



1. One of these items is covered in jewels and given as a gift alongside a golden banner and a wreathed standard. One of these items is engraved with a depiction of the Genesis flood destroying the giants, and is compared to melting icicles when it dissolves in blood. Another of these objects is said to have played a key part in the Cain and Abel story despite being absent from Genesis, and these items are described with the kenning "light of battle." Another of these items is acquired after spotting the severed head of Aeschere, and a later one is snapped in half after being subject to too much force during the battle with the dragon. Unferth gives away one of these items, which fails in an underwater battle. For 10 points, Naegling and Hrunding are two of what kind of weapon which often appears in *Beowulf*?

ANSWER: swords in *Beowulf*

019-13-64-05101

2. An assay to determine the activity of this enzyme uses BAEE and results in the production of ethanol. The presence of an aspartate at the bottom of this enzyme's S1 pocket differentiates it from two similar human enzymes with which it shares the serine-histidine-aspartate catalytic triad. This enzyme is often used with EDTA, which inhibits its activity, to detach masses of cells. It is created from its zymogen by enterokinase, and this enzyme inhibits the release of CCK. This enzyme will not cleave if a proline is located on the carboxyl side of a cleavage site, which is located after lysine and arginine amino acid residues. For 10 points, identify this pancreatic serine protease involved in the digestion of proteins.

ANSWER: trypsin

066-13-64-05102

3. This river flows into a namesake gulf located between the Gydan and Yamal peninsulas; that namesake gulf is an inlet of the Kara Sea. This river arises from the confluence of the Biya and Katun in the Altai Mountains. A city that grew around the Trans-Siberian Railway crossing of this river is now the most populous city in Asian Russia and is Novosibirsk. An important tributary of this river is the Chulym while important tributaries of its main tributary include the Tobol and Ishim rivers; that main tributary is the Irtysh. For 10 points, identify this Siberian river usually grouped with the Yenisei and Lena, as all their outflows reach the Arctic Ocean.

ANSWER: Obi-Irtysh River [prompt on Irtysh River until it is read]

066-13-64-05103

4. The Kronos Quartet commissioned three string quartets from this composer: *...songs are sung*, *Quasi una fantasia*, and *Already it is dusk*. One of this composer's pieces opens with a movement scored for tubular bells and piano; the title of that work can be interpreted as either "Polish woman" or "polka". Performances of this composer's harpsichord concerto only about nine minutes, and it bears more than a passing resemblance to his *Three Pieces in Olden Style*. Part of the text in this composer's most popular work derives from a message scribbled on the wall of a Gestapo prison cell in Zakopane, at the foot of the Tatras Mountains. That work is featured on an extremely popular recording featuring Dawn Upshaw as the soprano. For 10 points, identify this composer whose third symphony is known as the *Symphony of Sorrowful Songs*.

ANSWER: Henryk Mikolaj Górecki

002-13-64-05104

5. Some hadiths place this act alongside removing armpit hair and maintaining fingernails on the list of five acts of "fitra." Other hadiths claim that "the Earth cries out in anguish" upon receiving the urine of those who have not performed this act. One justification for this action is to emulate Mohammed, who was born without needing to perform this action, or Abraham, who did this action at age eighty. This action is performed near the time of puberty among Muslims in Southeast Asia, but usually earlier in Arab countries. For 10 points, name this practice observed by the vast majority of Muslims, which is the same thing that is performed at a Jewish "bris" ceremony.

ANSWER: **circumcision** of males in Islam [or **khitan**; or **tahara**]

019-13-64-05105

6. The author of this essay attempts to teach Frere Jacques to a young child, who is fascinated with a rocking horse denuded of its paint. One character in this essay claims that there are "only three significant pieces of data in the world today." This essay describes a confrontation between mimes and people in blackface claiming that Chuck Berry stole music, and black people arguing that his music belonged to everyone. Its author is accused of "media poisoning" by The Connection, an associate of Chester Anderson, and describes the charity of the Diggers. In it, a sign reading "Last Easter Day, My Christopher Robin wandered away," describes one in a generation of missing children. Sharon, Max, and Deadeye are among those who accommodate this essay's author, who shockingly describes a five-year old daughter fed peyote and acid by her mother. For 10 points, name this essay which links the squalor of the Haight-Ashbury hippie movement to Yeatsian anarchy, the title essay of Joan Didion's first collection.

