



1. The title character of this novel is told that he cannot be Don Quixote because "no one rides a horse anymore," and another character carries on an affair with the music teacher Elena. In this novel, Señor Daga is praised for showing Mickey Mouse cartoons to the title character, who is dressed in expensive clothing by a woman who plays "Where is the spider?" with him. At the start of this novel, a dockworker brings home two sugar cubes for dinner, and at its end, the title character announces "I am the truth" to his schoolteacher. This novel follows the impoverished Simón, who attempts to raise his five-year-old son David, whose randomly chosen mother, Ines, is a virgin. For 10 points, name this 2013 novel by J.M. Coetzee.

ANSWER: *The Childhood of Jesus*

019-13-64-06101

2. During this monarch's rule it became necessary to gain Parliament's approval before the king or queen left the country. Under this monarch, baronial consent for royal appointments was also instituted. Those laws were passed by this monarch's nephew Thomas, duke of Lancaster, who was defeated at the Battle of Boroughbridge. The Parliament of York overturned the Lord Ordinances at the behest of this monarch, who was murdered at Berkeley Castle. One favorite of this monarch was hanged by the forces of Roger Mortimer and the She Wolf of France, who was the daughter of Philip the Fair. Despite definitely having homosexual relations with Piers Gaveston, this monarch was married to Queen Isabella. For 10 points, name this king who lost to Robert the Bruce at the Battle of Bannockburn.

ANSWER: Edward II

149-13-64-06102

3. Pauldrach, Puls and Kudritzki modified one theory to produce a better prediction of the rate of this process. That theory correctly predicted the rate of this process within a factor of three and used the Sobolev approximation to calculate the force due to line absorption in a rapidly expanding envelope. That theory was developed by Castor, Abbott, and Klein. This process occurs in a bipolar pattern at the rotation axes of protostars; in that case, this process may result in the formation of Herbig-Haro objects. In a binary system, this process occurs to the star that exceeds its Roche lobe. Due to the strong stellar wind, this process occurs very quickly in Wolf-Rayet stars. For 10 points, identify this process in which a star's matter is slowly relinquished to the interstellar medium.

ANSWER: stellar wind-driven mass loss [or radiation line-driven mass outflow; or obvious equivalents, such as losing mass by stellar wind; prompt on radiation line-driven stellar wind; prompt on mass transfer; prompt on mass flux; prompt on stars getting smaller or obvious equivalents]

066-13-64-06103

4. One of the first ensembles to revive this composer's music was Sequentia, in concert with West German Radio Cologne, who released such albums as *Canticles of Ecstasy*. A pioneering recording of this composer's works is the album *A Feather on the Breath of God*, which pulled works from the collection *Symphonia harmoniae caelestium revelationum*. This composer created a work in which the concept of evil is represented by Diabolus, who only shouts his lines. That work chronicles the struggle between good and evil for the soul of Anima, is titled *Ordo Virtutum*, and is the earliest known musical morality play. Most of this composer's works are collected in the *Riesencodex* and were intended to be sung at the convent at Rupertsberg. For 10 points, identify this composer and abbess.

ANSWER: Abbess **Hildegard** of Bingen [or **Hildegard** von Bingen; or the **Sybil of the Rhine**]

066-13-64-06104

5. In some areas, a text recited at this event asks that several aspects of nature be "honey-sweet" while holding a cup containing honey and butter. Another ritual often performed at this event involves using the toes to touch seven betel nuts to a quantity of rice. At this event, water is sprinkled in honor of the pole star and the sun, and an "auspicious thread" is tied around the neck of one participant. This event is one of the few modern survivals of the Vedic "yajna" ritual. It is formalized when the *saptapadi* is performed, involving walking seven times around the fire dedicated to Agni. For 10 points, identify this event in Hinduism which also includes the "kanya daan," or "giving away" of the bride.

