



1. Among this deity's children are a goddess who provides good eyesight and a goddess who weaves colorful clouds. This figure passed a series of 3200 trials, each taking 3 million years, in order to defeat a demon. This divine figure created the Milky Way to separate his daughter from a cowherd, but allowed them to meet annually on a bridge of magpies. He owns an orchard whose peaches grant immortality. This figure was originally a subordinate to one of the Three Pure Ones, and he once gave Monkey the job of stable boy. For 10 points name this ruler of heaven from Chinese mythology, named for a type of green stone.

ANSWER: **Jade Emperor** [or **Yu-huang**; or **Yu Di**]

048-12-59-12102

2. Ling slightly simplified one form of this circuit by factoring out a propagate term from the group generate signal despite it not being a common factor. That form of this circuit helps eliminate the gate delay of the ripple-carry type of this circuit. A basic implementation of it feeds the two main bits into an XOR gate and an AND gate, sends the output of that XOR gate, along with a C-sub-in bit, to another XOR gate/AND gate pair and ORs the output of the AND gates together. A naive implementation of this circuit eliminates all but the first XOR and AND gate from the aforementioned design; that is the "half" type, which does not support a carry-in bit. For 10 points, identify these basic blocks used in arithmetic logic units which sum binary inputs.

ANSWER: **adder** [accept **summer** before "sum" is read]

066-12-59-12103

3. One bridge built in this city was the first to use tubular cord members and caused the first American outbreak of "the bends." That bridge was designed and named for Civil War shipbuilder James Eads. Minoru Yamasaki designed a housing complex for this city whose 1972 demolition became a symbol of the failures of modern architecture and public housing. This home of the Pruitt-Igoe project is the site of a ten-story red brick office building designed by Dankmar Adler and Louis Sullivan. Another structure in this city is the centerpiece of the Jefferson National Expansion Memorial and was based on an inverted catenary arch. For 10 points, name this Midwestern home of the Wainwright Building and the Gateway Arch.

ANSWER: **St. Louis**, Missouri

015-12-59-12104

4. One of his poems concludes by asking, "and in heaven, if I cry to you then, will you hear or know?" This poet wrote, "Thou hast conquered, O pale Galilean, the world has grown grey from thy breath" in a poem beginning, "I have lived long enough, having seen one thing, that love hath an end," and responding to "the Proclamation in Rome of the Christian Faith." This poet of "The Triumph of Time" elegized Charles Baudelaire in "Ave Atque Vale." For 10 points, name this Victorian poet of *Atalanta in Calydon* who included "Hymn to Proserpine" in his seminal collection *Poems and Ballads*.

ANSWER: Algernon Charles **Swinburne**

014-12-59-12105

5. This city's council was abolished and replaced by the "elders of the twelve tribes of Israel." One leader of this city passed a law that legalized polygamy and forbade women from refusing marriage proposals. A student of Melchior Hoffmann, Bernhard Rothmann, reformed this city. Its residents resorted to eating frogs, rats, and shoe leather during its siege by Bishop Franz von Waldeck. One of this city's leaders, Jan Mathys, declared it the "New Jerusalem" during its disastrous Anabaptist rebellion, when it was led by the "King of Zion," John of Leiden. For 10 points, name this German city where the Treaty of Westphalia was signed.

ANSWER: Münster

080-12-59-12106

6. This thinker wrote that "classic conservatism" requires an aristocracy, a peasantry, and a peasant-bourgeoisie, all things America has never had, in an analysis of the "conservative mood." He argued that the classic checks and balance system is outdated because interests cooperate instead of competing. One of this man's texts critiques Talcott Parsons's structural functionalist approach, arguing that his discipline must work between "the personal troubles of milieu" and the "public issues of social structure." Another of his books describes the shared worldview of the leaders of state, military, and industry in postwar American society. For 10 points, name this author of *The Sociological Imagination* and *The Power Elite*.

