

TOSSUPS

1. Stations used for trade in this kingdom title the most famous work of Isidore of Charax. Justin reports that a ruler of this kingdom was killed by the Tocharians, later called the Yuezhi. Hecatompylos was the first capital of this kingdom, which Julius Caesar was planning to invade before he was killed. During the reign of (*) Orodes II, a member of this kingdom's Arsacid dynasty, molten gold was poured down the throat of one of its foes by Surena. Crassus was defeated at Carrhae by - for 10 points - what Iranian empire, a long-time opponent of Rome?
ANSWER: Parthian Kingdom/Empire [or Pahlava; or Arsacid Empire/Arshakian until "Arsacid" it is read]

2. A reaction named for this scientist uses a mixture that contains either PHAL(DHQ) ["phal-D-H-Q"] or (DHQD) ["D-H-Q-D"] and is known as AD-mix. N-halosulfonamides can be used to generate amino alcohols in his oxyamination. He discovered a reaction that uses titanium isopropoxide, and (+) or (-) ["plus or minus"] (*) DET to generate epoxyalcohols and one that uses osmium tetroxide to convert alkenes to diols. This scientist developed a synthetic paradigm that joins small units in a biomimetic fashion, like in the azide-alkyne cycloaddition. For 10 points name this American chemist who popularized click chemistry.
ANSWER Karl Barry Sharpless

3. "Miss A" was the first person identified as having one of these conditions by William Gull. It's not drug abuse, but amenorrhea commonly results from these conditions, which are treated by the Maudsley Method. Naomi Wolf claimed that these conditions cause 150,000 female deaths per year in (*) *The Beauty Myth*. These conditions, which are several times more prevalent among women than men, are often blamed on the depiction of models and BMI statistics. For 10 points, identify these conditions which include bulimia and anorexia.
ANSWER: eating disorders [accept anorexia nervosa or bulimia nervosa until they are mentioned]

4. This author praised "France, the beautiful!" for a gift they gave America in his poem "The Bartholdi Statue." The speaker of another work by this author begs the "Dear Lord and Father of Mankind" to "Forgive our foolish ways!" This author set another poem in (*) Frederick town, whose title character instructs Stonewall Jackson to "Shoot, if you must, this old gray head." For 10 points, name this Fireside poet who wrote "The Brewing of Soma" and "Barbara Frietchie," along with the the "Winter Idyl" "Snow-Bound."
ANSWER: John Greenleaf Whittier

5. This politician has been repeatedly forced to defend his referring to members of Hamas as "friends." This politician's idea of using quantitative easing to fund infrastructure is called "People's QE." Membership in this politician's party has nearly doubled since his landslide defeat of Yvette Cooper and Andy Burnham. He has proposed the (*) re-nationalization of major industries like coal and steel, a throwback to the pre-Thatcher era. Ed Miliband was replaced by - for 10 points - what recently elected far-left leader of the British Labour Party?
ANSWER: Jeremy (Bernard) Corbyn

6. *Description acceptable.* One of these initiatives was described as a "challenge we are willing to accept, one we are unable to postpone." Jerry Brown was widely ridiculed for proposing that California create its own initiative of this kind. Explaining a program of this type at Rice University, a President said we choose to embrace its challenges (*) "not because they are easy, but because they are hard." It's not poverty-related, but an initiative of this kind was laid out in the "New Frontier" speech by John F. Kennedy. For 10 points, identify this kind of initiative exemplified by the Apollo Program.
ANSWER: space program [accept anything involving sending people into outer space; accept moon landings or satellite programs specifically; accept Apollo Program until it is read]

7. After this artist received criticism in London for his choice of subjects, he attempted to curry favor with *The Sortie made by the Garrison of Gibraltar*. This artist chose to exclude 14 men whom he could not find reliable pictures of from a painting by him that shows captured British flags on the back wall. The reverse of the (*) two-dollar bill contains a painting by this man showing five men standing to the left of a table opposite a seated John Hancock. For 10 points, name this American artist of a famous version of the *Declaration of Independence*.