ANSWER: Hindu **weddings**

019-13-64-06105

6. This author contributed a volume on *The Birds* to the BFI Film Classics line of books about films. She dubs Russell Brand an "epicene roué" in a 2012 column which criticizes "manic cyborg cheerleader" Katy Perry and Taylor Swift for being uninteresting feminist role models. She put together a poetry anthology with her own commentary entitled *Break, Blow, Burn*. In her major work, this author claims that "Patriarchy, routinely blamed for everything, produced the birth control pill, which did more to free contemporary women than feminism itself," and that Egypt was the only society which properly united male reason with the female connection to the "chthonic." For 10 points, name this author who examined "Art and Decadence From Nefertiti to Emily Dickinson" in her treatise *Sexual Personae*.

ANSWER: Camille **Paglia**

019-13-64-06106

7. A black and white checkered flag waves behind the head of a man in a large red and gold hat in one depiction of this event. Supposedly after purchasing one depiction of this event, Lorenzo de Medici forcibly seized other depictions of this event to partner with it. In one depiction of this event, Bernardino della Ciarda is seen falling from his horse, and that depiction of this event is stored in the Uffizi. The first work in a series depicting this event features a helmet-less Niccolo da Tolentino sending messengers to call for help. The last work in that series features Michelotto Attendolo preparing to counterattack a charge, which would lead to a victory for Florence over the Sieneese forces. For 10 points, name this conflict depicted in a series of three paintings by Paolo Uccello.

ANSWER: The Battle of **San Romano**

002-13-64-06107

8. One person aboard this ship is described as having a "tragic, mysterious, repulsive mask" over his soul. This ship is where the Finn Wamibo serves, alongside a man who is "afraid to turn his head" and has "unthinking stillness" after the cook Podmore accuses him of being the devil and attempts to convert him. This ship is tossed on its side by a storm during which Old Singleton works the wheel for thirty hours nonstop. After a person aboard this ship comes to embody "the idea of a stalking death," Belfast exclaims that he wants to "knock his ugly head off," and Donkin eventually robs that man of his money. This ship is journeying from Bombay to London under the command of Captain Allistoun when a new crew member takes ill with a cough, ultimately dying at the Flores Islands and being tossed overboard. For 10 points, name this ship aboard which the black sailor James Wait serves in a novel by Joseph Conrad.

ANSWER: the Narcissus

019-13-64-06108

9. Studies by Jiao and Chollet showed that the enzyme used in the first step of this pathway is unusually regulated by phosphorylation and dephosphorylation at a single N-terminal seryl residue. Important pulse-chase experiments elucidating this pathway were performed by Marshall Hatch and Roger Slack. NADP-ME, NAD-ME or PCK can catalyze the degradation of the end products of this pathway. This pathway is characterized by the presence of Kranz anatomy. The products of this pathway, either malate or aspartate, are transported via plasmodesmata from mesophyll cells, where it occurs, to bundle sheath cells. The initial step in this pathway is the formation of oxaloacetate via PEP carboxylase from CO<sub>2</sub>. For 10 points, identify this carbon fixing cycle, so named for the number of carbons in malate and aspartate.

ANSWER: C4 dicarboxylate acid pathway [or C4 dicarboxylate acid cycle; or Hatch-Slack cycle until "Marshall Hatch and Roger Slack" is read; prompt on CAM cycle]

066-13-64-06109

10. John of Procida traveled to this region to stir up anger against its ruler. This region was given to Boniface VIII by the Treaty of Anagni, which affirmed the earlier Treaty of Tarascon. A ruler of this region married the daughter of Henry II, Joan of England; that man was William the Good. This region was once led by William the Bad, who was the son of a king of it. That king was excommunicated by Innocent II at the Second Lateran Council and was Roger II. Michael VIII Palaeologus refused to aid the ruler of this region, Peter of Aragon, without papal approval. A rebellion in this region was ended by the Peace of Caltabellotta and was against the man that Louis IX had placed in charge of it, Charles of Anjou. For 10 points, a rebellion on what Italian island is known as its "Vespers"?