ANSWER: Charles Wright Mills

052-12-59-12107

7. This thinker defended the enslavement of Africans on the grounds that they were the defeated aggressors in a just war. Robert Nozick came up with the example of a man who mixes tomato juice with the ocean to mock this thinker's claim that a man gains ownership over something by mixing his labor with it. He wrote many of his later works in the household of the Earl of Shaftesbury, including one that refutes the idea of a divine right of kings put forth by Robert Filmer. This man wrote the *Fundamental Constitution of the Carolinas* and advocated toleration of Protestant sects in *An Essay Concerning Toleration*. For 10 points, name this English political philosopher who espoused liberal viewpoints in *Two Treatises of Government*.

ANSWER: John Locke

080-12-59-12108

8. This letter names a function in quantum field theory that relates the coupling parameter to the energy scale. One quantity denoted by this letter is equal to one over Boltzmann's constant times temperature; that quantity appears in the exponential of Boltzmann factors. This letter is also used to symbolize the ratio of an object's speed to the speed of light. In one process named for this letter, a down quark changes to an up quark, releasing an electron and an electron antineutrino. That process, which is mediated by the weak force, keeps a nucleus' mass number constant but changes the number of protons. For 10 points, identify this Greek letter which names a form of decay in which a positron or electron is emitted.

ANSWER: beta

132-12-59-12109

9. One character in this play has had seven children who all died within a day of their birth, leading her to task her only living child, Ruth, to investigate the cause of her misfortunes. Another character in this play is pregnant and thus is able to obtain a stay of execution until she has given birth. In this play, one character who wants his land to pass to his own sons chooses to die under the weight of many stones rather than confess to a crime. At its opening, Mr. Parris believes that the reason that his daughter Betty is in a catatonic state has something to do with her cavorting in the forest with Tituba. For 10 points, name this play in which the accusations of Abigail Williams lead to the death of John Proctor, a work of Arthur Miller.

ANSWER: *The Crucible*

040-12-59-12110

10. One of these works defends Barry Goldwater's claim that "extremism in the defense of liberty is no vice" by citing the Congo Crisis and Hamlet's "to be or not to be" soliloquy. Another of these works analyzes the Russian, Chinese, American, and French revolutions, concluding that revolutions are "the landless against the landlords" and brought about by bloodshed. That one is titled "Message to the Grassroots." The most famous of these works, delivered in two different forms in Cleveland and Detroit, calls Lyndon Johnson a "Southern cracker" and warns of another March on Washington from people who bought "one-way tickets." For 10 points, name this set of orations, including "The Ballot or the Bullet," which were all delivered by a Muslim rival to Martin Luther King.

ANSWER: **speeches** of **Malcolm X** [or **speeches** of **Malcolm Little**; or **speeches** of El-hajj Malik **El-Shabazz**]

080-12-59-12111

11. One religious community which, until the last decade, lived almost entirely in this country was mentioned in the Quran along with Jews and Christians as one of the "People of the Book." Those "Sabians," who lived here, revere John the Baptist but reject Jesus, and are now known as this country's minority "Mandaeans." Another small religion which exists mostly in this country worships Melek Taus, the peacock god, and is the Yazidis. In 2006, this country, home to the more western large population of Chaldean Christians, was plagued by death squads in the "Sunni Triangle." For 10 points, name this country where the Shia majority was long suppressed under the rule of Saddam Hussein.

ANSWER: Republic of **Iraq** [or Jumhuriyat al-**Iraq**]

019-12-59-12112

12. A type of ophiolite is named after a "supra" form of these regions. One part of these regions can undergo tearing known as STEP faults. They consist of an updip zone and a seismogenic zone. Accretionary prisms are formed on one part of these regions. Nankai and Cascadia are two notable ones. Although not island arcs, one area associated with them can be affected by "roll-back" and is a back arc. Earthquakes can occur deep in them in areas called Benioff zones. The primary driving force behind these regions is slab pull. For 10 points, name these regions in which an oceanic plate is driven under a continental plate at a convergent margin.