ANSWER: John Trumbull

8. The Duke discovers his bastard son's tryst with Casandra in this author's play *Justice without Revenge*. In one play by this author, a servant snuffs out a candle with the toss of a hat to cover up his master's affair. In another play by this author, a peasant steals a crossbow from a womanizing (*) commander attempting to rape the beautiful Laurencia. The Countess Diana marries Marcela's suitor Teodoro in this author's play *The Dog in the Manger*. For 10 points, name this author of *The Sheep Well*, a Golden Age Spanish playwright.

ANSWER: Felix Lope de Vega Carpio

9. This quantity can be measured with Kelvin probe microscopy. The Schottky barrier arises at a junction when this value in a semiconductor matches its value in a metal. The exponential of this quantity, divided by $-kT$, is proportional to the current density in the Richardson effect. Ionization energy can be considered its (*) single-atom analogue. Electrons are released when the product of Planck's constant and frequency is greater than this value in the photoelectric effect. For 10 points, name this quantity, the energy required to remove an electron from a metal's surface.

ANSWER: work function

10. This quantity is maximized on the "efficient frontier" in a theory developed by Harry Markowitz. The Sharpe ratio measures the increase in this quantity per unit increase in standard deviation. Thomas Piketty's *Capital in the Twenty-First Century* makes use of an inequality stating this quantity as greater than "g" or (*) growth. The "internal" variety of this quantity makes the net present value zero. The capital asset pricing model posits a linear relationship between beta, representing risk, and r for 10 points - what rate of profit on investment?

ANSWER: (annual) rate of return [or return on investment; or ROI; prompt on "r" or "rate" or "profit"]

11. This book suggests ways to avoid subjectivism and proposes eliminating beatings in the army in its sections on *Democracy in the Three Main Fields* and *Criticism and Self-Criticism*, respectively. This book states that the "people alone are the motive force in world history" in its section on the *Mass Line*. It says that the revolutionary war is a war of the masses and (*) "political power grows out of the barrel of a gun." For 10 points, name this book widely distributed during the Cultural Revolution, which quotes a Chinese Communist leader.

ANSWER: "Little Red Book" [or *Quotations from Chairman Mao Zedong*; or *Máo zhǔxí yǔlì*; or Treasured Red Book; or *Hóng bǎoshū*]

12. This religious group's style of music was first popularized in America in the 1970s by the Sabri brothers. The band Junoon popularized a style of rock based on the music of this religious group which is often played during the *sema* ceremony. Abida Parveen is a famous singer of this religious group's (*) *qawwali* music, which was also popularized by Nusrat Fateh Ali Khan. The *ghazals* of Hafez and Rumi were set to music by r for 10 points - what religious group, whose music accompanies the whirling of dervishes?

ANSWER: Sufi Muslims [accept basically anything involving Sufi Islam; accept any specific Sufi order, such as Mevlevi or Chisti; prompt on Muslims with "*what sect of Islam?*"]

13. A non-coding RNA, HOTAIR, trans-silences one of these genes by binding to PRC2, a Polycomb-group protein. These genes code for proteins that bind a TAAT-containing sequence with a 60-amino acid helix-turn-helix domain. The (*) chromosomal order of these genes parallels their patterns of expression. In arthropods, segment polarity, gap, and pair-rule genes control their expression, and mutations in them can cause wrong placement of body segments. For 10 points, name this conserved gene family that controls the anterior-posterior axis of embryonic development.

ANSWER: Hox genes [or homeobox genes; or homeodomain genes; or homeotic genes]

14. Adherents to this belief system put iron scissiors in bodies and built “corpse-doors” to prevent the dead from awakening. Adam of Bremen described three statues of deities at a major temple of this belief system, whose modern enthusiasts practice drinking rituals called *sumbels* and sacrifices called *blóts*, especially around (*) Yuletide. Ásatrú is a movement to revive this belief system, which feared undead called *draugar* and had a major center of worship at Uppsala. For 10 points, name this belief system that worshipped deities like Frigg and Thor.

