1773 to 1775 rebellion who proclaimed a government opposed to serfdom while pretending to be Peter III.

ANSWER: Yemelyan Ivanovich **Pugachev**

[10] Pugachev's Rebellion occurred during the reign of this Russian empress, whose favorites included Grigory Potemkin.

ANSWER: **Catherine the Great** [or **Catherine II**; or **Yekaterina Alekseyevna**; or **Yekaterina Velikaya**; or **Sophie Friederike Auguste**; prompt on **Catherine**]

[10] Pugachev was forced to escape across the Volga after being defeated by Ivan Michelson in battles around this city in 1774, which then led to the end of the rebellion.

ANSWER: Battle of **Kazan**

192-13-83-03201

2. This property occurs in helium II cooled to less than approximately 2.17 Kelvins, which is the lambda point. For 10 points each:

[10] Name this property of certain materials that have zero viscosity.

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

[10] This Soviet physicist won a Nobel for developing a theory that explained the superfluidity of helium II below the lambda point. He also names a phenomenological model of superconductivity with Vitaly Ginzburg.

ANSWER: Lev Davidovich **Landau**

[10] Independently of von Neumann, Landau developed this operator used to describe mixed states in quantum systems. The expectation value of an observable in a state A is equal to the trace of this operator of A.

ANSWER: **density matrix** [or **density operator**; or **statistical operator**]

066-13-83-03202

3. This man gave a 12 hour filibuster in March 2013 to protest the administration's use of drones. For 10 points each:

[10] Name this senator from Kentucky and Tea Party favorite. He is the son of a Texas congressman and frequent Presidential candidate who retired in 2013.

ANSWER: Randal Howard "Rand" **Paul**

[10] Paul was blocking voting regarding the nomination of this man as the Director of the CIA. This man took office in March.

ANSWER: John Owen **Brennan**

[10] This Senator has blasted January 2013 filibuster reform as inefficient. In December 2010, he gave an all-day "Tax Cut filibuster" which prompted progressives to suggest he run for president.

ANSWER: Bernard "Bernie" **Sanders**

052-13-83-03203

4. The speaker of this poem hears the lapping of water "in the deep heart's core." For 10 points each:
[10] Name this poem in which the speaker desires to build a small cabin "of clay and wattles made" at the title location. It begins, "I will arise and go now."

ANSWER: "The **Lake Isle of Innisfree**"

[10] "The Lake Isle of Innisfree" was written by this Irish poet who described "a vast image out of *Spiritus Mundi*" in "The Second Coming."

ANSWER: William Butler **Yeats**

[10] In this poem, Yeats's recollection of a folk song leads him to conclude, "if I triumph I must make men mad." It begins with him lamenting "this caricature, decrepit age that has been tied to me as to a dog's tail."

ANSWER: "The **Tower**"

192-13-83-03204

5. By 1946, this man had the mental capacity of a 12-year-old thanks to neurosyphilis effects. For 10 points each:

[10] Name this notorious gangster nicknamed "Scarface" who led the Chicago Outfit, but who was eventually busted on federal charges of tax evasion.

ANSWER: Al **Capone** [or Alphonse Gabriel **Capone**]

[10] Capone ordered the Saint Valentine's Day Massacre against the North Side gang led by this man, a gangster nicknamed "Bugs."

ANSWER: George Clarence **Moran** [or Adelard **Cunin**]

[10] Much of Capone's liquor came via the gangs of this city, whose Purple Gang was involved in causing the massacre. This city's underworld was wracked by the Cleaners and Dyers War and the Miraflores Massacre in the 1920s.

ANSWER: **Detroit**

052-13-83-03205

6. This poem describes a "conscientious object-or" whose "warmest heart recoiled at war," for which he is thrown into a dungeon to die. For 10 points each:

[10] Name this poem whose title character was "more brave than me" and "more blond than you."

ANSWER: "**i sing of Olaf glad and big**"

[10] "i sing of Olaf glad and big" is a poem by this American who also wrote *The Enormous Room* and "anyone lived in a pretty how town."

ANSWER: E. E. **Cummings**

[10] At the end of Cummings's poem "since feeling is first," he notes that "life's not a paragraph" and that death is not this punctuation mark.

ANSWER: **parenthesis**

192-13-83-03206

7. One part of this song addresses fate as being "monstrous and empty" and a "whirling wheel." For 10 points each:

[10] Identify this song in which light drums and a whispering choir develop into a crescendo of drums and string and horn notes, all of which occurs in less than three minutes.

ANSWER: "**O Fortuna**" [or "**O Fortune**"]

[10] "O Fortuna" is one of the medieval songs set to music in this Carl Orff cantata, whose other movements include "In the Tavern" and "The Court of Love."

ANSWER: **Carmina Burana** [or **Songs of Beuern**]

[10] In this other song from *Carmina Burana*, the male singer elevates his mistress to the level of the medieval beauty Blanche-flor, then Helen of Troy, and finally Venus herself.