ANSWER: **subduction zones** [prompt on **convergent boundaries** or **convergent margins**]

066-12-59-12113

13. In one scene in this film, the camera points straight up from the floor at the face of a character banging a metal door and shouting, "Go check it out!" Another of its scenes takes place in a bathroom with solid red walls and a white ceiling and floor, where that character's jacket is wiped by a man who mentions how he "corrected" his daughters. This film repeatedly uses floor-level tracking shots to follow a boy on a blue-seated tricycle through a building in which he has a vision of a torrent of blood gushing from an elevator. For 10 points, name this Stanley Kubrick film in which Jack Torrance pursues his family with an axe and famously exclaims, "Here's Johnny!"

ANSWER: *The **Shining***

014-12-59-12114

14. One part of this novel describes an incident in which the narrator asks a man to move his stalled motorcycle, after which he is attacked by an onlooker. Another part describes a man named Du Guesclin whom the narrator had fought alongside with during the Spanish Civil War. In another section, the narrator describes how he came to possess *The Just Judges*, a panel from the Ghent altarpiece. The narrator recounts how he failed to save a woman who committed suicide on the Pont Royal Bridge, an act compared to the biting of the apple in the Garden of Eden. This novel is narrated from the Mexico City bar in Amsterdam by Jean-Baptiste Clamence. For 10 points, name this novel by Albert Camus.

ANSWER: *The **Fall*** [or *La **Chute***]

064-12-59-12115

15. Conspiracy theories for this event were investigated in Operation Paget, which eventually blamed "gross negligence." It is effectively the subject of Stella Vine's painting *Hi Paul can you come over I'm really frightened*, whose title references a letter written to Paul Burrell warning of one man's desire to plan an accident so he could "marry Tiggy." Much blame was placed on the Head of Security at the Ritz Hotel, Henri Paul, who had been drinking and was also killed during this event. Taking place in the Pont de l'Alma road tunnel in Paris, this event was initially blamed on overaggressive paparazzi and also killed Egyptian film producer Dodi Fayed. For 10 points, name this August 31, 1997 car accident that killed a Princess of Wales.

ANSWER: **death of Diana**, Princess of Wales [or **death of Diana Spencer**; or **death of Dodi Fayed** until "Dodi Fayed" is mentioned; or **death of Henri Paul** until "Henri Paul" is mentioned; accept "car accident" in combination with any of the previous phrases]

052-12-59-12116

16. One of this city's museums is a former poorhouse called Vieille Charite. Louis XVI built over a fortress of the Knights Hospitallers to construct this city's Fort Saint-Jean. Marcel Pagnol founded his film studio in this city. This city's main thoroughfare, which takes its name from the hemp once transported along it, is La Canebiere. A 27-foot-tall copper statue of Mary tops the bell tower of this city's Notre Dame de la Garde. The Frioul Islands lie in this city's harbor, which contains the notorious Chateau d'If. A stew called *bouillabaisse* comes from this port founded in 600 BCE by Phoenician traders. For 10 points, name this port city in the south of France.

ANSWER: **Marseille** [or **Marseilles**]

080-12-59-12117

17. One man in this novel gives a speech, rifle in hand, from the roof of his porch. That man, Sherburn, mocks a mob for being unable to kill him in daylight. This book's title character is shown a magic hairball and fakes his own death by shooting a pig. Hemingway opined that this novel should end as the title character resolves, "All right then, I'll go to hell," before he goes to the Phelps estate to find a friend. This novel's title character travels through the Grangerford-Shepherdson feud and puts up with awful Shakespeare from two conmen pretending to be noble, the Duke and the Dauphin. For 10 points, name this novel in which the slave Jim floats down the Mississippi with the title boy, written by Mark Twain.

