1. In the Phil Ochs song "Love Me, I'm a Liberal," the narrator notes that his faith in the system was restored when this man was chosen. This man argued for a strong civil rights plank in the Democratic Party's platform at the 1948 convention and was instrumental in merging the Democratic and Farmer-Labor parties of his home state. At a convention that nominated this man, Connecticut Senator Abraham Ribicoff accused Mayor Daley of using "Gestapo tactics in the streets of Chicago." For 10 points, name this Minnesota politician who served as Lyndon Johnson's Vice President and lost the 1968 presidential election to Richard Nixon.
ANSWER: Hubert Horatio **Humphrey**, Jr.

030-13-83-16101

2. Peter Singer calls empathy an "expanding" one of these objects. Antoine Arnauld observed a logical failure to define "clear and distinct" ideas, called the "Cartesian" one. "Conversation is a game of" these objects according to an essay calling the horizon the second one and the eye the first, by Emerson. One of these containing "art" and "work", discussed by Heidegger, is the hermeneutic one. This kind of object partly name a group including the Ernst Mach Society, Otto Neurath, and Rudolf Carnap. This object partly names a set of logical positivists who adored Wittgenstein which was based in Vienna. For 10 points, name this shape which lends its name to flawed logic when the conclusion is the same as one's premise.
ANSWER: **circle**s [or the Cartesian **circle**; or the hermeneutic **circle**; or the expanding **circle**; or the Vienna **Circle**; or **circular** logic/reasoning; or Wiener **Kreis**; or hermeneutischer **Zirkel**]

104-13-83-16102

3. The speaker of one of these poems commands, "Descend lower, descend only into the world of perpetual solitude, world not world," and recalls the words of a talking bird in a rose garden. The third of these poems asks, "Where is there an end to it, the soundless wailing, the silent withering of autumn flowers?" before acknowledging the possibility of "the life of significant soil." The first of these poems begins, "Time present and time past are both perhaps present in time future." These five-section poems, which each have an associated classical element, include "The Dry Salvages" and "Burnt Norton." For 10 points, name this late set of complex poems by T. S. Eliot.
ANSWER: the *Four Quartets*

014-13-83-16103

4. The prologue to this film contains expressive dancers in various poses, possibly owing to the director's own background as a dancer. This film opens with shots of ancient Greek ruins, such as a crumbling Acropolis, before using an extended dissolve to bring Myron's *Discobolus* to life. This film was released in two parts, subtitled "Festival of Nations" and "Festival of Beauty." It pioneered the techniques of extreme close-up, complex tracking, and underwater shots. Its end uses long shots to depict a diving sequence. This documentary prominently features Jesse Owens. For 10 points, identify this Leni Riefenstahl film about the 1936 Summer Olympics.
ANSWER: *Olympia* [or *Olympia* Part 1: Festival of Nations or *Olympia* 1 Teil: Fest der Volker until "two parts" is read]

066-13-83-16104

5. Carl Stoermer pioneered the use of rigidity cutoffs in determining what amount of these particles penetrate the Earth's atmosphere. Above a certain energy, these particles cannot travel further than 50 megaparsecs without interacting with the CMB to produce delta baryons that decay into pions. An observatory in Argentina uses four fluorescence detectors and over a thousand water-based Cherenkov detectors to register these particles; data from that observatory was used to reject the theory of the isotropic distribution for certain types of them. That is the Pierre Auger observatory. That aforementioned energy is the GZK limit. The most energetic particle of this type to be detected was the Oh-My-God particle. For 10 points, name these highly energetic particles from outer space.
ANSWER: **cosmic ray**s [or any type of energy cosmic ray, such as ultra high energy, etc.; prompt on **proton**s; prompt on **neutrino**s; do not accept galactic or extragalactic cosmic rays]