ANSWER: **"Slouching Towards Bethlehem"**

020-13-64-05106

7. This was the first-born son of a woman who was born inside of a fish. This man himself was conceived when his mother and a visiting sage had sex on a riverbank shrouded by mist. This man advises a woman who had given birth to a ball of flesh to cut the flesh into 100 pieces and put them each in a different jar of ghee. Because of this man's foul odor and unkempt appearance, one princess closed her eyes upon seeing him and a second became pale at his touch, so his children with those women were born blind and pale-skinned. Thus with those sexual hijinks, this son of Shantanu and Satyawati became grandfather to both the Pandavas and Kauravas. He is better known for employing Ganesh as a scribe, dictating to him a work which his disciple Vaisampayana narrates. For 10 points, name this sage credited with compiling the *Mahabharata*.

ANSWER: Veda **Vyasa** [or **Krishna Dvaipayana**; prompt on **Vishnu**, since he's a minor avatar, but definitely don't accept "Krishna" on its own]

020-13-64-05107

8. The temple of Aius Locutius was built after the Roman confrontation with this people. These people's attack on Ardea spurred one of their greatest foes to action, and that man built the Servian Wall after the withdrawal of these people. These people were offended by Quintus Fabius killing one of their leaders under the pretext of an ambassadorship, after which Quintus Sulpicius lost a battle to this people's Senones tribe. The Roman civilian population went to Caera and the Roman army retreated to Veii in the face of these people, where their leader Brennus was opposed by Camillus. The Romans were alerted to the invasion of these people by the honking of the Capitoline geese. For 10 points, name these people who won the Battle of the Allia River around 390 BCE and then sacked Rome.

ANSWER: **Gauls** [or **Senones** before it is read]

019-13-64-05108

9. When an integral of motion does not depend on time, the construct named for this scientist of the integral of motion and the Hamiltonian of the system vanishes. That construct named for this scientist that satisfies the Jacobi identity, is invariant under a canonical transformation, and is a product of dynamical variables. That construct is an operator that links classical to quantum mechanics. The shear modulus can be derived to be inversely proportional to twice the ratio named for this scientist plus one. Auxetic materials have a negative value for that ratio, which is the negative ratio of transverse to axial strain and is represented by ν . When the source term is zero, this scientist's namesake equation is called Laplace's equation. For 10 points, identify this scientist who names an electrostatic equation which states that the Laplacian of the voltage is equal to the negative of charge density divided by epsilon-nought.

ANSWER: Siméon Denis **Poisson**

066-13-64-05109

10. A film about this man opens with the director reading a statement about Michael Goldsmith's dream as images of Christmas Island red crabs are displayed. That film is Herzog's *Echoes from a Somber Empire*. A failed coup against this man was revealed to the commanding officer of Camp Kassai, Jean-Claude Mandaba. Security chief Jean Izamo was killed during this man's ascent to power, which was aided by Alexander Banza. This man came to power on New Year's Eve when he defeated David Dacko in the Saint-Sylvestre coup. This man lost international support after he supposedly attacked children with a walking stick during a protest against government required school uniforms. This man fled to the Ivory Coast when he was ousted by the French-led Operation Barracuda. For 10 points, name this dictator of the Central African Republic during the 1970s who was acquitted of cannibalism.

ANSWER: Jean-Bedel **Bokassa** [or **Bokassa I**; or Salah Eddine Ahmed **Bokassa**]

149-13-64-05110

11. One novella by this author includes a salesman who takes the pen name "Kurt of the Forest" to write ambitious love letters, whose impact is destroyed by the bills attached to each one. Another short novel by this author follows a maiden who is converted to Anabaptism and rejects her suitor for fighting in the Italian Wars. This author of *The Misused Love Letters* and *Ursula* created a character who inherits money from Schmalhoefer after performing well as a painter of flagpoles and has a long unmarried relationship with Judith, after dressing throughout his childhood out of the same stock of cloth. In another novel by him, the Paradise Garden tavern is where a mysterious wanderer, the Black Fiddler, tempts Sali and Vrenchen to withdraw from society. For 10 points, name this Swiss author of *Green Henry* and *A Village Romeo and Juliet*.