ANSWER: *The Adventures of **Huckleberry Finn*** [or **Huck Finn**]

104-12-59-12118

18. Like the Thracians, these people used a sickle-like weapon called the *falx*. These people were unified under King Burebista. After destroying the army of Cornelius Fuscus, these people fell to Tettius Iulianus at the Battle of Tapae. Apollodorus of Damascus constructed a nearly 4000-foot-long bridge to combat these people, whose enemies cut the water pipes to their fortress at Sarmizegethusa. The defeat of their king, Decebalus, is commemorated on the spiral frieze of a column in the Roman Forum. For 10 points, name these people who lived in modern-day Romania and fought several wars against Domitian and Trajan.

ANSWER: **Dacians**

080-12-59-12119

19. Radiographic studies sometimes reveal that this substance is found in cavum velum interpositum in infants. The median and lateral apertures, respectively named for Magendie and Luschka, are pathways for it. The strongest positive result for a beta-2 transferrin assay occurs in this substance. Ependymal cells, which secrete this substance, beat their cilia to form a “barrier” to its access. This substance may be tested by a procedure that indicates Guillian-Barre syndrome if there are too many proteins. Its presence in ventricles and the space between the arachnoid and pia maters mediates intracranial pressure. For 10 points, name this liquid removed by lumbar puncture, found in and around the central nervous system.

ANSWER: **cerebrospinal fluid** [or **CSF**]

020-12-59-12120

20. This artist gained popularity during his namesake "Affair," in which the Union of Berlin Artists shut down his exhibition after one week due to its supposed French influences. This artist painted a woman wearing an unbuttoned white dress that reveals a red slip in *Ashes*. He also depicted a skinny, developing nude woman sitting at the edge of her bed in *Puberty*. His most famous work was recently sold for \$120,000,000 dollars, making it the most expensive work of art ever sold at an auction. That work depicts a swirling orange sky above a green-faced figure on a bridge. For 10 points, name this Norwegian artist of *The Scream*.

ANSWER: Edvard **Munch**

080-12-59-12121

21. An action of this poem’s subject is compared to how “a skate’s heel sweeps smooth on a bow-bend.” The speaker of this poem recalls how “my heart in hiding stirred” for the title figure before ambiguously exclaiming, “the achieve of, the mastery of the thing!” This poem concludes by noting how “blue-bleak embers...fall, gall themselves, and gash gold-vermilion,” and it begins by stating, “I caught this morning morning’s minion,” a “dapple-dawn-drawn Falcon.” For 10 points, name this sonnet dedicated “To Christ our Lord” by Gerard Manley Hopkins.

ANSWER: “The **Windhover**”

014-12-59-12122

22. Two of these structures can interact with each other if a heptad repeat is present. These structures show minima at 208 and 222 nanometers in CD spectroscopy, and the relative locations of their monomers are displayed on Wenxiang diagrams. Due to their dipole moment they are often capped by a negative charge. They occupy a stripe in the third quadrant of the Ramachandran plot. Seven of these structures that spanning a membrane are found in G protein coupled receptors. Glycine is rarely found in them because of the entropic cost. This type of structure is stabilized from hydrogen bonding between amino acids in position i and $i+4$. For 10 points, name this common type of motif that is part of a protein's secondary structure, often contrasted with the beta sheet.

ANSWER: **alpha helix** [prompt on **helix**]

064-12-59-12123

23. This colony's Plundering Time saw looting by Richard Ingle and led to the Battle of Severn. This colony fought a boundary war with its northern neighbor known as Cresap's War. William Stone served as this state's governor when it passed an act protecting all Trinitarian practitioners of a certain religion. That aforementioned act was revoked by this colony's governor William Claiborne and was known as this colony's "Toleration Act," or the "Act Concerning Religion." In addition to having its northern boundary set by the Mason-Dixon Line, this colony was established as a safe-haven for Catholics. For 10 points, name this colony that was founded by Cecil Calvert.

ANSWER: **Maryland**

149-12-59-12124



1. This goddess wields a spear and shield in her incarnation as "Sospita." For 10 points each:

[10] Name this Roman equivalent of Hera, the wife of Jupiter and queen of the gods.