ANSWER: "**Ave, formosissima**" [or "**Hail, most beautiful one**"]

189-13-83-03207

8. Two of this man's children were named "Dot" and "Dash". For 10 points each:

[10] Name this inventor who pioneered the phonograph and the motion picture camera. A prolific inventor, he was known as the "Wizard of Menlo Park".

ANSWER: Thomas Alva **Edison**

[10] Edison's promotion of direct current led him to wage the "war of currents" against this man, a promoter of alternating current. He had earlier invented the railway air brake.

ANSWER: George **Westinghouse**, Jr.

[10] Edison notoriously conducted the electrocution of this circus elephant in 1903, after it had killed three men, including one of its abusive trainers.

ANSWER: **Topsy**

052-13-83-03208

9. Answer the following about higher education in the United States, for 10 points each.

[10] Most students applying take one of the two major standardized tests, either the ACT or this one which is administered by the College Board.

ANSWER: **SAT** [or **Scholastic Aptitude Test**; or **Scholastic Assessment Test**]

[10] This Washington D.C.-based think tank has surveyed Americans' feelings on college admissions. Its other projects include a namesake "Forum on Religion and Public Life" and a "Global Attitudes Project."

ANSWER: **Pew** Research Center

[10] This informal process is frequently used by community colleges to convince underachieving students to readjust expectations. Its name is taken from an Erving Goffman essay describing how con men work to calm down or console their victims after they are scammed.

ANSWER: **cooling** out [accept word forms]

052-13-83-03209

10. It was first discovered in a petri dish, where the namesake contaminant fungus created an area of inhibition on a petri dish that prevented the growth of bacteria. For 10 points each:

[10] Name this antibiotic discovered by Alexander Fleming. Knowledge of its structure, decoded by Dorothy Hodgkin, allowed for synthesis of similar compounds such as amoxicillin.

ANSWER: **penicillin**

[10] Penicillin is this type of antibiotic, which are named for the cyclic amide functional group they all have in their structure. They inhibit cell wall synthesis in susceptible bacteria.

ANSWER: **beta-lactams**

[10] Resistance to beta-lactams can be seen in this strain of *Staphylococcus aureus*, which is a problem in hospitals as it can cause toxic shock syndrome after invasion of an open wound. It can usually be treated with vancomycin.

ANSWER: **MRSA** [or **methicillin-resistant Staphylococcus aureus**]

140-13-83-03210

11. The protagonist of this novel enters into a partnership with Reckfall Brown, who sells forged artworks. For 10 points each:

[10] Name this work about Wyatt Gwyon, who plans to become a minister but changes his mind and turns to painting, eventually working as a restoration manager in Spain.

ANSWER: *The **Recognitions***

[10] This postmodern author of *The Recognitions* also wrote *JR* and *Carpenter's Gothic*.

ANSWER: William **Gaddis**

[10] *The Recognitions* was one of the favorite novels of this contemporary American author who wrote about the Incandenza family in *Infinite Jest*.

ANSWER: David Foster **Wallace**

192-13-83-03211

12. A yellow and black floral pattern decorates the bed situated in the center of this painting, a selection of which was included in its artist's *Self-Portrait with a Hat*. For 10 points each:

[10] Name this painting in which a dark-skinned girl lies naked on her belly, face turned toward the viewer, while a greenish female shade in a black shawl stands against a pillar to the left.

ANSWER: *The **Spirit of the Dead Keep Watch*** [or ***Spirit of the Dead Watching***; or ***Manao tupapau***]

[10] This painter of *The Spirit of the Dead Keep Watch* moved to Tahiti in 1891 to escape European civilization.

ANSWER: Eugene Henri Paul **Gauguin**

[10] Gauguin swore that he would commit suicide upon the completion of this painting, which was meant to be read from right to left and includes three figure groups, each illustrating one of the title inquiries.

ANSWER: ***Where Do We Come From? What Are We? Where Are We Going?*** [or ***D'où Venons Nous? Que Sommes Nous? Où Allons Nous***]

190-13-83-03212

13. A dog in this novel is said to have no names and every name. For 10 points each:

[10] Name this novel in which Joanna Carda's actions wreak havoc around the world by causing the Iberian Peninsula to break off from the rest of Europe.

ANSWER: *The **Stone Raft*** [or *A **Jangada de Pedra***]

[10] *The Stone Raft* was written by this Portuguese author of *Blindness* who described the title character's birth in a cave, rather than a manger, in *The Gospel According to Jesus Christ*.

ANSWER: Jose **Saramago**

[10] This Saramago novel follows a bureaucrat named Senhor Jose who works in the Central Ministry of Births, Marriages, and Deaths.

ANSWER: ***All the Names*** [or ***Todos os Nomes***]

192-13-83-03213

14. This man gained his highest title after defeating his uncle Koppany at an engagement near Veszprem. For 10 points each:

[10] Name this member of the Arpad dynasty who claimed rule over the Magyar people. He was canonized along with his son, Emeric.

ANSWER: Saint **Stephen I** [prompt on **Stephen**]

[10] Stephen I is generally recognized as the founder of this European kingdom. Invading forces from this modern country were defeated by Otto the Great in the Battle of Lechfeld.