ANSWER: Gottfried **Keller**

019-13-64-05111

12. A duke of this region imprisoned the "prisoner of Chillon", Francois Bonivard, and was the son of Philip the Landless. Another duke of this region created the Order of the Spoon, whose failed attack on a city is celebrated during L'Escalade. That attack on Geneva was ordered by the duke of this region who signed the Treaties of Bruzolo and Lyon with Henry IV of France. That duke of this region married his son to the sister of Louis XIII, Christine Marie. The "Great" duke of this region was Charles Emmanuel I. A prince of this region defeated Mustafa II at the Battle of Zenta, which resulted in the signing of the Treaty of Karlowitz. That prince of this region surprised the Duc of Velleroi at the Battle of Cremona. For 10 points, a hero of the War of Spanish Succession named Eugene hailed from what region of France?

ANSWER: Duchy of **Savoy**

149-13-64-05112

13. This type of finite primitive group can be classified based on their socle according to the O'Nan-Scott theorem. This type of group is image of the action. For a finite group, the representation named for this operation is characterized by the tables of marks. Every group is isomorphic to the group of these operations according to Cayley's theorem; that group is the symmetric group. These operations can be described using two-line notation or the more compact cycle notation. This operation is defined as a mapping from a set to itself that is one-to-one and onto, or a bijection. When choosing k items from n items without repetition, another operation known by this name can be calculated as n factorial over quantity n minus k, factorial. For 10 points, identify this method of arranging objects, where order is important, that is typically contrasted with combination.

ANSWER: **permutations**

066-13-64-05113

14. One film with this title ends with Gounod's *Sanctus* playing over an image of a man on horseback riding into the distance. That film with this title had to move production from Delft after not being allowed to release about 11,000 white rats painstakingly dyed gray and then blow-dried so they wouldn't get pneumonia. That film of this title used footage of the mummies of Guanajuato in its opening credits. In one scene in another film with this title, a character's hands and head each occupy a center pane of a mostly glass-less nine-paned window. In another scene in that film, the dark sails of a ghost ship blot out a church as it glides into a harbor. Both films with this title substitute a provincial German town for cosmopolitan London as the setting in which the title creature strikes. A famous scene in the first film with this title shows only the shadow of a character ascending steps. That first film with this name is divided into five movements and is subtitled "A Symphony of Horror". For 10 points, identify this name of a Werner Herzog film that was a remake of a film by the same title directed by F.W. Murnau and featuring Count Orlok.

ANSWER: **Nosferatu** [or **Nosferatu**: *Phantom der Nacht*; or **Nosferatu**, *eine Symphonie des Grauens*]

066-13-64-05114

15. In a book about this concept, Michael Theunissen argues that its most notable theorist saw it as "the desire of the self to not be what it is". Its "demonic" kind is identified as the refusal to accept forgiveness, and its "second-order" kind as belief in the impossibility of forgiveness. In the chapter "Equilibrium Between the Aesthetic and the Ethical in the Composition of Personality", Judge Wilhelm lectures against this concept and labels it the choice to let one's life depend on conditions that cannot be controlled. A later book on this affliction claims that it arises when the self does not acknowledge "the power that constituted it." For 10 points, identify this condition which Søren Kierkegaard identified as the title subject of *The Sickness Unto Death*, the basis of an "existential crisis".

ANSWER: Kierkegaardian **despair** [or **fortvivlelse**; prompt on "the **sickness unto death**" before it is read]

019-13-64-05115

16. This person is performing while wearing a "Marty Beller Mask" according to a song by They Might Be Giants. This artist is the only person in history to have seven consecutive singles reach #1 on the Billboard Top 100 list. With Mariah Carey, this singer recorded a song which claims that "though hope is frail, it's hard to kill," and that song appears on the soundtrack to the movie *The Prince of Egypt*. This singer met the singer of the album *Don't Be Cruel* at the Soul Train Awards, and three years, and presumably large amounts of drugs, later she married Bobby Brown. For 10 points, name this female singer that sang that she was "Every Woman" on the soundtrack to *The Bodyguard*, where she also declared that "I will always love you."