6. One of this author's novels depicts a rural family whose hostile members bring whips to the dinner table. In that novel, the illegitimate son Gervaska murders the patriarch, Peter Khrushchev, and flees the title estate, *Sukhodol.* In another novel by this author, the aspiring writer Kuzma marries off a beautiful peasant known only as "the Bride" while working as the overseer of the estate of his brother, Tikhon Ilyich Krasov. The title character dies thinking only of dinner in his story about a man vacationing in Capri whose body is shipped back across the Atlantic. For 10 points, name this Russian writer of *The Village* and "The Gentleman from San Francisco."
ANSWER: Ivan **Bunin**

7. These compounds can be formed by a modification of the Wittig reaction that uses sulfur ylides with ketones and aldehydes. An enantioselective reaction that uses allylic alcohols in the presence of diethyl tartarate and t-butyl hydroperoxide can be used to create these compounds. Those are the Corey-Chaykovsky and Sharpless reactions for these compounds. The aza variant of these compounds are called aziridines, in which the oxygen atom found in these compounds is replaced with nitrogen. These compounds can be created by reacting MCPBA with an alkene in a reaction that contains the "butterfly mechanism." That is the Prilezhaev reaction. For 10 points, name these cyclic ethers that are commonly used in adhesives.
ANSWER: **epoxides** [or **oxirane**; or **oxacyclopropane**]

8. Five grotesque objects of this kind appear in Magritte's painting *The Black Flag*. Three cherubs gaze out of a framed window at the front of one of these objects in another artist's painting *The Swan is Very Peaceful*. In an even creepier painting by that artist, two soldiers huddle together near a wounded comrade as one of these objects with human arms takes up a majority of the space. Max Ernst painted the "murdering" variety of these objects, one of which explodes in *Blam*. The text "I pressed the fire control... and ahead of me rockets blazed through the sky" appears in a painting depicting combat between two of these vehicles. For 10 points, name these vehicles which dogfight in Roy Lichtenstein's painting *Whaam!*
ANSWER: air**plane**s [or fighter **jet**s; or **fighter**s; or **bomber**s]

9. One king with this name dressed up as a wild man and was set ablaze at the appropriately-named "Ball of the Burning Men." That king with this name was one of the first monarchs to suffer from the glass delusion. Another king of this name dealt with a Viking siege of his capital by buying the invaders off; that son of Louis the German was the last of the Carolingian line. A later king with this name won the Burgundians over to his side with the Treaty of Arras and was crowned in 1429 thanks to Joan of Arc. Another king with this name conquered Algeria and was deposed in the July Revolution. For 10 points, give the name of these "Mad" and "Fat" French kings, the tenth of whom succeeded Louis XVIII.
ANSWER: **Charles** VI [or **Charles** III; or **Charles** VII; or **Charles** X; or **Charles** the Mad; or **Charles** the Well-beloved; or **Charles** the Fat; or **Charles** the Well-served; or **Charles** the Victorious]

10. This city contained a dome supported by four arches called the Milion that recorded distances to other cities. A record of the regulations concerning this city's guilds can be found in the *Book of the Prefect*, addressed to the eparch administrating this city. A road called the mese (MEH-say) ran through this city, which may have lost forty percent of its population in a plague in 542 CE. A gigantic cannon designed by Orban sufficed to break through this city's 60-foot-tall Theodosian Walls. This city's hippodrome featured occasionally-violent contests between the Blues and Greens. For 10 points, name this capital city where the Nika Riots occurred during the reign of Justinian I.
ANSWER: **Constantinople** [or **Byzantium**; or **Istanbul**]

11. According to the Homeric Hymns, Apollo appeared on a Cretan ship as a talking one of these creatures to get the priests for his oracle at Delphi. In a story recounted by Herodotus, these animals save a musician from Methymna who goes to Corinth to confront King Periander. Acoetes avoided being turned into one of these creatures for saving a young boy from rape. These animals saved the musician Arion in one myth, and in another, they were originally Tyrrhenian pirates who were transformed into this shape for mistreating Dionysus. For 10 points, name this marine mammal that serves as a messenger for Poseidon due to its intelligence.
ANSWER: a **dolphin**

