Tossups

1. This composer's favorite chord, D flat major, is played with an added E flat at the end of a string quartet sometimes called his "manifesto on love." At the start of a piece by this composer, trombones and timpani play the rhythm "eighth-eighth, quarter, quarter, eighth-eighth" to interrupt two tubas playing in perfect fifths; that piece was dedicated to his country's army. This composer may have intended for the "Intrada" movement to be played at the start of his best-known choral work, whose "Postludium" contains a lengthy organ solo. The deaths of Andrei and Ostap are depicted in a rhapsody by this composer based on Nikolai Gogol's novel *Taras Bulba*. This composer set a text in Old Church Slavonic in his *Glagolitic Mass*. A famous *Sinfonietta* was composed by, for 10 points, what Czech composer?
ANSWER: Leoš **Janáček** ("LAY-osh YAH-na-check") [or Leo Eugen **Janáček**]
<Classical Music>

2. A dog from this territory saved the Royal Rifles from a grenade at the Battle of Hong Kong. The Colonial Building riot presaged this bankrupt territory's 1934 suspension of responsible government for an unelected Commission. This territory's Premier Robert Bond won its rights to lobster on the French Shore. The Somme's Beaumont-Hamel Memorial honors this territory's Royal Regiment with a bronze caribou. Two 1948 referenda ended this territory's dominion status under Joey Smallwood and Louis St. Laurent; it had earlier rejected Confederation. By 1900, the Beothuk died out on this island, whose economy relied on cod fishing in its Grand Banks. In 1809, this island re-annexed a region of Lower Canada that names a breed of retriever dog. For 10 points, what island forms an Atlantic province with Labrador?
ANSWER: **Newfoundland** [accept **Newfoundland** and Labrador or **NL**; or **Taqamgug** or **Tagamuk**; accept Dominion of **Newfoundland** or **Newfoundland** Colony; accept Royal **Newfoundland** Regiment; prompt on Canada before read; prompt on Labrador before read by asking "what territory was it united with in 1809?"]
(The heroic dog was Sergeant Gander, who was named for Newfoundland's Gander International Airport.)
<Other History>

3. In a story in this language, a merchant who is cheated out of his donkeys spends ten days giving elegant speeches to try to get justice. Stories in this language include "The Eloquent Peasant" and one in which a court official named "the son of the sycamore" flees during a military expedition. A magician removes and reattaches the head of a goose in a story in this language, which was also used to write the *Story of Sinuhe*. A work in this language sometimes titled "Coming Forth by Day" compiles a set of funerary spells. Literature in this language was translated after an 1822 breakthrough by Jean-François Champollion. For 10 points, name this language used for literature such as a non-Tibetan *Book of the Dead*, which was translated using the Rosetta Stone.
ANSWER: Ancient **Egyptian** [or r n **km.t**; accept Egyptian **hieroglyph**ics or **Demotic**; accept Middle **Egyptian** or Late **Egyptian**]
<World Literature>

4. This is the first action in the name of a medieval-era "program" that Joseph Henrich claims is ultimately responsible for Europe's psychological divergence in *The WEIRDest People in the World*. A line between St. Petersburg and Trieste demarcates different regional levels of this action according to John Hajnal ("HAI-nall"). The relative failure of the Shim-pua form of this action is considered a downstream consequence of the Westermarck effect. A "ghost" form of this action that is common among the Nuer people is similar to its "levirate" form. This action can be accompanied by the paying of a "price" named for one of its typical participants or the negotiation of a dower. For 10 points, name this action whose forms include polygamy.
ANSWER: **marriage** [accept **nuptial**s; accept **marriage** and family program or levirate **marriage** or ghost **marriage** or arranged **marriage**; accept **wedding** or **matrimony** or being a **bride** or **groom** or **bride** price]
<Social Science>

5. A Monte Carlo algorithm on these data structures uses selection, expansion, simulation, and backpropagation phases in order to update its values. The size of one form of these data structures can be measured in plies ("plys"). Parameters labeled alpha and beta are initialized to negative and positive infinity in an algorithm on these data structures that outperforms the naïve implementation of the minimax algorithm. Traversals of these data structures can be performed pre-, post-, or in-order. These data structures can be characterized by their depth and branching factor. Games can be represented by their "decision" type. For 10 points, name these data structures whose lowest-level child nodes are sometimes known as leaves.
ANSWER: **tree**s [accept specific types such as decision **tree**s or game **tree**s]
<Other Science>