ANSWER: **Norse** paganism [or **Scandinavian** paganism; or **Norse** mythology; or **Norse** Neopaganism; prompt on **Germanic** paganism or **paganism** or **Neopaganism** less specific terms]

15. On a road named for this place, an animal thought to be a hyena crashes into a moving car. A Christian woman describes a sound in this place as “devoid of distinction.” While one character briefly leaves this place for a smoke, another character flees this place and is lacerated by thorned plants. (*) Mrs. Moore and her son’s intended bride are led on a disastrous tour of this place by an Indian man. Adela Quested claims Dr. Aziz raped her in - for 10 points - what fictional caves near Chandrapore found in E. M. Forster’s novel *A Passage to India*?

ANSWER: The **Marabar** Caves

16. This leader broke guild monopolies and liberalized business with his *rakuichi rakuza* policy and allowed the construction of the Nanban temple in Kyoto. This leader’s attempt to seize Echigo province was halted at the Battle of Tedorigawa by Uesugi Kenshin. This man’s troops used (*) matchlocks to repulse the charge of Takeda cavalry at the Battle of Nagashino. The treason of this man’s subordinate Akechi Mitsuhide led him to commit *seppuku* at Honno-ji. Toyotomi Hideyoshi succeeded - for 10 points - what first great unifier of Japan?

ANSWER: **Oda** Nobunaga

17. In 2009, this player was suspended for elbowing an unflinching Anderson Varejao in the groin. In the 1996 NBA Draft, he was picked by the Timberwolves and flipped for Stephon Marbury. In the 2013 NBA Finals, he watched his opponent Danny Green break an NBA Finals record he held at the time. After a (*) Chris Bosh offensive rebound, he hit an overtime-forcing three-pointer in the 2013 NBA Finals. For 10 points, name this former member of the Supersonics who also teamed up with Kevin Garnett and Paul Pierce for the Celtics in 2007.

ANSWER: Ray **Allen**

18. It’s not in the Balkans, but this country is home to a mournful-sounding reed instrument called the *duduk*. Cultivation of apricots is thought to have begun in this country, which now only contains one of its three historic great lakes, Lake Sevan. The Aras River drains the main valley of this country, where the 1988 (*) Spitak earthquake devastated the city of Gyumri. This country borders the exclave of Nakhchivan to its south. Turkey disputes Mount Ararat with - for 10 points - what country that also disputes over a genocide with Turkey?

ANSWER: (Republic of) **Armenia** [or **Hayastani** Hanrapetut’yun]

19. A scientist from this country developed an interior-point algorithm to solve linear programming problems in polynomial time. This country was home to a scientist who names an electron-positron scattering process with the same cross section as Moller scattering, as well as a mathematician who devised a formula that calculates the area of a (*) cyclic quadrilateral from its semiperimeter and the lengths of its sides. That man from this country formulated the concept of 0 as a number. Einstein co-names a statistical distribution of integer spin particles with a scientist from - for 10 points - what home country of S. N. Bose?

ANSWER: **India** [accept Republic of **India** or **Bharat**]

20. The wife of this piece’s composer protested its adaptation as a ballet in 1910 by Michel Fokine and Leon Bakst. In this piece’s first movement, a triplet arpeggio motif in the strings depicts waves rocking a boat. The notes [read slowly] E-D-C-B-flat are prominent in a fanfare in this piece that contrasts with the theme of a character represented by a harp-accompanied (*) violin solo that recurs in movements like “Festival at Baghdad.” For 10 points, identify this symphonic poem by Nikolai Rimsky-Korsakov inspired by *Arabian Nights*.

ANSWER: **Scheherazade** [or **Shekherazada**; or **Rimsky-Korsakov**’s **Op. 35** (composer not needed after named)]

21. An author from this country wrote about Harold's unsuccessful attempts to woo an alcoholic's daughter named Sybylla Melvyn. This country's government provides suicide pills for its citizens in the wake of World War III in the post-apocalyptic novel (*) *On the Beach*. Another author from this country wrote about a young Anglican priest's bet with the second title character regarding the transportation of a glass church to Bellingen in the novel *Oscar and Lucinda*. For 10 points, name this country home to authors Nevil Shute and Peter Carey.