ANSWER: Whitney **Houston**

002-13-64-05116

17. One co-founder of this group introduced the navel orange to California, when he sent two trees to Eliza Tibbets. That co-founder of this group also designed the Gettysburg cemetery along with the Washington park system. Another co-founder of this group wrote the *Odd-fellow's Improved Manuel* for members of this group. Caroline Hall helped found this group, whose highest tier of membership was the High Priest in the Assembly of Demeter. That position was first held by Francis McDowell, who helped found this group with John Thompson. *Wabash v. Illinois* weakened this group's spiritual victory in the *Munn* case, which allowed states to regulate railroad rates. Oliver Kelley was the primary founder of this group. For 10 points, name this fraternal farm organization that was founded in 1867.

ANSWER: National **Grange** of the Order of Patrons of Husbandry [or **Patrons of Husbandry**; or **Grangers**]

149-13-64-05117

18. Pegasus and Mercury hang out in the bottom corner of a painting by this artist in which Vulcan wears a red cape in a cave looking up at a pair of adulterers. The title figure wears a blue robe as she dumps a head into a sack in this artist's depiction of *Judith and Holofernes*. Besides his *Parnassus*, this artist took to mythological sources for a painting in which Diana is being carried off by a centaur as Minerva chases off the vices. That painting is his *Triumph of the Virtues*. This artist depicted a martyr riddled with arrows in his *St Sebastian*. For 10 points, name this Mantuan that used foreshortening in his *Lamentation Over the Dead Christ*.

ANSWER: Andrea **Mantegna**

002-13-64-05118

19. These enzymes are responsible for the initial degradation of polyaromatic hydrocarbons into arene oxides in *Cunninghamella elegans*, where they are widely studied. They metabolize arachidonic acid and are involved in the 25-hydroxylation of Vitamin D. When the alcohol dehydrogenase pathway is overloaded, ethanol is converted to acetaldehyde by one of these enzymes in the microsomal ethanol-oxidizing system. They are part of the heme-thiolate class of proteins with chloride peroxidases and nitric oxide synthases. An abundant one of these enzymes in humans is CYP3A4. These enzymes play an important role in xenobiotic metabolism, such as that of drugs, and they are found in smooth ER. For 10 points, identify these enzymes that catalyze the incorporation of an oxygen atom into a substrate.

ANSWER: cytochrome P450 heme monooxygenases [or **hydroxylases**; or **CYP** until "CYP3A4" is read]

066-13-64-05119

20. The protagonist of this short story re-appears at several points in a later novel as a tea trader for Pulbrook Robertson, finding the spot of Robert Emmet's execution and praising Ben Dollard's performance of "The Croppy Boy." The title concept of this story is applied to "a silk hat of some decency and a pair of gaiters" by the narrator. Mr. Cunningham asserts that the event held by Farther Purdon on Gardiner Street at the end of this story will involve "washing the pot." This story begins when a man bites off part of his tongue during a fall in a bar restroom and is discovered by Mr. Power. Originally appearing between "A Mother" and "The Dead," this story follows the Catholic convert Tom Kernan, who also appears in three different scenes of *Ulysses*. For 10 points, name this penultimate story from *Dubliners*, in which the Jesuit concept of salvation is lauded by several Irish businessmen.

ANSWER: "**Grace**"

019-13-64-05120

21. One of these statements follows from the statement that a parse tree, G , of height h has a yield that is at most the fanout of G raised to the h power. A stronger version of that one of these statements is named for William Ogden. The canonical application of another of these statements is to a language with an alphabet of a and b which has strings composed of a then b each duplicated the same number of times. That one of these statements asserts that three substrings; u , v , and w ; of a string, s , satisfy three conditions: the length of v is greater than zero, the length of uv is less than or equal to n , and u, v repeated any number of times, w is a string in the regular language that contains s . For 10 points, identify this lemma whose various forms are used to prove that languages are not context-free or are not regular.