6. *Description acceptable*. Two guards in this place are killed after they fail to notice leafcutter ants stealing the flowers of its gardens. An invitation to this place is told to a louse who is sent inside of a toad inside of a snake inside of a falcon. A hero uses a mosquito to distinguish residents of this place from mannequins. Four talking roads are used to reach this place after passing through rivers of scorpions, pus, and blood. A man is decapitated by the god Camazotz in this place's Bat House. Two lords of this place called One Death and Seven Death are tricked into being chopped to pieces by a pair of brothers who earlier had defeated them at the ball game. For 10 points, the Hero Twins defeat the lords of what location in Mayan mythology where the dead reside?
ANSWER: **Xibalba** ("shee-BAHL-bah") [or **Metnal**; accept the **Maya**n **underworld** or equivalents; prompt on just underworld until "Mayan" is read by asking "which underworld?"; accept **underworld** or equivalents after "Mayan" is read]
<Mythology>

7. A unit of this organization, which was cofounded by "Oramics" creator Daphne Oram, helped to popularize *musique concrète* techniques. Ron Grainer arranged a piece commissioned by this organization that was created by a member of its "Radiophonic Workshop," Delia Derbyshire. This organization's competition with a boat-based organization called "Caroline" prompted it to hire the less traditionalist John Peel. William Walton's oratorio *Belshazzar's Feast* was commissioned by this organization's "Symphony Orchestra." *Pomp and Circumstance No. 1* features at the "last night" of this organization's annual concert series. For 10 points, name this broadcaster which hosts the Proms at the Royal Albert Hall and commissioned the theme tune to *Doctor Who*.
ANSWER: the **BBC** [or **British Broadcasting Corporation**; accept the **Beeb** or Auntie **Beeb**; accept **BBC** Symphony Orchestra or **BBC** Proms] (Radio Caroline was a pirate radio station.)
<Other Arts>

8. In the presence of disturbances, these systems can be approximated as a sequence of instantaneously unperturbed "osculating" instances of them. If the variable u is set to one over distance, the sum of u and the second derivative of u with respect to angle is constant in these systems according to Binet's equation. The mean and eccentric anomalies parameterize motion for these systems, which always conserve the Laplace–Runge–Lenz vector. The sign of the total energy possessed by an object determines if these systems are hyperbolic, parabolic, or elliptical. Position vectors in these systems sweep equal areas over equal times according to Kepler's second law. For 10 points, name these trajectories that include the motion of planets around the Sun.
ANSWER: astronomical **orbit**s [accept osculating **orbit**s; prompt on trajectory]
<Physics>

9. This poet described being left a "lonely began" in a poem that laments his isolation "at a third Remove" in Ireland. The speaker of a poem by this author tells despair he will "not feast on thee" and ends by recounting a time when he "wretch lay wrestling with (my god!) my god." This poet praised "all things counter, original, spare, strange" in a poem that says of God: "He fathers-forth whose beauty is past change." This Jesuit priest discussed his religious doubt in six "terrible sonnets," which include "Carrion Comfort." This author dedicated a poem to five Franciscan nuns who died in a shipwreck and opened another: "Glory be to God for dappled things." For 10 points, name this poet who used his characteristic sprung rhythm in poems like "The Wreck of the Deutschland" and "Pied Beauty."
ANSWER: Gerard Manley **Hopkins**
<British Literature>

10. In 1857, engineers created a harbor on this body of water with a "straight cut" that formed the marshy Jones Island, which was settled by Pomeranian and Kashubian fisherfolk. A Miami-language word for wild garlic names a city on this body of water whose grain and lumber markets shaped the rural West, per William Cronon's history *Nature's Metropolis*. "Electric dispersal barriers" were built to prevent invasive silver carp from entering this body via the Sanitary and Ship Canal that, in 1900, limited this lake's sewage buildup by reversing an adjacent river's flow. Wildfires burned Peshtigo's forests on this lake on the same day that the wooden buildings of its largest city suffered the 1871 Great Fire. For 10 points, what Great Lake is polluted by the ports of Muskegon, Milwaukee, and Chicago?
ANSWER: Lake **Michigan** [accept **Chicago River** or **Calumet River** or **Milwaukee River** or **Menomonee River** or **Kinnickinnic River** or **Chicago** Sanitary and Ship **Canal** or **Chicago** Drainage **Canal** before "lake"; accept **Little Bay de Noc**; accept **Green Bay**; accept **Grand Traverse Bay**; prompt on Great Lakes Waterway]
<American History>

11. This protein's production is partly regulated by EKLF binding to a CACCC box. Synthesis of this protein is coordinated by the locus control region. Dapsone and benzocaine can lead to this protein's oxidation, a process reversed by methylene blue. A regulator of this protein is generated by shunting glycolysis around PGK. Portland and Gower name this protein's fetal forms. The low-affinity tense state of this protein is stabilized by 2,3-BPG. Protonation of this protein's N-termini due to a decrease in the surrounding pH causes a rightward shift of its binding curve in the Bohr effect. A glutamate-to-valine substitution in this protein, whose adult form has two alpha and two beta chains, allows it to aggregate, causing sickle cell anemia. For 10 points, name this iron-containing red blood cell protein that carries oxygen.
ANSWER: **hemoglobin** [or **Hb**; accept fetal **hemoglobin** or **HbF** or embryonic **hemoglobin**]
<Biology>