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

[10] The Arpad dynasty ended with the death of the third Hungarian king by this name. The first king of this name attempted to crown his young son Solomon as his successor, prompting a revolt by his brother, Bela the Champion.

ANSWER: **Andrew** [or **Endre**; or **Andras**]

192-13-83-03214

15. A history of this region was written by Marjory Stoneman Douglas. For 10 points each:

[10] Name these wetlands that dominate the southern portion of Florida.

ANSWER: **Everglades**

[10] This large lake in the Everglades is the second largest freshwater lake entirely within the lower 48 states. Half the size of Rhode Island, it has been frequently devastated by Florida hurricanes.

ANSWER: Lake **Okeechobee**

[10] This island chain off the coast of southwest Florida is located between Cape Romano and the mouth of Lostman's River. Chokoloskee Island is the largest of this chain, which despite its name only numbers in the hundreds.

ANSWER: **Ten Thousand** Islands

052-13-83-03215

16. Any trajectory on one of these things stays on it forever and any trajectory sufficiently close to it must asymptotically approach some trajectory in it. For 10 points each:

[10] Identify these closed loops in phase space.

ANSWER: **limit cycle** [or **periodic orbit**]

[10] Limit cycles arise in the study of this type of system, whose state changes with time. They are usually nonlinear and are described by a differential equation when continuous in time.

ANSWER: **dynamical** system

[10] This branch of mathematics studies dynamical systems with sensitive dependence on initial conditions, which is commonly known as the butterfly effect.

ANSWER: **chaos** theory [or word forms]

066-13-83-03216

17. After college graduation, this man served as the principal and janitor for a one-room school he dubbed the Batesburg Institute. For 10 points each:

[10] Name this behaviorist psychologist who conducted an experiment in which he made a child known as Little Albert develop a phobia of a white rat.

ANSWER: John Broadus **Watson**

[10] Watson was assisted in the Little Albert experiment by this grad student assistant. Watson later left Johns Hopkins after having an affair with this woman, whom he married shortly after.

ANSWER: Rosalie **Rayner**

[10] Martin Seligman challenged some theories of behaviorism by coming up with this theory, which he developed after a series of experiments involving giving dogs electric shocks.

ANSWER: **learned helplessness**

052-13-83-03217

18. Answer the following on sigma bonds and pi bonds. For 10 points each:

[10] Give the number of pi bonds present in a triple bond.

ANSWER: **two**

[10] Pi bonds are formed from the overlap of these chemical entities. They must be oriented perpendicular to the sigma bond and parallel to one another in order for a pi bond to form.

ANSWER: **p-orbitals** [prompt on **orbitals**]

[10] This phenomenon, studied in both organic and inorganic chemistry, is the interaction of a sigma bond with an adjacent empty p-orbital, stabilizing the system. It was introduced by Robert Mulliken.

ANSWER: **hyperconjugation** [or **hyperconjugated system**; prompt on **conjugation** of orbitals]

189-13-83-03218

19. This giant challenged three gods to race against the fastest runner, eat faster than the quickest eater, and to drink an entire horn of water while those gods visited his castle. For 10 points each:

[10] Name this giant, who revealed after the contests that they had all been magical illusions, and that Thialfi, thought to have raced against Hugi, was racing against thought.

ANSWER: **Utgard-Loki** [or **Skrymir**; do not accept or prompt on partial answers]

[10] Utgard-Loki also revealed that this god had been drinking from the ocean, and that the old woman this god later wrestled was, in fact, old age. He was the Norse god of thunder.

ANSWER: **Thor**

[10] Utgard-Loki initially frightens Thor and his travelling companions by telling them that the spacious cave they took shelter in was, in fact, merely this object.

ANSWER: Utgard-Loki's **glove** [or Skrymir's **glove**]

140-13-83-03219

20. This ruler was deserted by his troops and captured at the Battle of Leipzig, where he fought on Napoleon's side. For 10 points each:

[10] Name this member of the House of Wettin who served as the first king of Saxony. He shares his royal name with the final king of Saxony, who abdicated in 1918.

ANSWER: **Frederick Augustus I** [or **Elector Frederick Augustus III** of Saxony; prompt on **Frederick Augustus**]

[10]The capital of the Free State of Saxony was this city, known as the "Florence on the Elbe." It was firebombed in February 1945.

ANSWER: **Dresden**

[10] This October 1806 victory for Napoleon had earlier subjugated Prussia to the French. Fought at two different locations, this battle was reportedly raging while Hegel compiled one of his major works.

ANSWER: Battle of **Jena**-Auerstaedt

052-13-83-03220

21. Jean Charles de Menezes was shot to death in this city in 2005. For 10 points each:

[10] Name this European city rocked by the July 7, 2005, terror bombings, most of which targeted its namesake "Underground" system of public transportation.

ANSWER: **London**

[10] The bombings were the deadliest act of terror in the United Kingdom since the December 1988 bombing of this company's Flight 103, which crashed in Lockerbie.

ANSWER: **Pan American** World Airways

[10] The country that reportedly ordered the Lockerbie bombing was also accused of bombing one of these structures in 1986 in West Berlin, killing three people.

ANSWER: **discotheque** [or night**club**]

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