

1. While discussing taking these objects, two men say they are "not actually talking about it" but "speaking about it as an idea." These objects are eventually delivered to the offstage Jerry Graff by thieves. The theft of these objects, which is committed to get back at "Murray and Mitch," is investigated by Detective Baylen and results in James Lingk canceling a contract. In a Chinese restaurant, John Williamson offers to sell these things. At the end of a play, it is revealed that Dave Moss and Shelley "The Machine" Levene conspired to break into the office and steal these objects, which will result in their firing and more business for Ricky Roma. For 10 points, name these important lists of contact information in a play by David Mamet.

ANSWER: the Glengarry leads

2. One character from this country can never remember the name of the fourth greatest poet of all time and works for the husband of Pinky Madam before beating him to death. A novel set in this country opens with a retired judge playing chess with himself. In one story, a character from this country realizes that he has never seen his wife fully naked while looking at a mural of entwined nude bodies. The authors of *The White Tiger* and *Inheritance of Loss* are from this country, and a story set here ends with a tour guide saving Bobby from monkeys. Another character survives a train-wreck in this country and names his son "Gogol." For 10 points, name this country whose emigrants appear in *The Namesake* by Jhumpa Lahiri.

ANSWER: India

3. This man related how a king ordered that a sheep be sacrificed in place of an ox for the consecration of a bell. This man's mother, a prominent role model, once responded to his truancy by cutting a cloth she had been weaving. This man used the example of compassion, shame, reverence, and moral value felt toward a child falling down a well to illustrate the Four Beginnings. The last of the Four Books is a collection of conversations with this man, an extreme optimist with respect to human nature, who studied under Zi Si. This scholar of the fourth century BCE was often called the "Second Sage." For 10 points, name this second greatest Confucian after Confucius himself.

ANSWER: Mencius [or Meng Zi]

4. While this leader was in power, members of the Lango and Acholi ethnicities were massacred in the Jinja and Mbarara Barracks. This man lost power following an attempt to annex a neighboring country's Kagera region. He took power while his predecessor was at a Commonwealth conference in Singapore. This leader, who was finally ousted by an invasion organized by Julius Nyerere, deposed Milton Obote in a coup and expelled all of the Asians in his country. This member of the Kakwa ethnic group caused Operation Thunderbolt to occur after he allowed a hijacked Air France flight to land at Entebbe airport. For 10 points, name this brutal dictator of Uganda during the 1970s.

ANSWER: Idi Amin

5. The Dawson integral is used in this function's imaginary counterpart. The n th Hermite polynomial is proportional to the $n+1$ derivative of this function. The Q-function is equivalent to one-half minus one-half this function, evaluated at x over the square root of 2. This function appears in the solution to partial differential equations like Fick's Second Law. This function of x arises from the integral of the exponential of negative x squared, an integral which has no elementary analytical solution. It equals zero at zero, one at infinity, and in general, equals twice the cumulative normal distribution function, shifted down one-half. For 10 points, name this sigmoidal function which shares its name with "type I" and "type II" methods of making mistakes in statistical testing.

ANSWER: error function [or erf]

6. Angels participate in this war in Natalia Goncharova's lithograph series *The Mystical Images of War*. Soldiers from this war ride a merry-go-round in a painting by Mark Gertler. The Vorticist movement broke up partly as a result of this war. By putting a banner with the word "censored" over a piece, Christopher Nevins publicized his sardonic painting of this war titled *Paths of Glory*. The etching series *Der Krieg* depicts Otto Dix's experiences fighting in this war. A line of wounded soldiers walk toward a dressing station in a painting of this war by John Singer Sargent. Despair over this war prompted the foundation of Dadaism. For 10 points, name this war that is the subject of Sargent's *Gassed* and Dix's *The Trench*.

ANSWER: World War I [or First World War; or Great War; prompt on World War]

7. It's not molecular weight, but for a colloid solution, the distribution of this property is commonly assayed using dynamic light scattering. It's not the activity coefficient, but in the Debye-Huckel equation, the variable "a" encodes this quantity, and this parameter notably does not appear in the Davies equation. A method of chromatography that is used to separate molecules by this property commonly uses a Sephacryl resin and is either referred to as gel-permeation chromatography or named for the exclusion of this property. For an ideal gas, this quantity is usually assumed to be significantly smaller than the distance between the molecules or the space occupied by the container. For 10 points, name this quantity which is accounted for by the "b" term of the van Der Waals equation, which is how much space a molecule takes up.