12. It's not Fragonard, but a 2017 biography of this artist by James Hamilton identifies a phallic bag in a painting by him, whose subjects are shown "without their heads" in a 1998 work by Yinka Shonibare. This artist, who once claimed that he was "sick of portraits" and wanted to play the viol, painted his friend Carl Friedrich Abel with a viola da gamba. A Pomeranian sheepdog tugs at a dress in a portrait by this artist in which the Halletts walk in a park. In a portrait by this painter of *The Morning Walk*, a large estate is shown behind a woman whose lap is unpainted and who sits next to her husband, who is holding a shotgun. In this artist's most famous portrait, a child thought to be Jonathan Buttall wears an outfit of the title color. For 10 points, name this English rival of Joshua Reynolds who painted *Mr. and Mrs. Andrews* and *The Blue Boy*.
ANSWER: Thomas **Gainsborough**
<Painting/Sculpture>

13. A theologian who wrote in this language may have written "The Hymn of the Pearl," proposed a Father and Mother of Life who bore a Son of Life, and was named Bardaisan ("bar-DAY-zen"). It's not Sogdian, but this language was used to write the *Arzhang*, a book of images produced by the prophet Mani. Saint Ephrem's hymns were written in this language, which is used in a liturgy named for Addai and Mari. A version of the Bible in this language, the Peshitta ("p'sheet-TAW"), is used by the Maronite Church. This liturgical language, which is used by Saint Thomas Christians, names the rite used by Assyrian Christians. Jairus's daughter is told "Talitha Kum" in this language that, along with Hebrew, was used to write the Book of Daniel. For 10 points, name this language of the Assyrian Empire, which was spoken by Jesus.
ANSWER: **Aramaic** [or **Arāmāyā**; accept **Syriac** Aramaic; prompt on Chaldean; prompt on Semitic]
<Religion>

14. After he discovered the plague bacillus in Hong Kong, Alexandre Yersin founded this colony's medical school and planted Brazilian rubber trees that supplied Michelin tires. Amid this colony's highland robusta coffee plantations, an adventurer set up the tiny "Kingdom of Sedang" for the mountain-dwelling Bahnar and Degar. In 1940, Phibun's neutral kingdom invaded this colony, whose Japanese occupiers diverted its rice supplies shortly before the August Revolution. This colony, which imposed direct rule on Cochinchina, but not Luang Prabang, was partitioned by the Geneva Accords. This colony's protectorates of Annam and Tonkin were ruled by the puppet emperor Bảo Đại. For 10 points, the French left what colony after they lost the Battle of Điện Biên Phủ to Võ Nguyên Giáp ("zahp") and Hồ Chí Minh?
ANSWER: French **Indochina** [accept **Vietnam** or **Việt** Nam or Nam **Việt** or Đại **Nam** or **Lao**s or **Cambodia** or **Kămpŭchéa** or **Cambodge** or **Nam** Kỳ or **Trung** Kỳ or **Bắc** Kỳ; accept **Tonkin** or **Annam** or **Cochinchina** or **Luang Prabang** before each is read; or **Indochine** française or **Đông Dương** thuộc Pháp or **Indochinese** Union or Union **indochinoise** or Liên bang **Đông Dương**; accept First **Indochina** War]
(The adventurer was Marie-Charles David de Mayréna. The 1940 conflict was the Franco-Thai War.)
<European History>

15. While driving with an open door, a character created by this author sees a turnip-shaped cloud and cries, "Break forth and wash the slime from this earth!" Another story by this author ends as the narrator feels "a tide of darkness" that sweeps his mother away from him as she collapses onto the pavement. One of this author's characters goes to the Hot Spot on his honeymoon, where he abandons his deaf wife Lucynell. This author created a character who kisses a girl in a barn loft and whispers, "Show me where your wooden leg joins on." In another of this author's stories, a car crash caused by the cat Pitty Sing results in the grandmother's murder by the Misfit. For 10 points, name this Southern Gothic author of the short stories "Good Country People" and "A Good Man is Hard to Find."
ANSWER: Flannery **O'Connor** [or Mary Flannery **O'Connor**] (The unnamed stories are "The Life You Save May Be Your Own" and "Everything That Rises Must Converge.")
<American Literature>