ANSWER: Australia

22. If the matrix for a system described by this adjective is singular, the system has infinitely many solutions. The number of linearly independent vectors needed to solve a system of this type equals *[read slowly]* the number of columns minus the rank of the matrix describing the system, giving the size of the null space. In solving higher-order differential equations, a general (*) solution can be found by adding any specific solution to the one described by this adjective. For 10 points, give this word describing systems of equations with no constant terms.

ANSWER: homogeneous (functions or systems of equations) [accept forms of the word]

23. When Herse blocked the doorway to one of these places, Hermes turned her to stone. Upon waking up, a hero who had slept in one of these places found a golden girdle in his hands. A wooden statue was knocked over when a woman was forcibly removed from one of these locations. (*) Poseidon raped Stheno and Euryale's sister in one of these places and Ajax the Lesser raped Cassandra after dragging her out of one of them. Medusa was transformed into a hideous monster in – for 10 points – what sort of location honoring the goddess of wisdom?

ANSWER: temples to Pallas Athena [accept anything mentioning both “temple” and “Athena”; prompt on temples with “to *which* deity?”]

24. A ruler of these people had fourteen children by his Alan wife, earning him the nickname “Big Nest.” Ahman ibn Fadlan described these people as “perfect physical specimens.” Two rulers of these people named Askold and Dir launched a raid on Constantinople. Byzantine sources refer to these people as (*) Varangians, a term derived from a name for Vikings. The *Primary Chronicle* describes a mass baptism of these people in the Dnieper river. The early Rurikid dynasty ruled - for 10 points - what Slavic people whose largest city was Kiev?

ANSWER: Rus' [or Kievan Rus'; accept Russians; accept Varangians until it is read; accept Varyags until “Varangians” is read; prompt on Vikings or Scandinavians or Slavs since the Rus' are technically part of each of those groups]

BONUSES

1. This phenomenon has caused spinal deformities to proliferate among Isle Royale wolves. For 10 points each:

[10] Name this phenomenon in which individuals produce offspring with closely related individuals, as in incest. It often occurs in small populations and can promote deleterious recessive traits.

ANSWER: **inbreeding** [accept word forms]

[10] According to Wikipedia, this man's "parents were first cousins, an interesting fact in light of his research on inbreeding." This Modern Synthesis geneticist also introduced the idea of isolation by distance, and applied shifting balance theory to his concept of fitness landscapes.

ANSWER: Sewall Green **Wright**

[10] Wright's three F-statistics quantify inbreeding and population structure by comparing expected and observed values of this quantity, which equals $2pq$ in Hardy-Weinberg equilibrium.

ANSWER: **heterozygosity** [or **frequency** of **heterozygotes**; accept other answers denoting the proportion of heterozygotes]

2. This son of Themiste was crippled by Zeus's thunderbolt for boasting about his affair with the goddess Aphrodite. For 10 points each:

[10] Name this figure, who is carried out of the burning city of Troy by his son.

ANSWER: **Anchises**

[10] That son of Anchises is this namesake of an epic by Virgil.

ANSWER: **Aeneas**

[10] According to Homer, Anchises had a mortal wife named Eriopis, with whom he fathered a daughter with this name. Another figure with this name was the prize of a chariot race rigged by Myrtilus.

ANSWER: **Hippodamia**

3. Fortunately, this isn't actually a bonus about SNSD songs, but rather one about how they've become so damn popular. For 10 points each:

[10] This term coined by S.M. founder Lee Soo-man refers to the extremely successful K-Pop business model of factory-like training of musical acts and collaboration with local markets to enable easy localization.