ANSWER: Sicily

149-13-64-06110

11. This author wrote four attempts at applying the idea of a leitmotif to literature, which he termed "symphonies," culminating in his *Goblet of Blizzards*. This man invented a system for marking poetic meter, which evaluated a poet's quality by whether the markings created recognizable geometric figures, in his *Rhythm as Dialectic in The Bronze Horseman*. He identified Alexander Blok's wife Lyubov as the Holy Sophia in his poetry collection *Urn*. This author of the autobiographies *Kotik Letaev* and *The Baptized Chinaman* also wrote a novel in which a lovelorn youth begins wearing a red mask and a cape everywhere. In that novel by him, Lippanchenko is the leader of a mysterious revolutionary organization on whose behalf Alexander Ivanovich Dudkin seeks a place to hide a sardine tin that contains a bomb. For 10 points, name this author who wrote of Nikolai Apollonovich Ableukhov's activities during the 1905 revolution in his novel *Petersburg*.

ANSWER: Andre Bely [or Boris Nikolaevich Bugaev]

019-13-64-06111

12. A nearly two hundred year old lighthouse in this body of water is built on a sandstone reef known as Bell Rock. A large shoal in this body of water became the site of an international incident after Admiral Rozhdestvensky mistook fishing trawlers for Japanese torpedo boats. The western terminus of the Kiel Canal lies on this body of water. Zuiderzee, a shallow bay of this sea, was reclaimed to form IJsselmeer, a large freshwater lake. Skaggeerak separates this body of water from the Kattegat, which together connect it to the Baltic Sea. This body of water contains the Frisian, Orkney, and Shetland islands. For 10 points, identify this sea separated from the English Channel by the Strait of Dover and located to the east of Great Britain.  
ANSWER: **North** Sea [prompt on **Atlantic** Ocean]

066-13-64-06112

13. When radial symmetry is present in a system being solved using this technique, replacing the angular momentum factor  $l$  times quantity  $l$  plus one with  $l$  plus one-half all to the one-half yields better results. This technique is in the same class as the stationary phase method, which is also based on the saddlepoint method of evaluation of integrals. A linearized potential, whose solutions are linear combinations of the Airy functions, is used when the total energy is equal to the potential energy, a so-called "turning point", where this technique breaks down. This technique is often applied to the harmonic oscillator, Morse potential, and tunneling probability because it is exact in those cases. This method assumes that the solution is plane wave whose amplitude and phase vary slowly. The first person to develop this technique was Harold Jeffreys. For 10 points, identify this semiclassical approximation used to find solutions to Schrodinger's equation.

ANSWER: **WKBJ** approximation [or **Wentzel-Kramers-Brillouin**-Jeffreys approximation; accept in any order; or **method** in place of "approximation"; or **LG** method; or **Liouville-Green** method; prompt on **semiclassical** approximation; prompt on **perturbation** theory]

066-13-64-06113

14. One work by this artist features an ad for "Hot Coffee", and he depicted his own toilet in *Excusado*. Another work by this artist features his assistant sitting nude as she holds her knee and tucks her head down; that depiction of Charis Wilson signaled his transition from depicting single body parts to entire nude figures. This man depicted a shell standing on end in his *Nautilus*, and an exhibition of this man's work inspired the creation of the group f/64. This person's most famous work involved the use of the opening of a tin funnel to create a better contrast and a third dimension. For 10 points, name this Pictorialist photographer who depicted a misshapen and partially rotten vegetable in his *Pepper, No. 30*.  
ANSWER: Edward **Weston**

002-13-64-06114

15. This philosopher wrote that the four elements of every social being are personality, profession, quality, and quantity. This author of a forgotten thirty-three volume history of Sweden identified humanity, Christianity, and citizenship as the three types of ordered communities. His anonymous pamphlet, *The Laws of the German Empire*, noted that the Holy Roman Empire was neither aristocracy, monarchy, nor democracy, and thus its constitution was a "monster." He attempted to synthesize all strains of natural law into a book explaining how monarchies emerge from the state of nature in a rational way, based on the influence of Erhard Weigel and Hugo Grotius. For 10 points, name this German theorist of international relations whose difficult-to-understand *On the Law of Nature and of Nations* was summarized for his slow-witted contemporaries in *On the Duty of Man and Citizen*.  
ANSWER: Samuel von **Pufendorf**

019-13-64-06115

16. One character in this film will run out of places to be branded at her next transgression, and that servant girl, Sola, is revealed to be another character's daughter. Matai Shang manages to banish the title character, and explains to that character the role of the Therns. After the protagonist of this film abruptly "dies," he is placed in a tomb that can only be opened from the inside, in an attempt to sneak back to Barsoom. The title character of this film is given a title meaning "my right arms," and prevents Sab Than from marrying the Princess of Helium, Dejah Thoris. For 10 points, name this 2012 box-office disaster in which Taylor Kitsch played the title Civil War veteran, based on a novel by Edgar Rice Burroughs.