12. Lindahl pricing is a way to efficiently allocate these things, but requires knowledge of individuals' demand functions. That problem may be overcome with the Groves-Clarke mechanism, an auction system for these things where truthful bidding is the dominant strategy. The Samuelson condition says these things are provided efficiently when the sum of individual marginal rates of substitution equals the marginal rate of transformation compared to an arbitrary good. These are non-rival and also non-excludable, which can make them subject to the free rider problem. 10 points, lighthouses are a frequently given example of what kinds of goods, which may be paid for with taxes?
ANSWER: **public** goods

13. Christian Lindberg's famed recording of this man's *Concerto for Trombone and Military Band* adds multiphonics to the cadenzas. One of his works opens with a bass motif based on the notes E-D-C-A sharp and depicts its title character with a harp-accompanied theme in which a solo violin plays high-register sixteenth note triplets. He asked the strings to imitate guitars in a movement that follows the second "Alborada" movement in one of his works; that work ends with a "Fandango Asturiano." This composer wrote a symphonic suite that opens with the movement "The Sea and Sinbad's Ship." For 10 points, name this composer of *Capriccio Espagnol* and *Scheherazade* who also wrote an interlude called "Flight of the Bumblebee."
ANSWER: Nikolai Andreyevich **Rimsky-Korsakov**

14. This leader's country is the subject of a website run by Curtis Melvin. One of his speeches inspired a song called "Onwards Toward the Final Victory." This man's wife may have been a former singer in the Unhasu Orchestra, and bootleg CDs of her performances are confiscated. This leader was accused of ordering the 2010 sinking of a ship called the *Cheonan*. Recently, he threatened to wipe out Baengnyeong Island. This man earned a physics degree at a university named for his grandfather and is the world's youngest head of state. In February 2013, he met possibly his first American, Dennis Rodman. For 10 points, name this son of Kim Jong-il, the current supreme leader of North Korea.
ANSWER: **Kim Jong-un** [prompt on **Kim**]

15. This poem's second section begins with the speaker recalling how "from air to air, like an empty net I went between the streets and atmosphere, arriving and departing." That section later warns, "You'll not return from the bottom of the rocks." This poem addresses Cristobal Miranda at the beginning of its eighth section, "The Earth's Name Is Juan," and it opens with "A Lamp on Earth." The speaker urges the listener to "speak through my words and through my blood" and to "arise to birth with me, my brother," in its section, "The Heights of Macchu Picchu." For 10 points, name this book-length poem by Pablo Neruda.
ANSWER: *Canto General*

16. The Saltoro Mountains cut through this region and their namesake river flows into the Shyok River. One group of people in this region treats a course of meals called *wazwan* as a work of art; *dum aloo* is also a popular dish from this region. Ladakh is a part of this region that lies south of the Kunlun Mountains. China connected Xinjiang and Tibet by building a railroad through this region's Aksai Chin portion. The Siachen Glacier area is disputed within this region, and Srinagar is on the Jhelum River in this region's Valley. An Indian state groups together part of this region with Jammu. For 10 points, name this disputed region in the northern part of the Indian subcontinent.
ANSWER: **Kashmir**

17. The Battle of Saltley Gate was a confrontation that occurred during one of these events. Management practices by American businessman Ian MacGregor prompted one of these events that was led by Arthur Scargill. One of these events, which occurred from 1984 to 1985, included a politician calling the participants the "enemy within" and resulted in a major loss of influence for NUM. An earlier event of this type resulted in the fall of the government of Edward Heath. For 10 points, name these types of work stoppages, one of which was put down by Margaret Thatcher, that involved extractors of the namesake commodity.
ANSWER: **mine**rs' strikes [or **coal** strikes]