ANSWER: **cultural technology** [or **culture technology**; or **CT**; or **munhwa kontenteu_gisul**; accept plausible translations of that phrase like "**culture content technology**"]

[10] Localizing K-Pop acts in this country is easy because it's nearby and its language is grammatically very similar to Korean. Enmity about this country's imperialism prevents acts from here from easily doing the same in Korea.

ANSWER: **Japan** [or **Nippon**-koku; or **Nihon**-koku]

[10] This specific term is commonly used to refer to the worldwide growth in popularity of Korean popular culture.

ANSWER: **Korean wave** [or **Hallyu**]

4. One of these Acts passed in 1833 was aimed mainly at the textile industry and introduced a ten-hour workday for children. For 10 points each:

[10] Give the common name for these 19th-century Acts passed in Britain to regulate working conditions and hours.

ANSWER: **Factory** Acts

[10] The earliest Factory Acts were targeted at children who worked in mills that processed this product into usable material. Most of this product was imported from the American South, where it was called "King."

ANSWER: **cotton** [accept King **Cotton**]

[10] One of the big proponents of the Factory Acts was a politician with this title. He shares both his name and title with his Deist great-grandfather, who moved to the continent and wrote works like *Inquiry concerning Virtue*.

ANSWER: Earl of **Shaftesbury** (both were named **Anthony Ashley Cooper**)

5. This author's novels include *The Garden*, *The Leather Mask*, *D'Arsonval*, and *The Blind Woman*. For 10 points each:

[10] Name this elusive author who is unsuccessfully sought out by professors Jean-Claude Pelletier, Piero Morini, Manuel Espinoza and Liz Norton in "The Part about the Critics."

ANSWER: Benno von **Archimboldi** [accept Hans **Reiter**]

[10] This Chilean author created the fictional author Benno von Archimboldi in his novel *2666*. A group of "Visceral Realists" appear in his novel *The Savage Detectives*.

ANSWER: Roberto **Bolaño**

[10] Bolaño condescendingly claimed that this other Chilean author's "attempts at literature range from kitsch to the pathetic." Her novels include *Daughter of Fortune*, *Eva Luna*, and *The House of the Spirits*.

ANSWER: Isabel **Allende**

6. Most powerful West African kingdoms have been concentrated in this biogeographic region. For 10 points each:

[10] Give this name for the transition zone between the Sahara desert in the north and the savannah in the south.

ANSWER: **Sahel**

[10] This massive landlocked country named for the second-largest lake in Africa is the largest to occupy part of the Sahel. Its capital is N'Djamena.

ANSWER: (Republic of) **Chad**

[10] The Aouzou strip controlled by Chad was believed to be rich in this resource, helping provoke a war with Libya. Australia has the world's largest known reserves of this resource, with 23% of the world supply.

ANSWER: **uranium** [accept any specific isotope of **uranium**; prompt on **U**]

7. The expectation value of a function is equal to the integral of its operator sandwiched between two instances of this function. For 10 points each:

[10] Name this function that gives the probability amplitude of a system, so its square gives the probability density of finding a particle at a particular location. Directly observing the system leads to its collapse.

ANSWER: **wave function**

[10] Because the wave function can take on complex values, when calculating the expectation value of an operator one must use this form of the wavefunction, denoted by an asterisk, in which all of the *i*'s ["eyes"] have been changed to *-i*'s ["minus eyes"].

ANSWER: its complex **conjugate**

[10] Operators that yield real expectation values are given this name and can be represented square matrices that are equal to their own conjugate transpose.

ANSWER: **Hermitian**

8. These two countries grew further apart after one of their leaders had a major split with Stalin in 1948 while the other's leader, Georgi Dimitrov, embraced Stalinism. For 10 points each:

[10] Name these two countries which agreed to make steps towards the formation of a federative republic in the 1947 Bled Agreement.

ANSWER: (Socialist Federal Republic of) **Yugoslavia** AND (People's Republic of) **Bulgaria**

[10] Key to Bulgarian-Yugoslav relations was a dispute over the land and people became this country. When it finally gained independence in 1993, this country took the name of a Greek region and made Skopje its capital.