ANSWER: John Carter

002-13-64-06116

17. One group of diseases that affects this type of tissue has subtypes caused by mutations in ZASP, caspase-3, and desmin. Although not the liver, metabolic diseases that primarily affect this tissue include acid maltase deficiency and debrancher enzyme deficiency. Recruitment of neurons and cells of this tissue is governed by Henneman's size principle. The individual cells of this tissue follow the all-or-none law. The action of some types of this tissue is regulated by the troponin complex. Mutations in the gene that codes for dystrophin give rise to diseases named for Becker and Duchenne that affect this tissue. For 10 points, identify this type of tissue that has the ability to contract, comes in skeletal and cardiac varieties, and which your heart is, according to Carly Rae Jepsen.

ANSWER: muscle tissue [or muscular tissue]

066-13-64-06117

18. This country's districts of Kiboga, Nakaseke and other members of the Luwero triangle experienced heavy fighting during one war. A president of this country created the PRA, which merged with a group led by Yusufu Lule to create the NRA. Supposedly to help the Banyamulenge people, this country invaded another to support the MLC's attempt to overthrow Laurent Kabila. In 2005, a president of this country repealed a constitutional ban on all political parties besides his Movement party. The 1985 Nairobi Agreement was signed by Tito Okello, the then leader of this country, and its current president. This country is led by Yoweri Museveni who has dealt with a man that was the subject of a viral video by Invisible Children Inc. For 10 points, the Lord's Resistance Army, led by Joseph Kony, originally operated in what African country?

ANSWER: Republic of Uganda

149-13-64-06118

19. One novel by this author concludes with the narrator reaching "the end of what can be done with words," asking "and then?," and focuses on the poor old writer William Hall's mystical journey to the Egyptian afterlife. Another of his novels was excoriated in the *Times Literary Supplement* with a headline reading "Ugh!" This author receives magical bullets from Pegleg in the avant-garde musical *The Black Rider*, which dramatizes how he accidentally murdered his wife in a game of handgun William Tell. This man drew on his own experiences living in Tangier to write about a man on the run from the police who comes across users of "black meat" in Freeland and crashes an orgy thrown by Hassan in Interzone. For 10 points, name this Beat author of *The Western Land* and *Naked Lunch*.

ANSWER: William Seward Burroughs II [or William Lee]

020-13-64-06119

20. One party in this election printed pictures of Abraham Lincoln on their ballots to confuse illiterate voters. In the run up to this election, a series of letters was discovered revealing one hopeful candidate's improper relations with the Little Rock and Fort Smith Railroad. Third party candidates in this election included Green Smith and the eighty-five year old man associated with Jell-O, Peter Cooper. Thomas Hendricks and William Wheeler were the vice presidential candidates in this election. One elector from Oregon was declared illegal in this election. The winner of this election failed to win the popular vote and only became president after Republicans agreed to end Reconstruction. For 10 points, name this election which was won by Rutherford B. Hayes.

ANSWER: presidential election of **1876**

149-13-64-06120

21. Prior to one of these campaigns, one side was told that disaster would befall them if they did not trust their "wooden wall." According to one source, troops during one of these campaigns ran the entire way to their opponent's lines while shouting "Eleleu! Eleleu!" The Serpent Column was built to commemorate troops from one battle during these campaigns. After one of these campaigns, one king's diplomats were hurled down a well. The second of these campaigns was led by Datis and Artaphemes, while the first was led by Mardonius and resulted in the subjugation of Thrace. The Battles of Mycale and Platea were part of these failed campaigns. For 10 points, name these early 400s BCE military campaigns, one of which was ended by Miltiades at the Battle of Marathon.