ANSWER: **pumping lemmas**

066-13-64-05121



1. This character is based on a man named "Governor" who, in 1900, was involved in a dispute with John Mawbey about payment for constructing a fence. For 10 points each:

[10] Name this character who is scolded by tribal representative Jackie Smolders and eventually captured alongside his brother Mort.

ANSWER: **Jimmie** Blacksmith [or **Blacksmith**]

[10] This author of *The Daughters of Mars* and *Schindler's Ark* wrote *The Chant of Jimmie Blacksmith*.

ANSWER: Thomas **Keneally**

[10] Jimmie is disjoined from the Aboriginal community and chastised by Jackie Smolders at the start of the novel for engaging in this activity "in the Methodist church at Wallah."

ANSWER: **marrying a white woman** [or **interracial marriage**, etc.]

019-13-64-05201

2. This kingdom was ruled by the Gyeongju Kim clan for most of its existence. For 10 points each:

[10] Name this kingdom that united the clans of the Jinhan. It used the bone rank system.

ANSWER: **Silla**

[10] The Silla kingdom unified this Asian peninsula. This peninsula was eventually ruled by the Joseon dynasty.

ANSWER: **Korean** peninsula

[10] In 935 the Silla kingdom was defeated by this other Korean dynasty. Founded by King Taejo, it was supplanted by the Joseon dynasty.

ANSWER: **Goryeo** dynasty [or **Koryo**]

149-13-64-05202

3. Since there will be no space geography in this tournament, answer some questions about extraterrestrial volcanology, for 10 points each.

[10] This planet has a lot of volcanoes, mostly of the shield variety. It orbits the Sun in a retrograde motion.

ANSWER: **Venus**

[10] These are the most abundant non-shield volcanoes on Venus. They are broad, circular volcanoes with a flat top and steep margins.

ANSWER: **pancake dome** [prompt on **steep-sided dome**; prompt on **lava** dome]

[10] Like most of the rest of Venus, its volcanoes were mapped with the synthetic aperture radar of this spacecraft.

ANSWER: **Magellan** [prompt on **Venus Radar Mapper**]

066-13-64-05203

4. In this ballet, Swanhilde pretends to be the title figure, and at her wedding three different people offer to pay damages owed to the Doctor. For 10 points each:

[10] Name this ballet based on the short stories "The Doll" and "The Sandman" in which that doctor tries to sacrifice Franz to bring the title doll to life.

ANSWER: **Coppelia**

[10] This composer, who may have written Charles Gounod's *Faust*, wrote the music to *Coppelia* that also wrote the operas *The King Has Spoken* and included a "Flower Duet" in his *Lakme*.

ANSWER: Clement Philbert Leo **Delibes**

[10] The title woman of this ballet by Delibes is struck by Eros causing her to pine for Aminta, before she is kidnapped by Orion.

ANSWER: **Sylvia**, ou *La nymphe de Diane*

002-13-64-05204

5. Answer the following about women from Roman legend for 10 points each:

[10] As a baby, this warrior woman, an ally of the Rutulians, was tied to a spear and thrown across a river during her father's flight into exile.

ANSWER: **Camilla**

[10] This legendary Roman girl led a number of fellow hostages across the Tiber River to freedom. Her Etruscan captor Lars Porsena was so impressed that he gave her a horse.

ANSWER: **Cloelia**

[10] This Roman traitor abandoned the Volscians and his planned assault on Rome after he was confronted by his mother, Volumnia, who asked if he viewed her as a prisoner of war.

ANSWER: **Coriolanus**

105-13-64-05205

6. This author collaborated with Robert Castel and Luc Boltanski to write *Photography: A Middlebrow Art*. For 10 points each:

[10] Name this theorist who distinguished the different value-systems of "habitus" and "doxa" in *The Field of Cultural Production*.

ANSWER: Pierre **Bourdieu**

[10] This major work of Bourdieu advances the theory of "cultural hegemony" by claiming that "class fractions" are created by different conceptions of aesthetic taste.

ANSWER: *La* **Distinction**

[10] Bourdieu's "habitus" is based on the "body technique" and "hexis" concepts of this author of *Sociology and Anthropology* and *The Gift*.