ANSWER: (Republic of) **Macedonia**

[10] This Bulgarian leader's government declared that "there is no Macedonian nation" in 1963. He encouraged the *predanost* cult and was the longest-serving Eastern Bloc leader.

ANSWER: Todor **Zhivkov**

9. According to legend, the Virgin Mary was shipwrecked on this mountain while traveling with John the Baptist to visit their friend Lazarus. For 10 points each:

[10] Identify this holy mountain in Greece, home to twenty different Orthodox monasteries.

ANSWER: Mount **Athos**

[10] Mount Athos may have served as a refuge for Orthodox monks who venerated these small religious devotional pictures during periods in which emperors like Leo the Isaurian promoted their destruction.

ANSWER: **icons**

[10] Female presence on Athos was forbidden by a Byzantine decree of this type issued in 1046. Issuance of these decrees was adopted by the Holy Roman Empire, as exemplified by a 1356 one defining the Empire's constitution.

ANSWER: **golden bull** [or **chrysobull**; prompt on **bull**]

10. This poet dedicated his pastoral poem *Colin Clouts Come Home Againe* to Sir Walter Raleigh. For 10 points each:

[10] Name this English writer who included Colin Clout in his allegorical epic poem, *The Faerie Queene*.

ANSWER: Edmund **Spenser**

[10] This hero of the first book of *The Faerie Queene* embodies the virtue of Holiness. He avoids succumbing to the temptations of the wicked sorcerer Archimago, and is eventually betrothed to Una.

ANSWER: The **Redcross Knight**

[10] This book of *The Faerie Queene* concerns the friendship of Sir Cambell and Sir Triamond. It is preceded by the Book chronicling the story of the lady knight Sir Britomart.

ANSWER: Book **IV** [accept “Book **Four**”]

11. Not doing this action is illegal in Brazil and Australia. For 10 points each:

[10] Identify this action, which is generally an irrational decision according to Downs’ paradox, assuming you ignore the benefits of civic pride.

ANSWER: **voting**

[10] Pride gained from voting is an example of this kind of economic benefit. Analysis of the “marginal” value of this concept from voting is limited since, unfortunately, you only get one vote per election.

ANSWER: **utility**

[10] This public choice theorist at George Mason University argued that voters are not very self-interested and do not make decisions based on utility in his 2007 book *The Myth of the Rational Voter*.

ANSWER: Bryan **Caplan**

12. The Russian formulator of this concept used the example of burying beetles as an example of it and emphasized it as an example of how organisms struggle against the environment. For 10 points each:

[10] Identify this two-word term used to refer to a mode of natural cooperation.

ANSWER: **mutual aid**

[10] Peter Kropotkin, the formulator of mutual aid, hypothesized that it was the most important factor in this natural process which Darwin argued was driven by natural selection.

ANSWER: **evolution**

[10] Evolutionary biologist Stephen Jay Gould objected to Kropotkin’s use of this fallacy attacked in G.E. Moore’s *Principia Ethica* as a refutation of Social Darwinism.

ANSWER: **naturalistic** fallacy

13. A director from this country cast more than a hundred amateur actors in a movie about a murder on Guling Street, and depicted the life of a family led by NJ in another movie. For 10 points each:

[10] Name this setting of *A Brighter Summer Day* and *Yi Yi*. A director from this country made *A City of Sadness* and *The Assassin*, which was screened at Cannes in 2015.

ANSWER: **Taiwan** [or **Republic of China**; don’t accept just “China”]

[10] Another Taiwanese director besides Edward Yang and Hou Hsiao-Hsien is Ang Lee, who adapted this film about the relationship between two cowboys in Wyoming from an Annie Proulx story.

ANSWER: **Brokeback Mountain**

[10] Inexplicably, *Brokeback Mountain* lost the 2005 Best Picture Oscar to this film about racial tensions in Los Angeles. David Cronenberg adapted a J. G. Ballard novel of the same name.