ANSWER: molecular size [or molecular radius; or molecular diameter; or molecular volume; accept any answer which talks about how big a molecule is or how much space it takes up until it is read; or particle in place of molecular]

8. Serkan Ozkaya used gold-painted foam to reproduce this sculpture for the Istanbul Biennial, but it soon collapsed. The creator of this sculpture responded to a request for an alteration by climbing a ladder and then pretending to chisel as he threw dust around. The eyes of this sculpture initially faced towards Rome, until it was moved to the Galleria dell'Accademia and replaced with a replica at its original site in a public square outside the Palazzo della Signoria. Contrary to Biblical tradition, its subject is uncircumcised, and he carries a slingshot over his left shoulder. For 10 points, name this seventeen-foot-tall sculpture created from a single block of leftover marble by Michelangelo, and which depicts the slayer of Goliath.

ANSWER: David

9. A baculoviral family of proteins that inhibits this process contains BIR domains. During this process, scramblases move phosphatidylserine to the outer leaflet of the plasma membrane. One method of activating this process relies on signal transduction through a FADD domain. In follicular lymphoma, an 8 to 14 translocation upregulates a protein that inhibits this process, called Bcl-2. This process can be triggered by the binding of the Fas ligand or by release of cytochrome C from the mitochondria. This process is carried out by cysteine proteases called caspases, and it results in blebbing of the plasma membrane and laddering of DNA. For 10 points, name this process of neat, ordered cell death.

ANSWER: apoptosis

10. This city is home to the fish-feeding exhibit at Aquascene as well as the historic Deckchair Cinema. This city's namesake 1918 rebellion was led by Harold Nelson, who burnt an effigy of John Gilruth. In 1974, Cyclone Tracy completely destroyed this city. This home to many saltwater crocodiles is the largest city in the "Top End." In February 1942, this city on the Timor Sea was destroyed by a Japanese bombing raid. It was named by John Clements Wickham in 1839 when the *HMS Beagle* sailed into this city's harbor. For 10 points, name this capital of Australia's Northern Territory, named for an English scientist who formulated natural selection.

ANSWER: Darwin, Northern Territory

11. Scattering of this type is described by the Mie scattering approach. In plasmas, the Coulomb collisions are this type of interaction. The Compton shift in a photon's wavelength occurs because, unlike low-energy Thomson scattering, Compton scattering is not this type of interaction. Mass is always conserved in particles undergoing this type of interaction. The ideal gas law assumes gas particles undergo only this type of interaction, which van der Waals equation modifies by allowing for particle attraction or repulsion. In this interaction, the total kinetic energy remains unchanged. For 10 points, name this interaction between two bodies exemplified by two balls bouncing off each other.

ANSWER: binary elastic collision [or elastic scattering]

12. The Treaty of Tordesillas was amended by this pope to make Portugal's claim of Brazil official. Alexander Jagellion, the king of Poland, fought the Teutonic Knights with the financial backing of this pope. This pope allowed a marriage on the grounds of non-consummation between Catherine of Aragon and Henry VIII. This pope allied with Venice after an alliance he created to fight against Venice broke up, the League of Cambrai. Although it does not contain his remains, this pope's tomb is adorned by a horned statue of Moses, which was allegedly commanded to speak by its sculptor. For 10 points, name this "Warrior Pope" who commissioned Michelangelo's painting of the ceiling of the Sistine Chapel.

ANSWER: Pope Julius II [or Giuliano della Rovere]

13. Female members of this family married Chief Justice Roger Taney and Senator George Pendleton. A member of this family prosecuted Benjamin Lundy for saying D.C. lacked “mercy” for black people, and also prosecuted Richard Lawrence for trying to kill Andrew Jackson. Another member of this family was killed by Daniel Sickles, who successfully first used the temporary insanity defense in his trial. The most famous member of this family wrote a text that matched the rhythm of the song “To Anacreon in Heaven.” That member of this family was negotiating prisoner release when he was detained on a British ship and forced to watch the shelling of Fort McHenry. For 10 points, name this family, whose members include the author of “The Star-Spangled Banner,” Francis Scott.