ANSWER: Marcel **Mauss**

019-13-64-05206

7. Note to moderator: do not read the alternate answer to the first part.

The beard of a man in this painting "arrogantly" points outward, and may be the reason that he is traveling with the aid of a walking stick. For 10 points each:

[10] Name this painting in which an artist happens to come across his patron while passing down a road. Neither the patron nor his servant cast a shadow.

ANSWER: *The Meeting* [or *Bonjour, Monsieur Courbet*]

[10] *The Meeting* includes a self-portrait of this artist who also depicted himself wide-eyed and with his hands in his hair in a self-portrait subtitled "The Desperate Man".

ANSWER: Gustave Courbet

[10] As part of the same trip depicted in *The Meeting*, Courbet made this landscape as part of his exuberance at seeing the ocean for the first time. A man in this painting raises his cap as a greeting to the waves.

ANSWER: *The Beach at Palavas*

002-13-64-05207

8. Sample introduction in this technique can be accomplished with electrokinetic injection or pressure injection and it is used by the modern method for Sanger sequencing. For 10 points each:

[10] Identify this analytical technique in which a tiny buffer-filled, fused-silica tube, which has an integrated detector, extends between two buffer reservoirs that hold platinum electrodes, which have a potential of 5 to 30 kilovolts (DC) applied to them. The potential causes electroosmotic flow across the tube.

ANSWER: capillary zone electrophoresis

[10] One of the cooler modes of capillary electrophoresis is isoelectric focusing, which separates proteins based on their isoelectric point, the value for this quantity at which a protein, or other molecule, has no net charge.

ANSWER: pH

[10] Capillary electrochromatography is a hybrid technique that combines capillary electrophoresis and this kind of chromatography. This type of chromatography uses columns and pumping pressures on the order of several hundred atmospheres.

ANSWER: HPLC [or high-performance liquid chromatography; or high-pressure liquid chromatography]

066-13-64-05208

9. Fon Huffman was the last living survivor of this country's attack on a United States navy ship and three Standard Oil vessels. For 10 points each:

[10] Name this country that attacked the *USS Panay* in 1937.

ANSWER: Japan

[10] This man was president of the United States during the *Panay* incident, as well as when Japan attacked Pearl Harbor.

ANSWER: Franklin Delano Roosevelt

[10] The *Panay* incident sparked debate over this proposed amendment, which called for a national referendum whenever Congress declared war. Its namesake represented Indiana.

ANSWER: Ludlow amendment

149-13-64-05209

10. This character debates Lucian Gregory over poetry at a party in Saffron Park. For 10 points each:

[10] Name this undercover policeman who is elected to a position on the Central Anarchist Council, which is led by Sunday.

ANSWER: Gabriel **Syme** [or **Gabriel**; prompt on **Thursday**]

[10] Gabriel Syme is the protagonist of this novel, which is subtitled "A Nightmare". In this novel, a man hijacks a zoo's elephant in order to escape from six men who are trying to stop a bombing.

ANSWER: *The **Man Who Was Thursday***

[10] *The Man Who Was Thursday* was written by this British author. He rebutted Wells's *Outline of History* in his *The Everlasting Man*.

ANSWER: Gilbert Keith **Chesterton**

149-13-64-05210

11. A campaign poster for this man features two blue footsteps in front of a white background. For 10 points each:

[10] Name this Progressive Conservative Prime Minister of Canada who passed the Canadian Bill of Rights. He was succeeded by Lester Pearson.

ANSWER: John **Diefenbaker**

[10] Diefenbaker's popularity suffered over his decision to accept Bomarc missiles from the United States, which ultimately led him to cancel this program.

ANSWER: **Avro Arrow** program [or **Avro** Canada CF-105 **Arrow**]

[10] In this work, George Grant claimed that the Central Canadian establishment and the Liberal Party conspired to take Diefenbaker down over the Bomarc missile controversy.

ANSWER: ***Lament for a Nation: The Defeat of Canadian Nationalism***

149-13-64-05211

12. A UN report held that eight women a day die in childbirth in this country, which may be related to the case of a hospital that charged \$5 for every scream the mother made. For 10 points each:

[10] Name this incredibly corrupt country, where the ruling party has asked that courts move the elections scheduled for July 31st back by at least two weeks.