ANSWER: **Persian invasions** of **Greece** [prompt on Greco-**Persian** Wars]

149-13-64-06121



1. This man's army is looked upon favorably in José María Gironella's novel *The Cypresses Believe in God*, and the economic stagnation under his early reign is exposed in Camilo José Cela's *The Hive*. For 10 points each:

[10] Name this political leader, who was the ultimate victor of the war depicted in George Orwell's *Homage to Catalonia*.

ANSWER: Francisco **Franco**

[10] This writer took the name "Federico Sánchez" when he joined the PCE to oppose Franco; he wrote about his time in Buchenwald in *The Long Voyage* and *What a Beautiful Sunday!*, though he may be better known as the screenwriter of *Z* and *The Confession*.

ANSWER: Jorge **Semprún** Maura

[10] This lauded Greek filmmaker directed both *Z* and *The Confession* from Semprún's scripts; he also directed *State of Siege* and *Missing*.

ANSWER: Costa-**Gavras** [or Constantinos **Gavras**]

019-13-64-06201

2. Wang Anshi created the baojia system for this dynasty. For 10 points each:

[10] Name this Chinese dynasty that was followed by the Yuan dynasty. This dynasty fought against the Jin dynasty.

ANSWER: **Song** dynasty

[10] This conservative scholar lived during the Song dynasty. He resigned from aiding the Shenzong emperor over the implementation of the xin fa policies.

ANSWER: **Sima Guang**

[10] Sima Guang is perhaps most famous for writing this book. Originally compiled for the Yingzong emperor, it chronicles the history of China from 403 BCE to 959 CE.

ANSWER: **Zizhi Tongjian** [or **Comprehensive Mirror to Aid in Government**]

149-13-64-06202

3. In 2012, soldiers in this country formed the National Committee for the Restoration of Democracy and State and began a coup. For 10 points each:

[10] Identify this country where, on March 21, 2012, soldiers attacked the presidential palace, state television, and military barracks in the capital of Bamako.

ANSWER: Republic of **Mali**

[10] This politician was President of Mali before being overthrown. He formally resigned as part of an agreement to restore constitutional order, despite being scheduled to exit office shortly after the coup began.

ANSWER: Amadou Toumani **Touré**

[10] The coup was inspired by Touré's poor handling of this event, in which a group of nomadic people in Azawad waged war with the government in an attempt to gain independence.

ANSWER: **Tuareg** Rebellion

002-13-64-06203

4. All the works in Corelli's opus two and four, as well as the last four works of his opus six, are of this type. For 10 points each:

[10] Identify this type of work contrasted with the sonata da chiesa. It was scored for one or more instruments and continuo, and it consisted of a suite of stylized dances.

ANSWER: **sonata da camera** [or **chamber sonata**; or **concerti da camera**; or **trattenimenti da camera**; or **allegretti da camera**; prompt on **partita**; prompt on **ordre**]

[10] Corelli's opus six contains twelve of this type of composition, which was composed for a small group, the concertino, and a string orchestra, the ripieno. This type of work was originated by Alessandro Stradella.

ANSWER: **concerto grosso** [or **concerti grossi**]

[10] The eighth work of Corelli's opus six, the *Christmas Concerto*, contains a 12/8 time last movement in this style. It is also the nickname of Beethoven's sixth symphony.

ANSWER: **pastorale**

066-13-64-06204

5. Poseidon sent one of these creatures to woo Amphitrite on his behalf. For 10 points each:

[10] Name these animals, into which Dionysus turned the crew of a pirate ship.

ANSWER: **dolphins**

[10] According to Ovid, this unusually friendly pirate was the only one not turned into a dolphin, leading him to become a devoted follower of Dionysus.

ANSWER: **Acoetes**

[10] Herodotus is one source for the story of this poet, who was rescued by dolphins after more unfriendly pirates threw him into the sea.

ANSWER: **Arion**

105-13-64-06205

6. A Youtube user pitch-shifted the first single off this album to make Pharell Williams sound like Michael Jackson while maintaining runtime, and Chilly Gonzales composed the track "Within" to change the key of this album. For 10 points each:

[10] Name this 2013 album which features the single "Get Lucky" and a lengthy narration by Giorgio Moroder.