18. If a field is orthogonal to this operator applied to the field, it is said to be complex lamellar. In cylindrical and spherical coordinates, respectively, this operation is scaled by one over rho and one over r squared sine theta. The Kelvin-Stokes theorem shows the surface integral of this operation applied to a function equals the line integral on the surface's boundary of the function. Maxwell's form of the Faraday equation equates it applied to the electric field to the negative time derivative of the magnetic field. If it applied to a fluid's velocity field is zero, the field is irrotational, and more generally, this operation applied to a fluid's velocity field gives the vorticity. For 10 points, name this vector operator usually symbolized as del cross a vector field.
ANSWER: **curl**

19. This poet wrote an untitled poem in which he described how his dead hand would "haunt thy days and chill thy dreaming nights," though it is "now warm and capable of earnest grasping." One of his sonnets concludes, "on the shore of the wide world I stand alone, and think till love and fame to nothingness do sink." Another of his sonnets incorrectly identifies whose "eagle eyes...stared at the Pacific" and begins, "Much have I travelled in the realms of gold." This poet of "When I Have Fears That I May Cease to Be" asked, "Was it a vision, or a waking dream?" in a poem about a bird that "wast not born for death." For 10 points, name this Romantic poet who wrote "On First Looking into Chapman's Homer" and "Ode to a Nightingale."
ANSWER: John **Keats**

20. Susumu Ohno wrote a 1970 book that launched the study of the role this process plays in the evolution of genomes; Ohno proposed that two rounds of this happened in the ancestor of vertebrates. The results of this process can undergo subfunctionalization and neofunctionalization. The Bar phenotype in flies is a result of this action. This genetic process is the cause of Charcot-Marie-Tooth disease type I a. This process creates paralogs. If the result of this process is located adjacent to its source, it is said to be tandem. When this process occurs to the entire genome, polyploidy results. For 10 points, name this process in which additional copies of genetic material are created, and which thus contrasts with deletion.
ANSWER: **duplication**

21. The speaker of one poem in this collection notes, "I wish that I might be a thinking stone," before observing, "until now I never knew that fluttering things have so distinct a shade." A poem in this collection begins with the observation that "man is the intelligence of his soil" and traces a voyage to Carolina undertaken by the poet Crispin. Another poem in this collection describes a listener who "beholds nothing that is not there, and the nothing that is." This collection includes "The Comedian as the Letter C," "The Snow Man," and a poem invoking "the roller of big cigars." For 10 points, name this poetry collection containing "The Emperor of Ice Cream," the first by Wallace Stevens.
ANSWER: *Harmonium*

22. A one-time US ambassador to this country, Arthur Bliss Lane, wrote a book titled "I Saw [this country] Betrayed." One man from this modern-day country lost most of his men at the Battle of Little Egg Harbor, was mortally wounded at the Siege of Charleston, and suggested the creation of a cavalry unit with the recommendation of Horatio Gates. Another man from this modern-day country fortified West Point, making Benedict Arnold's life difficult. This nation's involvement in the Iraq War was "forgotten" by John Kerry in the 2004 election. For 10 points, name this country whose patriots Casimir Pulaski and Thaddeus Kosciuszko fought in the Revolutionary War.
ANSWER: Republic of **Poland** [or Rzeczpospolita **Polska**]

23. The St. Petersburg magazine *Nouvellist* commissioned one piano collection with this title, which includes a popular G minor "Barcarolle." The composer of another work with this title bemoaned the "Frenchified trash" of the tone-painting required to portray the croaking of frogs. That work includes the lyrics "The huts that shelter us, The wool that covers us, The food that nourishes us, All is thy grant, thy gift," sung by Simon, Lucas, and Hanne, three peasants. These things are evoked by "the barking dog" and "the langour caused by heat" in a set of violin concertos published as part of *The Contest Between Harmony and Invention*. For 10 points, name these things depicted in an oratorio by Haydn and four concerti by Vivaldi.
ANSWER: **season**s [or *Le quattro **stagioni***; or *Die **Jahreszeiten***; or *Les **Saisons***]