ANSWER: **Zimbabwe**

[10] This South African president was forced to backtrack claims made by aides that Zimbabwe was nowhere near ready for July 31st elections. Robert Mugabe may have tried to get a Lebanese hit squad to murder this man.

ANSWER: Jacob **Zuma**

[10] This Zimbabwean activist and civil rights lawyer was arrested for obstruction of justice after insisting police searching a client's home produce a warrant. A secretly-produced documentary recounting this activist "and the Rule of Law" was released in 2013.

ANSWER: Beatrice **Mtsetwa**

002-13-64-05212

13. This equation was developed by making the Klein-Gordon equation linear in the first partial derivative of time. For 10 points each:

[10] Identify this relativistic wave equation that predicted the existence of antiparticles, such as the positron.

ANSWER: **Dirac** equation

[10] One of the consequences of the negative-energy states of the Dirac equation is *zitterbewegung*, the rapid oscillation of an electron around its position, which gives rise to the Darwin term in this correction. It also has terms for a relativistic correction and spin-orbit coupling.

ANSWER: **fine structure** corrections to the spectrum of the hydrogen atom [prompt on the **Hamiltonian** of the hydrogen atom; do not accept "hyperfine structure"]

[10] This widely-used unitary transformation reduces the four-component Dirac equation to two two-component wave equations, one of which reduces to the Pauli equation in the non-relativistic limit and one of which describes the negative-energy states.

ANSWER: **Foldy-Wouthuysen** transformation [or **FW** transformation]

066-13-64-05213

14. A prominent scholar of this composer is Bathia Churgin and this composer is locked in a perpetual battle with Haydn for the title "father of the symphony". For 10 points each:

[10] Identify this Milanese composer who taught Gluck.

ANSWER: Giovanni Battista **Sammartini** [do not accept "Giuseppe Sammartini"]

[10] Sammartini's Symphony in G minor anticipated this Pre-Romantic movement by nearly twenty years. Other works in this literary and musical movement, which takes its name from a play by Maximilian Klinger, include Haydn's fifth "Sun" quartet and some of his circa 1770 symphonies, including "Trauer".

ANSWER: **Sturm und Drang** [prompt on **Storm and Stress**]

[10] Giovanni Sammartini's brother, Giuseppe, was a prominent player of this double reed woodwind, which is the namesake of a family that includes the cor anglais. Zelenka wrote six trio sonatas for two of these instruments and a bassoon, and Bohuslav Martinu composed a concerto for this instrument for Jirí Tancibudek.

ANSWER: **oboe** [or **hautbois**; or French **hoboy**]

066-13-64-05214

15. This philosopher was killed while crusading in North Africa, after identifying the "dignities" of God in his Neoplatonist cosmology. For 10 points each:

[10] Name this Franciscan author of the *Ars Magna* and *Ars Generalis Ultima*.

ANSWER: Ramon **Llull** [or Raymond **Lully**]

[10] Llull sought to develop a purely logical one of these constructs in order to prove Christianity. Other examples of these constructs were developed by Johann Scheyer and Ludwig Zamenhof.

ANSWER: **universal languages** [or **characteristica universalis**; or **artificial languages**]

[10] This man was also a philosopher who developed a universal language. This author of *The Principles of Arithmetic* created Interlingua.

ANSWER: Giuseppe **Peano**

019-13-64-05215

16. You are a hypothetical seven year old figure skating fanatic in the mid-1990s. Answer these questions about your fandom, for 10 points each.

[10] Your absolute favorite skater is this Olympic Gold Medalist, who in 1982 became the first American man to land a triple axle, five years before introducing a namesake form of the triple lutz.

ANSWER: Brian **Boitano**

[10] You were completely devastated when you found out that this skater had been attacked by her rival Tonya Harding. You basically cried when you saw her clutching her leg crying out in pain "WHY?!"

ANSWER: Nancy **Kerrigan**

[10] One of the most bothersome parts of watching your favorite competitions is that they almost all feature the commentary of this remarkably tiny skater. In 2006, he was called on to host Fox's disastrous "Skating With Celebrities".