ANSWER: **Random Access Memories**

[10] *Random Access Memories* is the latest album by this duo that wears masks in all performances and used the chorus of one of their songs in a collaborative single with Kanye West.

ANSWER: **Daft Punk**

[10] This singer provides guest vocals for the track "Instant Crush". He also collaborated with The Lonely Island on a track where he cries out that "a boombox is not a toy".

ANSWER: Julian **Casablancas**

002-13-64-06206



7. The Manning formula relates open channel flow to the two-thirds power of this quantity. For 10 points each:

[10] Identify this quantity that can be calculated as the ratio of cross-sectional area of flow to the wetted perimeter.

ANSWER: **hydraulic radius** [or **equivalent radius**; do not accept or prompt on "radius"; do not accept "hydraulic diameter" or "equivalent diameter"]

[10] The hydraulic radius is preferred to the radius for pipes that are not full or that do not have this geometry. The Hagen-Poiseuille law can be used to find the volumetric flow rate or the pressure drop in pipes of this geometry.

ANSWER: **circular** [or **round**; or obvious equivalents, such as the pipe is **cylindrical**]

[10] The Manning formula is only valid for open channel flow that is both fully rough and has this property. The friction coefficient for flows with this property can be calculated using the Colebrook equation.

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

066-13-64-06207

8. In this novel, a cult controls its members by piping gas into their bedrooms, producing steam-generated "ghosts." For 10 points each:

[10] Name this episodic novel whose protagonist delves into a fake diamond heist at the home of former Devil's Island resident Edgar Leggett, whose daughter Gabrielle is an insane morphine addict.

ANSWER: *The **Dain Curse***

[10] *The Dain Curse* stars this protagonist, who journeys to Poisonville to investigate the gang murder of Donald, son of industrialist Elihu Willsson, in *Red Harvest*.

ANSWER: the **Continental Op**

[10] This author of *The Dain Curse* and *Red Harvest* made Sam Spade the main character of his novel *The Maltese Falcon*.

ANSWER: Dashiell **Hammett** [or Samuel Dashiell **Hammett**]

020-13-64-06208

9. This law was deemed unconstitutional in the *E.C. Knight* case. For 10 points each:

[10] Name this law that established the "rule of reason" test. The Danbury Hatters case, also known as *Loewe v. Lawlor*, established that secondary boycotts were illegal under this law.

ANSWER: **Sherman Antitrust Act**

[10] The Sherman Antitrust Act was used to break up this oil monopoly. It was founded by John Rockefeller.

ANSWER: **Standard Oil**

[10] This was the first company to be broken up by the Sherman Antitrust Act. This holding company was created by James Hill.

ANSWER: **Northern Securities Company**

149-13-64-06209

10. This type of damage can result in the formation of pyrimidine dimers. For 10 points each:

[10] Identify this reddening of the skin that occurs after one is exposed to too much sunlight or other ultraviolet radiation.

ANSWER: **sunburn**

[10] The double bond of pyrimidine bases is broken when it absorbs this specific band of ultraviolet light.

ANSWER: ultraviolet **B**

[10] A human's sole defense against mutagenic ultraviolet radiation is this type of DNA repair. Defects in this repair pathway can lead to the disorder xeroderma pigmentosum.

ANSWER: **nucleotide excision** repair [or **NER**; prompt on **excision** repair; do not accept "base excision repair"]

066-13-64-06210

11. This bestselling composer of chamber music was instructed on the piano by Kumiko Tamura. For 10 points each:

[10] Name this inspiration for characters in *Teach Us to Outgrow Our Madness*, *My Deluged Soul*, and *Rouse Up O Young Men of the New Age*!

ANSWER: **Hikari Oe** [prompt on **Oe**]

[10] In this novel, dealing with the birth of a character based on Hikari Oe, the protagonist rejects Himiko's suggestion to cause his child's death and run away to Africa.

ANSWER: A **Personal Matter** [or **Kojinteki na taiken**]

[10] Hikari Oe, who did not speak as a child, first vocalized these sounds while walking, an incident fictionalized in *Rouse Up O Young Men of the New Age*!