ANSWER: **Key**

14. An institution in this city was directed by the author of a book which demanded that unemployment be reduced to three percent, titled *Full Employment in a Free Society*. 10 basis points is the average amount of the spread between a metric named for this city and the overnight indexed swap. “Members” and “Names” congregate at an establishment in this city which has famously insured Whitney Houston’s vocal chords; that insurance market is called Lloyd’s. The Webbs, George Bernard Shaw, and other members of the Fabian Society established this city’s School of Economics. In 2012, evidence broke out of massive collusion over an interest rate named for this city. For 10 points, name this city whose Interbank Offered Rate is abbreviated LIBOR.

ANSWER: **London**

15. A king who was transformed into one of these animals with his seven sons is defeated with the help of Mabon. One of these animals has between his ears some scissors, a comb, and a razor that are needed to shave the giant Ysbaddaden. In Hindu myth, one of these animals dives to the bottom of the ocean to rescue Bhudevi, an earth goddess, from the demon Hiranyaksha. Half of the Welsh tale *Culhwch and Olwen* concerns one of these animals called Twrch Trwyth. Vishnu takes the form of one of these animals as Varaha. When Artemis sends one of these animals to punish King Oeneus for neglecting her in sacrifices, Peleus and other heroes show up to kill it. For 10 points, name the type of animal slain by Meleager during a hunt in Calydon.

ANSWER: a **boar**

16. In this novel, three coin tosses convince the protagonist to go visit his love interest, but he accidentally breaks a parasol handle when he finds her art dealer husband home. At a party in this novel, “The Sphinx” coughs up blood, and guests break pieces of china to honor a man who has moved into the porcelain business. Rosanette and Madame Dambreuse both have unhappy affairs with the protagonist of this novel. The protagonist of this novel sees Louis Philippe’s throne tossed out the window during the 1848 revolution. In this novel, Charles Deslauriers advises a young man on how to get close to Madame Arnoux. For 10 points, name this novel by Gustave Flaubert about Frederic Moreau’s personal growth.

ANSWER: **Sentimental Education** [or *L’Education Sentimentale*]

17. Alphonse Hasselmann may have finished a piece for this solo instrument dedicated to him, a D flat major impromptu by Gabriel Faure. The ergonomics of playing this instrument are addressed in the Salzedo method. Two of them lead the waltz in the movement "Un bal" from *Symphonie fantastique*. This is the nickname of Beethoven's E-flat major tenth string quartet. Mozart's only piece for this instrument is a double concerto pairing it with the flute. A violin solo accompanied by this instrument represents Scheherazade's theme in the piece by Rimsky-Korsakov. A glissando played by this instrument contributes to the dreaminess of Debussy's *Prelude to the Afternoon of a Faun*. For 10 points, name these tall instruments with forty-seven strings.

ANSWER: **harp**

18. A member of this family briefly owned the Manchester City football club, whose fans nicknamed him "Frank." Prior to entering politics, a business tycoon from this family founded Advanced Info Service, his country's most successful phone operator. In 2014, the Constitutional Court forced a member of this family to step down as prime minister. In 2006, an earlier prime minister with this surname dissolved parliament, won a widely-boycotted election, and was toppled by a military junta. That man from this family restricted press freedom after suffering an excoriation at the hands of Ajahn Bua, a Buddhist monk. For 10 points, give this common surname of embattled brother and sister Yingluck and Thaksin, each of whom led Thailand.

ANSWER: **Shinawatra**

19. The novel *Eldorado* begins with its protagonist reluctantly joining the plot to free this person. This person was placed under the jurisdiction of the cobbler Antoine Simon. This person's literal heart was stolen from a jar by one of the students of physician Philippe-Jean Pelletan, and subject to DNA testing comparing him to samples of the annoying German watchmaker Karl Naundorff. Despite the certainty that he died of scrofula in imprisonment, many people believed that there was a corpse buried in his place and that this "Lost Dauphin" was still out there somewhere. For 10 points, name this kid whose memory was honored by the skipping of a number by the next Bourbon French monarch.

ANSWER: **Louis XVII** [or **Louis-Charles**, Duke of Normandy; or **Louis-Charles**, Dauphin of France; or **Louis-Charles**, Prince Royal of France; or the **Lost Dauphin**; or the **Lost French King** or answers along those lines]

20. In this novel, a woman discovers her husband's former lover by opening a coffin with a screwdriver and finding hair the same color as the one in his watch. This novel's female lead takes Liddy's advice and impulsively stamps a valentine reading, "Roses are red, violets are blue" with the phrase "Marry me." That woman in this novel, the mistress of Weatherbury Farm, hires a shepherd who gave up farming after his dog chased his two hundred sheep off the edge of a chalk-pit. In this novel, after Boldwood goes to prison for shooting Sergeant Troy, Gabriel Oak is free to marry Bathsheba Everdene. For 10 points, name this Thomas Hardy novel with a pastoral setting.