ANSWER: **Crash**

14. This essay opens by noting 250 years of slavery, 96 of Jim Crow, and 60 of separate but equal. For 10 points each:

[10] Identify this 2014 essay published in the Atlantic which argues that the descendants of slaves should be compensated.

ANSWER: “The **Case for Reparations**”

[10] “The Case for Reparations” was written by this African-American public intellectual and *Atlantic* essayist, whose book *Between the World and Me* is phrased as a letter to his son.

ANSWER: Ta-Nehisi **Coates**

[10] This intellectual has criticised Coates and others for creating a “religion of antiracism.” A Columbia University linguist, he gave a talk on NPR in April 2015 about how “thug” has essentially become a substitute for the N-word.

ANSWER: John **McWhorter**

15. Identify the following European countries home to literary prodigies, for 10 points each:

[10] This country's two Nobel Prize-winning poets are George Seferis and Odysseus Elytis. It was also home to Nikos Kazantzakis, who wrote a novel about a character named Zorba with this nationality.

ANSWER: Greece [accept Hellenic Republic; accept Greek]

[10] A Nobel Prize-winning poet from this country wrote "Calling Out to Yeti." Authors from this country wrote the novels *Ferdydurke*, *The Captive Mind*, and *With Fire and Sword*.

ANSWER: Republic of Poland

[10] The first Nobel Prize candidate from this country wrote a 17,000-line-long epic titled *The Highland Lute*. A living writer from this country wrote the novels *Chronicle in Stone* and *The General of the Dead Army*.

ANSWER: Republic of Albania

16. A looming storm cloud nearly blocks out the pale yellow sun in this painting. For 10 points each:

[10] Name this painting, in which a hazy avalanche descends from the right towards the central group. Stylistically, it resembles its artist's later painting of a *Steam-Boat off a Harbour's Mouth*.

ANSWER: *Snow Storm: Hannibal and his Army Crossing the Alps* [accept answers that mention both underlined portions]

[10] In this painting by the artist of *Hannibal Crossing the Alps*, a battered ship of the line is tugged to her last berth to be broken up.

ANSWER: *The Fighting Temeraire tugged to her last berth to be broken up, 1838*

[10] This English landscape artist painted *Hannibal Crossing the Alps* and *The Fighting Temeraire*. A rabbit dashes across a bridge in this artist's *Rain, Steam and Speed*.

ANSWER: J. M. W. Turner [accept: Joseph Maillord William Turner]

17. This leader promoted women's advancement by outlawing female genital mutilation and providing support programs for pregnant women to stay in school. For 10 points each:

[10] Identify this iconic pan-Africanist leader, who renamed his country from Upper Volta to Burkina Faso.

ANSWER: Thomas (Isidore Noël) Sankara

[10] Sankara's main mentor among African leaders was Jerry Rawlings, a flight lieutenant who became president of this country. Late in life, W. E. B. du Bois was naturalized as a citizen of this country.

ANSWER: (Republic of) Ghana

[10] Sankara also modeled himself on this iconic Latin American revolutionary, which is somewhat ironic because this guy was racist against Africans. The CIA helped capture and execute this guy in Bolivia.

ANSWER: (Ernesto) Che Guevara [accept either underlined portion]

18. The iron-nickel alloy Invar has an unusually low value for this quantity because it passes through a frustrated ferromagnetic state. For 10 points each:

[10] Name this ratio of the change in the length of a material to the temperature change in Kelvin.

ANSWER: alpha or coefficient of thermal expansion

[10] For crystalline solids, an analogous property is this quantity, denoted gamma, which describes the effect of changing the volume of a crystal on its vibrational properties.

ANSWER: Gruneisen parameter

[10] For many materials, alpha is inversely proportional to this value, which is also known as the freezing point. The latent heat of fusion is the energy required to change a solid to a liquid at this point.

ANSWER: melting point

19. This book considers the case of a Young Man who no longer wishes to marry his beloved. For 10 points each:

[10] Identify this book, whose narrator Constantin Constantius seeks to experience a concept similar to Socratic recollection, but projected into the present and future, through which he can eternalize pleasure.