1. This phenomenon occurred to the O-rings on the Challenger, causing the rubber to lose its ability to form a seal. For 10 points each:
[10] Name this transition which occurs to polymers and other amorphous materials when they are cooled quickly below the melting point, preventing crystallization. It's also called vitrification.
ANSWER: **glass** transition
[10] During the glass transition, this quantity becomes discontinuous. It is the partial derivative of enthalpy with respect to temperature and measures the energy required to increase the temperature of a material by one degree.
ANSWER: **heat capacity** [or **specific heat** capacity]
[10] The glass transition occurs due to supercooling, which occurs in the absence of sites for this process. This process is the coalescence of crystals around a "seed" in a liquid, from which the freezing or boiling process begins.
ANSWER: **nucleation**

190-13-83-16201

2. In this novel, Anne Dubreuilh, a stand-in for the author, has an affair with Lewis Brogan, who represents Nelson Algren. For 10 points each:
[10] Name this *roman à clef* about a group of French intellectuals including the editor of *L'Espoir,* Henri Perron.
ANSWER: *The **Mandarins*** [or *Les **Mandarins***]
[10] This French existentialist wrote *The Mandarins.* This writer also wrote about Francoise's strained relationship with Pierre in *She Came to Stay.*
ANSWER: Simone de **Beauvoir**
[10] In *The Mandarins,* Henri Perron represents this other existentialist. Meursault kills an Arab in his novel *The Stranger.*
ANSWER: Albert **Camus**

149-13-83-16202

3. Answer the following about the Norman conquest of England, for 10 points each.
[10] William the Conqueror's weather delays in invading England actually helped him by causing this coastal city in Sussex to be undefended when William's forces landed on September 28.
ANSWER: **Pevensey**
[10] William's won this 1066 battle depicted in the Bayeux Tapestry.
ANSWER: Battle of **Hastings**
[10] William used this tactic two times during the Battle of Hastings to draw the English out of their defensive position on Senlac Hill.
ANSWER: faking a **retreat** [accept equivalent answers such as **retreat**ing then attacking]

023-13-83-16203

4. In this novel, Sandip promotes the Swadeshi movement but is mostly concerned with his own well-being. For 10 points each:

[10] Name this novel about Bimala and Nikhil's relationship to Indian nationalism.

ANSWER: The *Home and the World* [or *Ghore Baire*]

[10] *The Home and the World* was written by this author of the poetry collection *Gitanjali*, the first non-European to win the Nobel Prize in Literature.

ANSWER: Rabindranath **Tagore**

[10] *Gitanjali* and *The Home and the World* were originally written in this Indian language, Tagore's native tongue.

ANSWER: **Bengali** [or **Bangla**]

5. According to the FBI, this man was probably killed by his right-hand man, Steve Schneider. For 10 points each:

[10] Name this cult leader who died on April 19, 1993. He believed God told him to procreate with women at the Mount Carmel Center and was accused of committing statutory rape by taking underage brides.

ANSWER: David **Koresh** [or Vernon Wayne **Howell**]

[10] The ATF and FBI raid on the Branch Davidian compound occurred during the tenure of this female Attorney General under Bill Clinton.

ANSWER: Janet Wood **Reno**

[10] While serving as a Florida prosecutor, Reno helped to convict Frank Fuster, an operator of one of these institutions. Fuster was accused of being a Satanist, much like Peggy McMartin, who also ran one of these places and was the subject of a seven year trial in the 1980s.

ANSWER: **preschool** [or **daycare** center]

6. For 10 points each, answer the following about Saul Bellow.

[10] Many of Bellow's novels, such as *The Adventures of Augie March*, paint a portrait of this American city, also immortalized in a Carl Sandburg poem.