ANSWER: **Far from the Madding Crowd**

21. In this novel, an old woman bangs her head against the ground in front of a crucifix. This novel ends with the protagonist fantasizing about shooting a naked king while riding through a crowd in a coach. In this novel, a pince-nez-wearing magistrate who reads Spinoza is hung by a belt in jail. The main character of this novel saves a drunken man whom he finds lying face down in the snow and almost has sex with that man's daughter, Zeneida. Shortly after the protagonist chases some boys out of a brickyard, a body with thirty-seven wounds is discovered in a nearby cave. For 10 points, name this novel in which the Jewish handyman Yakov Bok is imprisoned for ritual murder, a work of Bernard Malamud.

ANSWER: *The Fixer*

22. This leader initiated a Literacy Corps that allowed those drafted into military service to perform their service tutoring in villages. He ordered the arrest of his intelligence chief Nematollah Nassiri, and his wife Farah Diba accumulated the most valuable collection of modern art outside of the United States. This man assumed his highest post after Soviet Union and Great Britain replaced his father during World War II, and his secret police force was known as the Savak. This man reversed Mohammad Mosaddeq's nationalization of British petroleum interests and initiated the westernizing White Revolution. For 10 points, name this leader who was overthrown in the Islamic Revolution and replaced with the Ayatollah Khoemeni as the leader of Iran.

ANSWER: Mohammad Reza Shah Pahlavi [accept either underlined; prompt on "Shah of Iran"]

23. The best known algorithm for minimizing these things uses partition refinement and is named for John Hopcroft. Two types of these things, which are differentiated on the basis of whether an output is a function of the input, are named for Mealy and Moore. Lexical analyzer generators work by converting a regular expression into one of these things. Using the powerset construction, one can convert them from a nondeterministic form to a deterministic form. Simple examples of these things can have their structure defined by transition diagrams or transition tables. The set of strings that allow these things to progress from a starting state to the accepting state is the language they accept. For 10 points, name these computational models without an infinite number of states.

ANSWER: finite state machines [or finite state automata; or FSM; or FSA; or deterministic finite automata; or DFA; or nondeterministic finite automata; or NFA]

1. Name some important popes, for 10 points each.

[10] This first Pope was one of the Twelve Apostles. He also names a Basilica in the Vatican.

ANSWER: Saint **Peter** [or **Simon** Peter; or **Simeon**]

[10] This longest-reigning elected Pope, who served during the nineteenth century, instituted Papal infallibility during the First Vatican Council.

ANSWER: **Pius IX** [or Giovanni Maria **Mastai-Ferretti**; prompt on **Pius**]

[10] This Pope issued the bull *Unam Sanctam* in 1302, which was one of the most extreme declarations of the supremacy of the Pope. He was also placed in the eighth circle of Hell by Dante.

ANSWER: **Boniface VIII** [or Benedict **Caetani**; prompt on **Boniface**]

2. The Frank-Caro process reacted this element's diatomic gas with calcium carbide. For 10 points each,

[10] Identify this element frequently added through a Schlenk line for inert environments.

ANSWER: **nitrogen** gas [or **N₂**]

[10] The Frank-Caro process was an early method for nitrogen fixation, but was later replaced by this method, which directly added nitrogen gas to hydrogen gas in the presence of an iron catalyst.

ANSWER: **Haber**-Bosch process

[10] Originally, Haber used this element as a catalyst, but eventually substituted a much cheaper iron catalyst. Its tetroxide is an extremely strong oxidizing agent.

ANSWER: **osmium**

3. A multilayered example of this style is Jean-Etienne Liotard's *Still Life: Tea Set*. For 10 points each:

[10] Name this fad in European art that involved designing or painting porcelain in an attempt to imitate the art of a certain country.

ANSWER: **chinoiserie**

[10] Chinoiserie was especially popular in French art during this early eighteenth-century movement exemplified by the ornate and fanciful style used by Jean-Honore Fragonard.

ANSWER: **Rococo**

[10] This painter dabbled in the style in his *The Chinese Garden*, but is better known for the series of portraits he painted of his patroness Madame de Pompadour.