ANSWER: Repetition

[10] *Repetition* was inspired by the relationship of this Danish existentialist philosopher with Regine Olsen.

ANSWER: Søren (Aabye) Kierkegaard

[10] *Repetition* is the only one of Kierkegaard's three major 1843 works not to feature this man, who is presented in *Fear and Trembling* as the prime example of a knight of faith.

ANSWER: Abraham [or Ibrahim; or Abram]

20. You are a rockstar ninja programmer in a startup billed as Uber, but for artisanal cat toys. Answer some questions about machine learning algorithms you might use, for 10 points each:

[10] This popular kind of supervised learning algorithm uses training data to classify new inputs among two or more categories. Unlike perceptrons, it's guaranteed to find the separating hyperplane with maximal margin.

ANSWER: **support vector machines** [or **SVMs**; or **support vector networks**; or **SVNs**]

[10] This kind of unsupervised algorithm picks groups so that objects within a group are more similar to each other than those in other groups. An example is the k-means type.

ANSWER: **clustering** [or **cluster** analysis]

[10] An important class of supervised algorithms perform this task of modelling a response variable in terms of one or more explanatory variables. The method of least squares is used for this task.

ANSWER: **regression**

21. This play opens with a fury urging a ghost to make his house commit greater sins. For 10 points each:

[10] Identify this tragedy by Seneca whose chorus is composed of citizens wishing that the wretched behavior of the royal house be brought to an end.

ANSWER: **Thyestes**

[10] Seneca's *Thyestes* may have inspired this later play which also features the serving of people as food. At its end, the Goths are driven out of Rome by Lucius, who sentences a treasonous Moor to death.

ANSWER: **Titus Andronicus** (by Shakespeare)

[10] The shade of Thyestes makes an appearance in this earlier playwright's *Agamemnon*, part of his *Oresteia*.

ANSWER: **Aeschylus**

22. Answer the following about the Second Party System, for 10 points each.

[10] The Second Party system was dominated by conflict between the Democratic-Republicans and this other party dominated by wealthy interests. It basically died out during the 1850s.

ANSWER: **Whig** Party

[10] People who didn't vote for either of the two big parties generally went for this first major U.S. third party, a single-issue party that was strongest in states with weak opposition.

ANSWER: **Anti-Masonic** Party

[10] The Anti-Masonic Party organized the first of these events in U.S. history in 1832.

ANSWER: presidential nominating **conventions** [or national **conventions**]

23. Answer the following about the biggest wig in Baroque France, François Couperin. For 10 points each:

[10] Couperin depicted this composer cavorting with "lyric shades" in Elysium in an apotheosis dedicated to him. He created the *Petit violons* ensemble while serving as royal music director.

ANSWER: Jean-Baptiste **Lully**

[10] Couperin primarily played this instrument from the age of 11 though he only published one collection of pieces for it. A Danish Baroque composer created 19 *praeludia* for this instrument that are core to its repertoire.

ANSWER: pipe **organ**

[10] Couperin is best known for his 1716 treatise on the playing of this keyboard instrument similar to the virginal, which plucks strings to create sound.

ANSWER: **harpsichord**

24. Identify the following American authors who only wrote a single screenplay apiece, for 10 points each:

[10] This author's only credited screenplay was for the movie *Watch on the Rhine*, which was based on a play by his lover, Lillian Hellman. Sam Spade appears in his hard-boiled detective novel *The Maltese Falcon*.

ANSWER: (Samuel) Dashiell **Hammett**

[10] This writer's only screenplay was for the film *Things Change*. His poem "A Boy Named Sue" was popularized by Johnny Cash.

ANSWER: Shel **Silverstein**

[10] Stig Bjorkman directed *Georgia, Georgia*, which featured a screenplay written by this author. This author's seventh autobiography, titled *Mom & Me & Mom*, was published in 2013 when this author was 85. *J*

ANSWER: Maya **Angelou** [accept: Marguerite Annie **Johnson**]