ANSWER: **Juno**

[10] The Roman mint was located in the temple of this aspect of Juno. This epithet derives from the Greek for "unique" or the Latin for "to warn."

ANSWER: Juno **Moneta**

[10] Juno's role in the Capitoline Triad is derived from this people's myth system. They practiced haruspicy and believed in the prophets Tages and Vegoia.

ANSWER: the **Etruscans**

080-12-59-12201

2. This theory is used to explain why none of the magnetic monopoles predicted by GUTs exist. For 10 points each:

[10] Name this model of the early universe in which a viewer's commoving frame shrinks. Proposed by Alan Guth, the slow roll form of this theory occurs when its namesake field is larger than the Planck energy.

ANSWER: cosmological **inflation**

[10] Cosmic inflation is a modification of this traditional theory of the beginning of the universe. It states that the universe expanded from a singularity over 13 billion years ago.

ANSWER: **big bang**

[10] Fluctuations in this value for de Sitter space in cosmic inflation results in a Hawking temperature equal to the Hubble constant over two pi times the Boltzmann constant. Fluctuations in this quantity lead to density perturbations, which create galaxies.

ANSWER: **energy**

149-12-59-12202

3. The losers of this battle agreed to the Treaty of Schoenbrunn. For 10 points each:

[10] Name this 1809 battle that effectively ended the War of the Fifth Coalition. Napoleon defeated the Archduke Charles here and received a large portion of the Austrian Empire as a result.

ANSWER: Battle of **Wagram**

[10] At Wagram, Napoleon gave Jean Bernadotte the boot after he retreated from the Austrian army. Bernadotte later became Charles XIV John of this Scandinavian country and is still the namesake of its royal house, currently under the rule of Carl XVI Gustaf.

ANSWER: Kingdom of **Sweden** [or Konungariket **Sverige**]

[10] Bernadotte fought against his former commander at this 1813 "Battle of the Nations." The Sixth Coalition's victory at this battle allowed them to invade France and send Napoleon off to Elba the next year.

ANSWER: Battle of **Leipzig**

080-12-59-12203

4. Answer the following about controversial photographs, for 10 points each:

[10] Photographer Annie Leibovitz drew fire in 2008 for a topless photoshoot of this then fifteen-year-old actress.

ANSWER: Miley **Cyrus**

[10] Andres Serrano took this photograph of a crucifix submerged in fluid as part of a series that also involved statuettes photographed in blood and milk.

ANSWER: ***Piss Christ***

[10] This photographer drew questions regarding the definition of obscenity over his explicit, homoerotic exhibition at the Washington Project for the Arts.

ANSWER: Robert **Mapplethorpe**

105-12-59-12204

5. In the "hindsight" example of these phenomena, subjects believe they "knew all along" what would be the outcome of a potentially unpredictable event. For 10 points each:

[10] Name these phenomena, in which a subject's distorted perception leads to an error in judgment. Other examples of these phenomena include the fundamental attribution error.

ANSWER: cognitive **biases**

[10] In this type of cognitive bias, a subject lends more credence to the data that support his preconceived ideas than to data that refute them. It allows conspiracy theorists to "prove" outlandish ideas.

ANSWER: **confirmation** bias

[10] This man investigated how the "availability heuristic" results in cognitive biases along with Amos Tversky, with whom he developed prospect theory.

ANSWER: Daniel **Kahneman**

080-12-59-12205

6. This work claims that the incorporation of a whitewashed German nihilism into American liberal ideology has led to the title phenomenon. For 10 points each:

[10] Name this Allan Bloom work, which criticizes the American university system for embracing a facile multiculturalism and kowtowing to 1960's radical movements.

ANSWER: *The **Closing of the American Mind***

[10] The introduction to *The Closing of the American Mind* attacks this ideology, which holds that behaviors can only be judged according to the values of the specific culture in which they originate.