ANSWER: Francois **Boucher**

4. One of her novels climaxes with a masquerade at which the hunchbacked dwarf Herr Glocken wears a tie painted with the words "Girls, follow me!" For ten points each:

[10] Name this author of an allegory of fascism, *Ship of Fools*, and of several stories about Miranda such as *Pale Horse*, *Pale Rider*.

ANSWER: Katherine Anne **Porter**

[10] This story by Porter ends "she stretched herself with a deep breath and blew out the light" and follows the dying thoughts of the title old woman.

ANSWER: "The **Jilting of Granny Weatherall**"

[10] Porter wrote about explaining this holiday to her niece in one essay. Clement Clarke Moore wrote a poem set on the eve of this holiday.

ANSWER: **Christmas**

5. Credited with founding the Lausanne School of Economics, this man lends his name to an auction where the auctioneer yells out a price and then buyers and sellers agree on what quantities they want to buy or sell. For 10 points each:

[10] Identify this nineteenth-century French economist, the author of *Elements of Pure Economics*.

ANSWER: Marie-Esprit-Leon **Walras**

[10] This Italian economist succeeded Leon Walras as Chair of Political Economy at the Lausanne School. His namesake efficiency describes a condition when no one can be made better off without someone being made worse off.

ANSWER: Vilfredo **Pareto**

[10] This English economist developed his marginal utility independently of Carl Menger and Leon Walras, and preceded fellow English foundational figure Alfred Marshall. This author of 1871's *The Theory of Political Economy* incorrectly predicted coal prices would rise in *The Coal Question*.

ANSWER: William Stanley **Jevons**

6. This book's protagonist plays ragtime at the behest of a "rich white gentleman" who, like his childhood friends "Red" and "Shiny," is never called by name. For 10 points each:

[10] Name this narrative which also includes an argument about race between "the old soldier" and "the Texan." Its narrator wonders if he "traded [his] birthright for a mess of pottage" by passing.

ANSWER: **Autobiography of an Ex-Colored Man**

[10] This author of *God's Trombones* and lyricist of "Lift Every Voice and Sing," a song so popular it became known as the "Negro national anthem," wrote *Autobiography of an Ex-Colored Man*.

ANSWER: James Weldon **Johnson**

[10] This later black novelist described Bigger Thomas's murder of a white woman in *Native Son*.

ANSWER: Richard **Wright**

7. Members of this group include possible murder victim Jesse Smith, who was inexplicably nicknamed "Jess." For 10 points each:

[10] Name this disreputable bunch who hung out at The Little Green House on K Street, and counted Harry Daugherty and Albert Fall among its members.

ANSWER: **Ohio Gang**

[10] Daugherty and Fall were implicated in this bribery scandal involving Navy petroleum reserves during the Harding presidency.

ANSWER: **Teapot Dome** scandal

[10] This alumnus of the Ohio Gang and campaign manager for Harding in the 1920 election became the first president of the predecessor to the MPAA, in which role he approved a moralistic code governing films.

ANSWER: William Harrison **Hays**, Sr.

8. Answer some questions about the Birch and Swinnerton-Dyer conjecture, for 10 points each.

[10] The conjecture concerns these objects over number fields. These objects have an equation of the form $y^2 = x^3 + ax + b$ and were used by Andrew Wiles to prove Fermat's last theorem.

ANSWER: **elliptic** curve [or **EC**]

[10] The conjecture is defined in terms of a function named for Hasse and Weil designated by this letter. A function designated by this letter and named for Dirichlet is a sum over Dirichlet characters and the reciprocal of n to a particular exponent.

ANSWER: **L**

[10] The BSD conjecture also makes a prediction about the first coefficient of this series for the L-function. This kind of series has coefficients containing to the n th derivative at the given point, and Colin MacLaurin names those that are centered at zero.

ANSWER: **Taylor** series

9. After being sold by his jealous brothers, this man became a high official in the pharaoh's court. For 10 points each:

[10] Name this most beloved son of Jacob, who was bestowed the coat of many colors.

ANSWER: **Joseph**

[10] This mother of Joseph was the daughter of Laban. Jacob married this woman's sister Leah after working for seven years for Laban and won this woman's hand after working seven more years.

ANSWER: **Rachel**

[10] Abraham bought the Cave of Machpelah, which is located in this West Bank city. Tradition holds that Jacob and Leah are buried in that cave in this city, and David was anointed the king of Israel here.