ANSWER: **bird songs** [or equivalents]

019-13-64-06211

12. This man was victorious at the Battle of Cyzicus. For 10 points each:

[10] Name this statesman who was killed for challenging the Thirty Tyrants of Athens. A storm prevented this man from saving drowning sailors at the Battle of Arginusae.

ANSWER: **Theramenes**

[10] Theramenes died after drinking this substance. Socrates also died after drinking it.

ANSWER: **hemlock**

[10] In 405 BC, Theramenes negotiated a treaty with this man to end the Peloponnesian war. Co-ruler with Pausanias, this man won the Battle of Mantinea.

ANSWER: King **Agis II**

149-13-64-06212

13. One of the first three-component compositional diagrams for this type of rock was the ACF diagram. For 10 points each:

[10] Identify this type of rock formed when igneous or sedimentary rock is subjected to high temperature and pressure.

ANSWER: **metamorphic** rock

[10] The 'A' in the ACF diagram stands for this compound, which comprises the mineral corundum.

ANSWER: **aluminum(III) oxide** [or **Al<sub>2</sub>O<sub>3</sub>**; or **alumina**; or **aloxide**; or **aloxite**; or **alundum**]

[10] This is the name given to metamorphic mineral assemblages that result from a specific temperature and pressure range. Like the ACF diagram, this concept was developed by Pentti Eskola and, unsurprisingly, they are depicted as fields on an upside-down plot of temperature versus pressure.

ANSWER: metamorphic **facies**

066-13-64-06213

14. One of this director's films begins with a flashback of an Indian family being expelled from Uganda and depicts the complicated racial relationship between blacks and Indians in Greenwood, Mississippi. For 10 points each:

[10] Identify this director of *Mississippi Masala* and *Monsoon Wedding*.

ANSWER: Mira **Nair**

[10] In *Mississippi Masala*, Mina's relatives, with whom she and her family settle, own one of these businesses. Marion Crane absconds to one of these businesses owned by Norman Bates in *Psycho*.

ANSWER: **motel** [or motor **hotel**]

[10] Nair's *Monsoon Wedding* has drawn comparisons, in style and otherwise, to this director's *A Wedding*. Known for eschewing plot and being a grumpy old man, his most famous film follows over twenty characters in a five-day period in the title city.

ANSWER: Robert **Altman**

066-13-64-06214

15. This woman is the last martyr described in a sequence that begins with the death of the mothers who circumcise, and she throws herself from a roof after watching Antiochus's soldiers kill her children. For 10 points each:

[10] Give the Jewish or general descriptive name of this martyr, who resisted Hasmonean attempts to suppress Judaism.

ANSWER: **Hannah** or [the **woman with seven sons**]

[10] Each of Hannah's sons was killed for refusing to perform this action, which Antiochus ordered as a sign of nonconformity to Jewish law. Eleazar was also martyred for failing to do this.

ANSWER: **eating pork** [or obvious equivalents; prompt on **breaking kosher law**, etc.]

[10] The stories of Eleazar and Hannah are found in the second book named for these people, whose overthrow of Hasmonean rule is celebrated at Hannukah.

ANSWER: **Maccabees**

019-13-64-06215

16. The Santa Fe Institute created an "artificial stock market" to model this theory in 1989. For 10 points each:

[10] Name this economic approach which uses an index designed by Ricardo Hausmann and Cesar Hidalgo to analyze phenomena such as "cross-cutting hierarchical organization" and "dispersed interaction."

ANSWER: **complexity** economics

[10] This frequent publisher of articles on complexity economics also wrote about the equally strange "econophysics." His namesake equation gives the ratio of future to current Social Security benefits, and his father was a same-named mathematician who proved a paradox in lambda calculus with Stephen Kleene.

ANSWER: John Barkley **Rosser**, Jr.

[10] John Horgan labeled complexity economics one of the four failed fads with C-names in social science, alongside chaos theory, catastrophe, and this field, loosely defined as the study of control in systems and invented by Norbert Wiener.