ANSWER: cultural **relativism**

[10] Bloom called this author "Dale Carnegie with a bit of middle European whipped cream on top." This author of *The Art of Loving* claimed that existential angst makes submission to authoritarian regimes more appealing in *Escape from Freedom*.

ANSWER: Erich Seligmann **Fromm**

080-12-59-12206

7. Because this compound has an odd number of electrons, it exists in equilibrium with its dimerized form. For 10 points each:

[10] Name this compound with nitrogen in a +4 oxidation state, which is formed by reacting nitric oxide with oxygen.

ANSWER: **nitrogen dioxide** [or **NO₂**; or **nitrogen (IV) oxide** (nitrogen-four-oxide); prompt on **nitrogen oxide**; do not accept or prompt on “nitrous oxide”]

[10] Nitrogen dioxide reacts with water in one step of the Ostwald process, which forms this strong acid with formula HNO₃.

ANSWER: **nitric** acid

[10] The formation of the nitrogen-nitrogen bond when NO₂ dimerizes causes it to lose this property. Molecular orbital theory was partially developed to explain this property's occurrence in liquid oxygen.

ANSWER: **paramagnetism** [accept word forms like **paramagnetic**; prompt on **magnetism** or similar answers]

132-12-59-12207

8. This author wrote an autobiographical trilogy consisting of *Childhood*, *Boyhood*, and *Youth*. For 10 points each:

[10] Name this author, whose novel *Resurrection* is about a nobleman whose experiences visiting a prison cause him to reexamine his life. Another of his novels begins with the famous line, “Happy families are all alike; every unhappy family is unhappy in its own way.”

ANSWER: Leo **Tolstoy** [or Lev Nikolayevich **Tolstoy**]

[10] That aforementioned Tolstoy novel is this one, in which the title woman has an affair with Count Vronsky before ultimately throwing herself under a train.

ANSWER: **Anna Karenina**

[10] Tolstoy reportedly played a game involving this animal as a child. In Dostoevsky’s *Winter Notes on Summer Impressions*, he asks the reader to try not to think of this animal, which will inevitably result in the person always thinking of it. Psychologist Daniel Wegner later ran an experiment proving that assertion.

ANSWER: **polar bear** [or **white bear**; prompt on **bear**]

052-12-59-12208

9. This Republican was a leader in the Conservative Coalition against the New Deal alongside Democrat Richard Russell, Jr. For 10 points each:

[10] Name this United States non-interventionist Senator who condemned the Nuremberg Trials as an instance of victor's justice. He lost the Republican nomination to Dewey in 1948 and narrowly lost again to Eisenhower in 1952.

ANSWER: **Robert Alphonso Taft** [prompt on **Taft**]

[10] Robert Taft also sponsored the Labor-Management Relations Act along with Hartley, which amended this 1935 act that limits the power of employers to regulate labor unions and strikes.

ANSWER: **National Labor Relations** Act [or **Wagner** Act]

[10] The Wagner Act was found constitutional in a 1937 Supreme Court case between the National Labor Relations Board and this steel company.

ANSWER: **Jones and Laughlin** Steel Corporation

127-12-59-12209

10. This character loses connection with humanity after his best friend William frames him for theft, leading to his expulsion from Lantern Yard. For 10 points each:

[10] Name this character, who then becomes a miser until his accumulated gold is stolen by Dunstan. He experiences spiritual rebirth while raising his adopted daughter, Eppie.

ANSWER: Silas **Marnier** [or **Silas** Marnier]

[10] *Silas Marner* was written by this English Victorian novelist, who wrote under a male pseudonym. She also wrote *Middlemarch*.

ANSWER: George **Eliot** [or Mary Ann **Evans**]

[10] In *Silas Marner*, this son of a squire fears that his secret marriage to the opium-addicted Molly will ruin his social standing. He gets off scot-free when Molly dies and Silas takes in his daughter, Eppie.