ANSWER: **Hebron**

10. This structure consists of a phospholipid bilayer whose polarity is maintained by flippases and scramblases. For 10 points each:

[10] Name this cell component, the subject of the fluid mosaic model. Microdomains within this structure are called rafts.

ANSWER: cell **membrane** [or plasma **membrane**]

[10] Lipid rafts are partly held together by this molecule. This molecule is a steroid whose insertion into the membrane is used to regulate fluidity.

ANSWER: **cholesterol**

[10] The outer membrane of gram-negative bacteria contains this endotoxin, which has both sugar and lipid components. Its outer core is bonded to the O antigen while its inner core is bound to lipid A.

ANSWER: **LPS** [or **lipopolysaccharide**]

11. This movement began with a speech called "On the Correct Handling of the Contradictions Among the People." For 10 points each:

[10] Name this 1956 movement in which citizens were briefly encouraged to express their true opinions about the Chinese government. It didn't last long.

ANSWER: **Hundred Flowers** Campaign

[10] The aforementioned speech was given by this man, the Chairman of the Communist Party and center of a cult of personality during his rule of China.

ANSWER: **Mao** Zedong

[10] These late 1950's campaigns followed Hundred Flowers and sought to purge the nebulously defined title group. After the Lushan Conference in 1959, these campaigns intensified.

ANSWER: **Anti-Rightist** Movement

12. In this play, a man begins to panic when people start buying white chocolate and white bread on credit at his store. For ten points each:

[10] Identify this play in which Claire Zachanassian promises to give a billion marks to her hometown if her former lover, Alfred Ill, is murdered.

ANSWER: *The **Visit***

[10] This Swiss playwright of *The Marriage of Mr. Mississippi* and *The Physicists* also wrote *The Visit*.

ANSWER: Friedrich **Dürrenmatt**

[10] Dürrenmatt's *The Physicists* is set in one of these places. Chief Bromden escapes one of these places after smothering Randle McMurphy in Ken Kesey's *One Flew Over the Cuckoo's Nest*.

ANSWER: insane **asylums** [or obvious equivalents]

13. Francis Hutcheson's work in this field inspired a response from the pseudonymous "Philaretus," while Benedetto Croce separated it from logic in his conception of mental activity. For 10 points each:

[10] Name this branch of philosophy which discusses the nature of art and beauty.

ANSWER: **aesthetics**

[10] This philosopher stated that an aesthetic experience occurs when the subject achieves a will-less perception of the world and called art the "pure subject of cognition." That work by this philosopher contains an appendix critical of Kant.

ANSWER: Arthur **Schopenhaur**

[10] This other philosopher and member of the Frankfurt school critiqued Marxist aesthetics in his *The Aesthetic Dimension* but is better known for outlining how capitalist societies reify the repression of our instincts in *Eros and Civilization*.

ANSWER: Herbert **Marcuse**

14. Name some tributaries of the Mississippi River, for 10 points each.

[10] This longest river in North America rises in the Rocky Mountains before flowing into St. Louis.

ANSWER: **Missouri** River

[10] This tributary of the Missouri River is a major river of Nebraska and helped form many trails during westward expansion. It is sometimes known as "The Shallow River," as it is too shallow and muddy to be navigable.

ANSWER: **Platte** River

[10] This tributary joins the Mississippi just north of Vicksburg in the state of Mississippi. Lands along it were fraudulently sold in a major scandal of early American history.

ANSWER: **Yazoo** River

15. Name the following beings encountered by Samuel Taylor Coleridge's *Ancient Mariner*, for 10 points each.

[10] This creature is shot by the mariner with a crossbow, and hangs around his neck as his misfortunes and eerie encounters pile up.

ANSWER: an **albatross**

[10] The mariner watches this womanly figure gloats after winning a dice game against the haggard male figure of Death.

ANSWER: the Nightmare **Life-in-Death**

[10] The albatross falls off the mariner's neck after he blesses these two creatures "unawares" at the end of Part IV. These creatures "moved in tracks of shining white" and had "rich attire" of "blue, glossy green, and velvet black."

ANSWER: **water-snakes**

16. Answer these questions about the early history of Ireland, for 10 points each.

[10] Members of this profession produced writings such as the *Book of Kells* and the *Voyage of Saint Brendan* after Saint Patrick's missionary work inspired them to secluded life.