ANSWER: **Chicago**

[10] In this Bellow novel, a Holocaust survivor's daughter steals the manuscript of the Indian rocket scientist Dr. Govinda Lal, who wishes to escape the title location and go to the moon.

ANSWER: *Mr. Sammler's Planet*

[10] Bellow fictionalized himself as Charlie Citrine in this novel, in which he deals with contradictory advice from Rinaldo Cantabile and the title character, a stand-in for Bellow's real life friend Delmore Schwartz.

ANSWER: *Humboldt's Gift*

7. This artist painted himself dramatically pulling back a curtain in *The Artist in His Museum*. For 10 points each:

[10] Name this early American artist who also founded one of the first American museums in Philadelphia. He also painted *The Exhumation of the Mastodon* and had artistic minded sons named Rembrandt and Titian.

ANSWER: Charles Wilson **Peale**

[10] Peale created sixty paintings of this man, who was also depicted crossing the Delaware River by Emanuel Leutze.

ANSWER: George **Washington**

[10] The House of Representatives is home to a Leutze mural honoring manifest destiny, whose title states that "westward" this concept takes its way.

ANSWER: the **course of empire** [or **empire**; do not accept any other answers]

8. Name these characters from the *Mabinogion*, for 10 points each.

[10] This giant goes to war with his brother-in-law King Matholwch for mistreating his sister. His head is cut off and buried in Britain to protect the isle from invasion.

ANSWER: **Bran** the Blessed [or **Bendigeidfran**]

[10] This king sends six of his knights to help his cousin Culhwch in the quest to marry Olwen. In another myth system, he is the son of Uther Pendragon.

ANSWER: King **Arthur**

[10] In the last branch of the *Mabinogion*, this king turns his nephews into oppositely-gendered stags, pigs, and wolves and makes them have sex. At all times except wartime, he had to have his feet in the lap of a virgin.

ANSWER: **Math** fab Mathonwy [or **Math** the son of Mathonwy]

9. This process results in the observed movement of the deep scattering layer. For 10 points each:

[10] Identify this movement of organisms that usually involves ascent to food-filled shallow water at night and descent to food-depleted depths during the day

ANSWER: **diel vertical migration** [or **diurnal vertical migration**; or **DVM**]

[10] These tiny crustaceans in the order Euphausiacea undergo diel vertical migration. They are a major source of food for whales and other organisms in the Southern Ocean.

ANSWER: **krill**

[10] These tiny crustaceans also undergo diel vertical migration. These crustaceans are the most abundant zooplankton and form the largest biomass on Earth.

ANSWER: **copepod**s [or **Copepoda**]

10. One person who was discussing legislation addressing this event labeled Darell Issa "one thousand percent wrong" and promised to "hold all my votes in abeyance." For 10 points each:
[10] Name this event which displaced thousands of New York and New Jersey residents in October 2012 after causing flooding across the Northeast.
ANSWER: Hurricane **Sandy**
[10] This Congressman from New York threatened to leave the Republican Party over opposition to Sandy relief funding. He has been chided for his stance on Islamic terrorism following his vocal support for the IRA in the 1980s.
ANSWER: Peter **King**
[10] The only part of the bill to be funded by offsets was three billion dollars designated for this Defense Department agency, which itself was criticized in 2005 for its faulty designs of New Orleans-area levees.
ANSWER: United States **Army Corps of Engineers** [or US**ACE**]

11. This work quotes the "Grossvater Tanz" to represent the Philistines in its final movement. For 10 points each:
[10] Name this collection of 22 short pieces, subtitled "Little Scenes on Four Notes," which make up the A-S-C-H cryptogram. It depicts masked people celebrating the title festival.
ANSWER: *Carnaval, Op. 9*
[10] *Carnaval* was composed by this German composer of the *Spring* and *Rhenish* symphonies, who married Clara Wieck.
ANSWER: Robert Alexander **Schumann**
[10] The 18th movement of *Carnaval* is a D-flat piece with this title. In another work, this is the name of several pieces that alternate between 5/4 and 6/4 time, found between movements like "Two Jews: Rich and Poor" and "The Market at Limoges."
ANSWER: **promenade**s