ANSWER: Scott **Hamilton**

002-13-64-05216

17. This type of organism is divided into obligate, such as the Brown-headed Cowbird, and non-obligate, such as the Bank Swallow, types. For 10 points each:

[10] Identify this type of organism that lay its eggs in the nests of other birds.

ANSWER: avian **brood parasites**

[10] Many brood parasites have evolved so that their eggs closely resemble the eggs of their host, which is known by this term. Two commons types of it are Müllerian and Batesian.

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

[10] This family of birds contains the most widely studied brood parasites. This family includes roadrunners and is also known for its wide repertoire of calls.

ANSWER: **cuckoos** [or **Cuculidae**]

066-13-64-05217

18. A lost master of this form was Cornelius Gallus, and it was used to write the calendar poem *Fasti* by Ovid. For 10 points each:

[10] Name this popular form of Roman poetry, which involved couplets of a hexameter and pentameter line.

ANSWER: **elegy** [or **elegaic**]

[10] This mysterious poet, called the greatest of the elegists by Quintilian and others, wrote love elegies to women he called "Delia" and "Nemesis" before his 19 BCE death, which was appropriately commemorated by an elegy about him in Ovid's *Amores*.

ANSWER: Albius **Tibullus**

[10] This poet's elegies include "I Hate And I Love" and a recounting of crossing many lands and much ocean to attend his brother's funeral. He wrote poems to Lesbia.

ANSWER: Gaius Valerius **Catullus**

019-13-64-05218

19. This man led troops against Frederick the Great in the War of Bavarian Succession. For 10 points each:
[10] Name this Holy Roman Emperor who was the son of Maria Theresa. The United States of Belgium was formed during the Brabant Revolution against this ruler's policies.

ANSWER: **Joseph II** of Austria

[10] This man served as privy finance minister to Joseph II. He is perhaps most well-known for his diary, in which he described the opening performances of several Mozart operas.

ANSWER: Karl von **Zizendorf**

[10] Joseph II granted religious freedom to non-Catholic Christians with this 1781 declaration. It was followed up a year later by a similarly named edict.

ANSWER: **Patent of Toleration**

149-13-64-05219

20. Josef Ombindi and Enzian are two "Hereros" who survived von Trotha's genocide and fled to this place, home to a village that has been taken over by dogs. For 10 points each:

[10] Identify this large location, corresponding to a post-apocalyptic mainland Europe, to which the protagonist of a 1973 novel flees from the Hermann Goering casino.

ANSWER: the **Zone** [accept "**In the Zone**"]

[10] The Zone is the setting for the third part of this novel, quizbowl's hottest, which has everything: Brigadier Pudding's heroic descent through the bowels of Katje Borgesius, a bunch of Argentine anarchists directing a film version of *Martin Fierro*, the Pavlovian conditioning of Grigori the Octopus, a human light show.

ANSWER: **Gravity's Rainbow** [moderator's note: if they ask "what's a human light show" or something similar, then, after the entire bonus is read, tell them that "it's that thing when a bunch of midgets dope up on electricity in a misguided attempt to get to the Electroworld"]

[10] Tyrone Slothrop's uncanny ability to predict V2 rocket strikes with the pattern of his erections is the focus of *Gravity's Rainbow*, which was written by this author.

ANSWER: Thomas Ruggles **Pynchon**, Jr.

020-13-64-05220

21. A boy becomes disillusioned by watching his grandfather cheat Masood, who has been married ninety times, out of sacks of produce in this author's "A Handful of Dates." For 10 points each:

[10] Name this author who created the regretful English-educated Mustafa Saeed, who announces "Othello was a lie," in *Season of Migration to the North*.

ANSWER: Tayeb **Salih**

[10] This novella by Salih is about a two-toothed, hairless man who has six times been the prior suitor of girls who married other men and is about to undergo the title event with Nima.

ANSWER: *The **Wedding of Zain***

[10] Both *Season of Migration to the North* and *The Wedding of Zain* take place in this home country of Tayeb Salih, also where Jafar Abbas wrote the satire *Obtuse Angles*.

ANSWER: **Sudan**

019-13-64-05221