ANSWER: **Godfrey** Cass [prompt on **Cass**]

080-12-59-12210

11. This god was honored yearly in the Toxcatl festival, at which one man got selected to live like a king imitating this god for a year and the previous man who did so was killed. For 10 points each:

[10] Name this Aztec god of the night sky, who is often depicted as a jaguar.

ANSWER: **Tezcatlipoca**

[10] Tezcatlipoca was often depicted with one of these objects, usually one made of obsidian and/or emitting smoke. In some myths, this item appears in place of a foot he lost at the world's creation while fighting the Earth Monster.

ANSWER: a smoking **mirror** [or obsidian **mirror**]

[10] In some myths, Tezcatlipoca was the first of these celestial objects. In Greek myth, Helios takes this role.

ANSWER: the **sun**

104-12-59-12211

12. In 1966, he recorded *The Empty Foxhole* with his son, Denardo, playing the drums - at the age of ten. For ten points each:

[10] Name this jazz musician who recorded *The Shape of Jazz to Come*.

ANSWER: Ornette **Coleman**

[10] After watching Coleman in concert, this trumpeter was said to have declared him "all screwed up inside." He recorded *Filles de Kilimanjaro* and *Kind of Blue*.

ANSWER: Miles Dewey **Davis** III

[10] Coleman collaborated on this woman's album *Universal Consciousness*. She also recorded *Journey in Satchidananda*, and her husband released *Giant Steps*.

ANSWER: **Alice Coltrane** [or Alice **McLeod**]

088-12-59-12212

13. On October 3, 2010, the final redemption on bonds issued to guarantee these payments was delivered. For 10 points each:

[10] Identify these very long-term payments whose restructuring was the subject of the Dawes and Young Plans.

ANSWER: **German reparations** for World War I [accept equivalent]

[10] Attempts to collect reparations from Germany had been suspended in 1932 after a conference at this city. A 1923 treaty here recognized the state of Turkey and was the final treaty ending World War I.

ANSWER: **Lausanne**

[10] The case for reparations was outlined in Article 231 of the Treaty of Versailles, which is usually known by this name, for its assertions about Germany's responsibility for the conflict.

ANSWER: "war **guilt**" clause

019-12-59-12213

14. This man claimed “good artists were philosophers who had overcome philosophy” in his essay, “We Metaphysicians.” For 10 points each:

[10] Name this practitioner of *pittura metafisica*, who painted *Nostalgia of the Infinite* and *Enigma of the Hour*.

ANSWER: Giorgio **de Chirico**

[10] Sylvia Plath wrote a poem addressed to her mother inspired by this painting by De Chirico. The two title figures are Classical statues with the heads of mannequins in the foreground, and there is a red castle in the city of Ferrara in its background.

ANSWER: *The **Disquieting Muses*** [or *Le **Muse inquietanti***]

[10] De Chirico also helped develop this art movement, whose manifesto was written by Andre Breton and whose exponents included Salvador Dali.

ANSWER: **Surrealism**

121-12-59-12214

15. This author calls himself a "rusty head sailor with sea green eyes" and declares, "Either I'm nobody or I'm a nation" in "The Schooner *Flight*." For 10 points each:

[10] Name this poet of "Sea Grapes" who described "marble like Greece, like Faulkner's South in stone" in "Ruins of a Great House."

ANSWER: Derek **Walcott**

[10] Walcott may be best known for this epic poem about Achille and Hector, who compete over Helen.

ANSWER: **Omeros**

[10] Walcott's "The Castaway" was inspired by this creation of Daniel Defoe, who must survive on a Caribbean island after being shipwrecked.

ANSWER: Robinson **Crusoe** [or **Robinson** Crusoe]

080-12-59-12215

16. One war in the country was supposedly sparked when a former slave called her former master a "pig's head." For 10 points each:

[10] Name this country home to the Maori. Henry Williams, a missionary in this country, described the Musket Wars, which occurred in this country following Hongi Hika's acquisition of guns.