12. These works were defended in the manifesto "Together Facing the New Totalitarianism." For 10 points each:
[10] Identify these works published in the Danish newspaper *Jyllands-Posten* in 2005. One of them featured a man wearing a turban with a bomb in it.
ANSWER: **cartoons of Muhammad** [accept equivalent answers]
[10] Jose Manuel Barroso, the president of the executive body of this organization, supported freedom of the press in the Muhammad cartoon case. This organization of 27 member states was formally established by the 1993 Maastricht Treaty.
ANSWER: **European Union** [or **EU**; or **European Commission**]
[10] This Dutch filmmaker made the film *Submission*, which criticized the treatment of women in Islam. In 2004, he was murdered by a Muslim extremist.
ANSWER: Theodoor **van Gogh**

13. A character in this novel gets back from a ball at two in the morning and is only let into his home because the servant was just then locking the door. For 10 points each:
[10] Name this novel in which the social climber Eugene de Rastignac courts Delphine, one of the two ungrateful daughters of the title vermicelli-maker.
ANSWER: Le *Pere Goriot* [or *Father Goriot*; or *Old Goriot*]
[10] *Le Pere Goriot* is part of *The Human Comedy,* a massive series of novels written by this French author.
ANSWER: Honore de **Balzac**
[10] In *Le Pere Goriot,* this criminal entices Rastignac with the possibility of marrying the single woman Victorine by having her overprotective brother killed in a duel.
ANSWER: **Vautrin** [or **Jacques** Collin; or Jacques **Collin**; or Abbe **Carlos** Herrera; or Abbe Carlos **Herrera**; or **Trompe-la-Mort**; or the **Dodger of Death**]

14. If a system has a cycle of this period, then by Sarkovskii's Theorem it has cycles of all periods. For 10 points each:
[10] Identify this number that also names a case of the n-body problem to which Lagrangian points are solutions of a restricted circular form.
ANSWER: **three**
[10] This man's work on the three body problem lead to the start of chaos theory. He also names a map formed by taking the points where a system's trajectory repeatedly crosses a hyperplane in phase space.
ANSWER: Jules Henri **Poincaré**
[10] This man names an integral whose value is conserved for orbits in the circular three body problem. He also co-names an equation which states that the partial derivative of the action with time plus the Hamiltonian written in terms of the action's derivatives equals zero.
ANSWER: Carl Gustav Jacob **Jacobi**

15. James Yorke Scarlett was heavily decorated for his efforts at this battle. For 10 points each:
[10] Name this battle in which the Scottish 93rd Highland Regiment was called a "thin red line tipped with steel." An ill-fated attack based on Lord Raglan's misinterpreted order also occurred in this battle.
ANSWER: Battle of **Balaclava**
[10] Balaclava was a battle in what war fought between Russia and a European alliance over Ottoman territory?
ANSWER: **Crimean** War
[10] One of the first ever war correspondents, William Howard Russell, covered the Crimean War for this English newspaper, formerly *The Daily Universal Register*. It later employed double agent Kim Philby as a correspondent.
ANSWER: The *Times*

16. The sestet of this sonnet laments that "crass Casualty obstructs the sun and rain, and dicing Time for gladness casts a moan." For 10 points each:
[10] Name this sonnet, whose speaker hopes that "some vengeful god would call to me" and laugh, "Thou suffering thing, know that thy sorrow is my ecstasy, that thy love's loss is my hate's profiting!"
ANSWER: "**Hap**"
[10] "Hap" was written by this poet, who wrote the novels *Far From the Madding Crowd* and *The Mayor of Casterbridge*.
ANSWER: Thomas **Hardy**
[10] In this Hardy poem about the close of the 19th-century, when "every spirit upon earth seemed fervourless as I," he concludes that the title bird sings of "some blessed hope, whereof he knew and I was unaware."
ANSWER: "The **Darkling Thrush**"