ANSWER: **cybernetics**

019-13-64-06216

17. After this battle, the National Convention formally dissolved the French monarchy. For 10 points each:  
[10] Name this French Revolutionary Wars battle in which the First Coalition's march on Paris, led by the Duke of Brunswick, was halted. Francois Kellermann shouted "Vive la Nation" at this battle.

ANSWER: Battle of **Valmy**

[10] This man shared command of the French forces at Valmy with Kellermann. This general won the Battle of Jemappes before being defeated at Neerwinden.

ANSWER: Charles Francois **Dumouriez**

[10] Charles Dumouriez ultimately defected to Austria with this future king of France. He was kicked out of France in 1848.

ANSWER: **Louis Philippe I**

149-13-64-06217

18. The model for the title high-priced whore of this painting was also the model for the Darnstadt Madonna and is in the same setting as the artist of this painting's *Venus and Amor*. For 10 points each:

[10] Name this painting in which the title woman holds out her hand, likely to request more coins to add to her small pile of gold which is titled with an inscription on the edge of the stone table.

ANSWER: **Lais of Corinth**

[10] *Lais of Corinth* was painted by this artist, who included a funky looking skull in his double portrait of Jean de Dinteville and Georges de Selve.

ANSWER: Hans **Holbein, the Younger**

[10] Holbein also painted this scene, in which the resurrected Jesus is urged to stay back, with the title phrase, by a terrified Mary Magdalene, who is holding an urn as two angels sit around in the opened tomb.

ANSWER: **Noli me tangere**

002-13-64-06218

19. After hearing a list of superlatives from William Lucy, this character dismisses Lord Talbot's corpse as "stinking and flyblown lies here at our feet." For 10 points each:

[10] Name this Shakespearean character who is tried by York and Warwick and then executed while cursing the English to "darkness and the gloomy shade of death" which will "drive you to break your necks or hang yourselves."

ANSWER: Joan la **Pucelle** [or **Joan** of Arc; or obvious equivalents]

[10] Joan la Pucelle is one antagonist in "part 1" of the play named for this king, which concludes with Margaret and Suffolk ascending to de facto control of England.

ANSWER: **Henry VI**

[10] Early in *Henry VI, Part 1*, Joan is challenged to prove the authenticity of her visions by performing this ahistorical action after being brought before Charles, the dauphin.

ANSWER: **dueling** with Charles [or engaging in single **combat** with him, etc.]

019-13-64-06219

20. This tournament doesn't have enough stuff about the Emil Fischers. For 10 points each:

[10] Emil Fischer discovered the fact that reducing sugars with a free aldehyde or ketone group can be reacted with this compound to form osazones. He also names a synthesis of this compound, which is abbreviated PhNHNH<sub>2</sub>.

ANSWER: **phenylhydrazine** [do not accept "phenylhydrazone"]

[10] The other Emil Fischer names a reaction with Hans Tropsch that converts synthesis gas, a mixture of this compound and hydrogen gas, to a mixture of hydrocarbons and their derivatives.

ANSWER: **carbon monoxide** [or **CO**]

[10] The Fischer phenylhydrazine synthesis diazotizes an aniline, reduces the resulting diazonium salt with an excess of sodium sulfite, and then hydrolyzes the resulting phenylhydrazine sulfonic acid salt with this acid. This strong, monoprotic acid is paired with nitric acid in aqua regia.

ANSWER: **hydrochloric** acid

066-13-64-06220

21. This gene activates *hunchback* and *Krüppel*; the latter is repressed by high concentrations of *hunchback* and *knirps* and so is only expressed as a stripe in the *Drosophila* embryo. For 10 points each:

[10] Identify this maternal effect gene that shows an exponential decrease from the anterior to posterior axis.

ANSWER: **bicoid** [or **bcd**]

[10] This signaling molecule is expressed in segments where the transcription factor *engrailed* is expressed. A mammalian homolog of this signaling molecule is named "sonic".

ANSWER: **hedgehog**

[10] *nanos*, whose expression is the opposite of *bicoid*, is important for the formation of the thorax and this grouping of segments. In general, an arthropod's segments are grouped into the head, thorax and this one.

ANSWER: **abdomen**

066-13-64-06221