ANSWER: **New Zealand**

[10] Many Maori chiefs signed this treaty co-drafted by James Busby and William Hobson. Debate over the meaning of the word "governship" in this treaty led to hostility between the British and Maori.

ANSWER: Treaty of **Waitangi**

[10] William Williams briefly persuaded Hone Heke not to cut down one of these objects located on Maiki Hill. Heke eventually did, sparking a war named for this object.

ANSWER: **flagstaff** [or **Flagstaff** War]

149-12-59-12216

17. An attempt by the de Lesseps company to build this structure in the 1880's ended in disaster due to rampant disease. For 10 points each:

[10] Name this Central American waterway, completed in 1914.

ANSWER: **Panama Canal**

[10] The Gaillard Cut connects this large artificial lake created by the Panama Canal that receives water from the Chagres River.

ANSWER: Lake **Gatun**

[10] A bridge between Staten Island and New Jersey is named for this civil engineer who supervised the construction of the canal.

ANSWER: George Washington **Goethals**

064-12-59-12217

18. Mesons are made up of one these particles and the anti- type of this particle, whereas baryons are made up of three of these. For 10 points each:

[10] Name this class of fundamental particles that come in up, down, charm, strange, top, and bottom varieties.

ANSWER: **quark**

[10] This man is credited with discovering the quark along with George Zweig. He showed how the quark model explains the eightfold way of organizing baryons and mesons, which in turn becomes the SU(3) flavor symmetry.

ANSWER: Murray **Gell-Mann**

[10] Gell-Mann also names a formula with Nishijima that gives this physical quantity as equal to isospin plus one half the sum of baryon number and strangeness.

ANSWER: **charge**

127-12-59-12218

19. The speaker of this poem leaves the lecture-room to go to "the mystical moist night-air, and from time to time, looked up in perfect silence at the stars." For 10 points each:

[10] Name this poem whose speaker sees "the proofs, the figures...the charts and the diagrams" of the title scientist.

ANSWER: "**When I Heard the Learn'd Astronomer**"

[10] In this poem, the speaker reflects on "the varied carols I hear," including those of mechanics, carpenters, masons, boatmen, shoemakers, woodcutters, and mothers.

ANSWER: "**I Hear America Singing**"

[10] "When I heard the Learn'd Astronomer" and "I Hear America Singing" are part of this poetry collection by Walt Whitman, most of which consists of his poem "Song of Myself."

ANSWER: **Leaves of Grass**

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20. The drug cilengitide is being studied for its selectivity for these proteins, which may play a role in inhibiting angiogenesis. For 10 points each:

[10] Name these proteins which mediate cell attachment to other cells or to the extracellular matrix. They can bind to collagen and fibronectins.

ANSWER: **integrins**

[10] Integrin binding to the ECM can trigger the release of kinases which are involved in this process, the propagation of an intracellular response to an extracellular event.

ANSWER: **signal** transduction [or word forms like **signaling**]

[10] During cell migration, integrins are shuttled from the membrane to the cell's interior by this process, in which cells engulf objects.

ANSWER: **endocytosis**

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21. Performing this operation on two orthogonal vectors yields a value of zero. For 10 points each:

[10] Name this algebraic operation that, for two vectors, returns a value equal to the product of the magnitudes of those vectors times the cosine of the angle between them unlike the cross product.

ANSWER: **dot** product [or **scalar** product]

[10] This inequality states that, for two vectors x and y , the modulus of the inner product between x and y is less than or equal to the product of the magnitudes of x and y .

ANSWER: **Cauchy-Schwarz** inequality [or **Cauchy** inequality; or **Schwarz** inequality; or **Cauchy-Schwarz-Bunyakovsky** inequality]

[10] The two sides of the Cauchy-Schwarz inequality are equal if and only if the two vectors x and y have this property. Two vectors have this property if one can be written as a linear combination of the other.

ANSWER: **linearly dependent**

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