ANSWER: **monks**

[10] The papal bull *Laudabiliter* allowed this Plantagenet king to invade Ireland. In England, he issued the Constitutions of Clarendon after his accession ended the Anarchy.

ANSWER: **Henry II** Curtmantle

[10] This man, the first High King of Ireland, supplanted the O'Neills and squared off against the Vikings at Clontarf early in the second millennium CE.

ANSWER: **Brian Boruma** mac Cennétig [or **Brian Bóroimhe**]

17. The Abraham-Lorentz force can be derived via the integration of this formula. For 10 points each:

[10] Name this non-relativistic formula for the power radiated by an accelerating point charge.

ANSWER: **Larmor** formula

[10] This constant is raised to the third power in denominator of the Larmor formula. Its division by phase velocity gives the refractive index.

ANSWER: **speed of light** [or **c**]

[10] A relativistic form of the Larmor formula was derived by this physicist, who developed a retarded potential for a moving point charge with Emil Wiechert.

ANSWER: Alfred-Marie **Liénard**

18. This symphony, the second and last of the composer's to use a minor key, begins the fourth movement with a Mannheim Rocket. For 10 points each:

[10] Name this symphony in G minor that opens only with the lower strings, with the melody of E flat D, D, E flat D, D from the first violins coming nearly a measure later.

ANSWER: Symphony No. **40** in G minor [do not read full answerline if not answered correctly; accept Great G Minor Symphony; or K.550]

[10] This Austrian composer wrote forty-one symphonies, including ones nicknamed "Haffner" and "Paris." Another Mannheim Rocket appears in his chamber piece *Eine Kleine Nachtmusik*.

ANSWER: Wolfgang Amadeus **Mozart**

[10] Mozart's *Prague*, *Linz*, and thirty-ninth symphonies are the only three of his forty-one to have this musical feature, though he also incorporated it into a symphony by Michael Haydn. Eleven of the twelve London symphonies by Joseph Haydn have this feature.

ANSWER: **slow introduction** [or equivalent answers indicating a **slow beginning** or **slow start**]

19. In some iterations, this figure is assisted by Brontes, Steropes, and Pyracmon, and he is responsible for the creation of the Aegis shield and Aphrodite's girdle. For 10 points each:

[10] Name this blacksmith of the gods who once caught his wife Aphrodite in bed with Ares using a very fine gossamer net.

ANSWER: **Hephaestus**

[10] Hephaestus' workshop was supposedly located on this island, where his cult was centered. According to the Iliad, he was flung onto this island by Zeus.

ANSWER: **Lemnos**

[10] In another tradition, Hephaestus was raised by Thetis and this oceanid, who was also the mother of the Graces. She shares her name with a titan queen who, with her husband Ophion, was overthrown by Cronus.

ANSWER: **Eurynome**

20. One of these structures located in the city of Segovia contains niches displaying the Virgin of Fuencisca. For 10 points each:

[10] Identify these marvels of Roman engineering, such as the Anio Novus in Rome and the Pont du Gard in Nimes. Frontinus also called these water-transporting objects more useful than the "idle Pyramids" or anything the Greeks made.

ANSWER: Roman **aqueducts**

[10] The eleven aqueducts that went into Rome were eventually fed into this gigantic sewer underneath the city.

ANSWER: **Cloaca Maxima** [or **Maxima Cloaca**]

[10] These apartment buildings in ancient Rome, which had running water and sanitation, primarily housed the plebs. More elite families lived in domus instead of these buildings, whose Latin name literally means "island."

ANSWER: **insulae**

21. This person discovered a moth in the Mark II computer system, coining the term "computer bug". For 10 points each:

[10] Name this US Navy Rear Admiral whose work on programming languages led to the creation of the common business oriented language, or COBOL. She was promoted to commodore by Ronald Reagan's Secretary of the Navy, John S. Lehman.

ANSWER: Grace **Hopper**

[10] The Mark II that Hopper worked on was invented by Howard Aiken at this university, where it was used to create mathematical tables for the Navy during World War II.

ANSWER: **Harvard** University

[10] The design of COBOL took some features from COMTRAN, which was designed by this company. The first CEO of this company, Thomas J. Watson, is the namesake of a supercomputer which defeated Ken Jennings and Brad Rutter on Jeopardy!.

ANSWER: **IBM** [or **International Business Machines** Corporation]