17. Zuma Rock is known as the "Gateway to" this city, which lies inside the Federal Capital Territory. For 10 points each:
[10] Name this planned city that became its nation's capital in 1991.
ANSWER: **Abuja**
[10] Abuja is the capital of this West African country, having replaced its former capital in the southwest, Lagos.
ANSWER: Federal Republic of **Nigeria**
[10] Moving the capital occurred in part because Lagos is in the Yoruba-dominated portion of Nigeria, which was seen as unfair by Igbos in the east and members of this predominantly Muslim ethnic group mostly living in Nigeria's north.
ANSWER: **Hausa**-Fulani [or **Fulani**]

18. Answer the following about slimy things that crawl upon the slimy sea but might or might not have legs, for 10 points each.
[10] Aplysia californica, a favorite of neurobiologists, is a member of this phylum. This phylum also includes bivalves and snails.
ANSWER: **Mollusc**a [or **mollusc**s]
[10] The Hawaiian Bobtail type of this mollusc likes to hide in sand during the day. At night the bobtail emerges filled with glowing *Vibrio Fischeri* which prevents this creature from casting a moon shadow. Some of these creatures have giant axons.
ANSWER: **squid** [or **Teuthida**]
[10] The slime of hagfish consists of mucins and thread like proteins similar to these proteins of which the alpha form have 3.5 residues per turn. Disruption of these proteins in humans is responsible for EBS and white sponge nevus.
ANSWER: **keratin**s [prompt on **intermediate filament**s]

19. This man was responsible for a referendum that removed Bao Dai from power and placed himself as president of a new republic. For 10 points each:

[10] Name this world leader killed in a November 1963 coup by Duong Van Minh. His biased Catholic policies were protested by a Buddhist monk who set himself on fire in 1963.

ANSWER: Ngo Dinh **Diem** [or **Ngo** Dinh Diem]

[10] Diem was the first president of what country that fought its northern neighbor, a Communist country founded by Ho Chi Minh?

ANSWER: **South Vietnam** [or **Republic of Vietnam**; prompt on **Vietnam**; do not accept "Democratic Republic of Vietnam"]

[10] This man supported Van Minh's coup and shortly afterwards overthrew Minh himself. He was president of Vietnam during the Gulf of Tonkin incident. He eventually angered American ambassador Maxwell Taylor and was himself overthrown in 1965.

ANSWER: Nguyen **Khahn**

20. Karl Marx originated this sociological field. For 10 points each:

[10] Name this field of sociology which examines coercion in maintaining social order. According to it, social inequalities result from the ruling powers holding on to their advantages.

ANSWER: social **conflict theory**

[10] Conflict theorists want to change the status quo, unlike proponents of this other sociological approach, such as Parsons and Merton, who see society as a complex machine made up of many parts.

ANSWER: structural **functionalism** [or word forms]

[10] Herbert Spencer, a proto-structural functionalist, is best known for this four-word phrase summing up natural selection. This phrase's intent has been twisted by Social Darwinists.

ANSWER: **survival of the fittest**

21. These numbers can be generated via the Mersenne twister or Blum Blum Shub methods. For 10 points each:

[10] Name these numbers whose sequence has no identifiable patterns.

ANSWER: pseudo-**random** numbers

[10] Evaluating a function at many randomly chosen inputs and then dividing the sum by the number of points provides an integral using this method, which was first proposed by Stanislaw Ulam and Nicholas Metropolis.

ANSWER: **Monte Carlo** integration [or **Monte Carlo** method; or **Monte Carlo** technique]

[10] In physics, Monte Carlo event simulations are often decayed using these memoryless constructs, which represent variables which can each randomly evolve with some probability at any time.

ANSWER: **Markov chain**s