16. The decomposition of acetone peroxides is driven by this quantity's namesake "explosion." A decrease in the configurational type of this quantity opposes protein-ligand binding. In a reversible isothermal process, the change in this quantity equals nR times the log of a ratio of volumes. A non-extensive version of this quantity arises from ignoring the indistinguishability of mixing particles in the Gibbs paradox. Reactions driven by this quantity are, by definition, endothermic. This quantity equals Boltzmann's constant times the log of the number of microstates and is zero for a perfect crystal at absolute zero by the third law of thermodynamics. For 10 points, name this quantity that cannot decrease in a closed system by the second law of thermodynamics, a measure of disorder.
ANSWER: **entropy** [accept **entropic** explosion; prompt on S]
<Chemistry>

17. Characters in this novel hide in the beds of horse-drawn carriages to travel to secret meetings at the Hotel Asia. While rummaging through his friend's apartment in Germany, this novel's narrator discovers poems shaped in six-sided diagrams in a green notebook. A chapter of this novel, written in the form of a tape recording in the New Life Pastry Shop, ends with the Director of Education getting shot. In this novel, the actor Sunay Zaim ("SOO-nay zai-EEM") orchestrates his own climactic shooting during a performance of Thomas Kyd's *The Spanish Tragedy*. The protagonist of this novel is killed four years after İpek ("EE-peck"), the sister of Kadife, learns that he betrayed Blue. For 10 points, name this novel in which the poet Ka investigates a string of suicides by headscarf-wearing girls during a blizzard, written by Orhan Pamuk.
ANSWER: *Snow* [or *Kar*]
<European Literature>

18. This state's former solicitor general Jonathan F. Mitchell pioneered a restriction common in this state's town of Waskom. The question of whether a pastor may be able to touch a person being executed is central to this state's recent Supreme Court case *Ramirez v. Collier*. Elena Kagan criticized the Supreme Court's "shadow docket" after it denied an injunction in this state's case *WWH v. Jackson*. An op-ed by Alan Braid in the *Washington Post* revealed that he violated a law in this state permitting damages of up to 10,000 dollars. This state's S.B. 8, which inspired similar laws sometimes named for a six-week window, allows members of the public to sue doctors. For 10 points, a recent law that bans abortions after a "fetal heartbeat" was signed by what state's governor Greg Abbott?
ANSWER: **Texas** [or **TX**]
<CE/Geo/Other/Pop Culture>

19. To defeat an expedition ordered by caliph Hisham, people of this ethnic group tied bags of water to the tails of mares, provoking a stampede that allowed them to neutralize cavalry. The Banu Hilal ("BAH-noo hee-LAHL") tribe emigrated to defeat this ethnic group, which established the Zirid ("ZEE-rid") Emirate. Another empire ruled by this people, which was named for "ribat" ("ree-buht") frontier fortresses, supposedly sacked Kumbi Saleh. The Umayyad conquest of al-Andalus ("ahl-UHN-duh-loose") was led by one of these people, Ţāriq ("tah-reek") ibn Ziyad, who also names the Strait of Gibraltar. Religious leaders within the Sanhaja ("san-HAH-ja"), this ethnicity's largest tribal confederation, encouraged the formation of the Almoravid Empire. The Umayyad conquest of the Maghreb ("Mahg-reb") introduced Islam to, for 10 points, what North African ethnic group that included many Barbary pirates?
ANSWER: **Berber**s [or **Imazighen** or **Amazigh**, accept **Jarawa** or **Zenata** or **Kutama** tribes, accept **Sanhaja** before read; prompt on Moors; prompt on Moroccans]
<World History>

20. In a book on this subject, a person identifies kite positions by their shadows in a section about developing inferences. A treatise on this subject advocates harsh conditions like thin shoes in order to develop rational "habits." Mary Wollstonecraft criticized a book on this subject for an incredibly sexist passage about the bride-to-be Sophie. A treatise on this subject calls virtue the goal of this subject and defines it as the ability to deny one's desires and pursue rationality. A treatise on this subject advocates treating people as "rational creatures" before listing art and trades as useful pursuits. Jean-Jacques Rousseau presented an early theory of this subject in his book *Émile*. For 10 points, John Locke wrote "Some Thoughts Concerning" what subject focused on the teaching of children?
ANSWER: **education** [accept equivalents such as **pedagogy** or **instruction**; accept **learn**ing or synonyms; accept **teach**ing before mentioned; accept *Émile, or On **Education***; accept *Some Thoughts Concerning **Education***]
<Philosophy>

21. The protagonist of this novel describes trying to "fly by those nets" which hold back a man born in his country. This novel's protagonist has an epiphany upon seeing a girl likened to a "strange and beautiful seabird." A character in this novel describes the million of centuries it would take for a bird to remove a mountain of sand grain-by-grain. At the beginning of this novel, Dante and Mr. Casey debate over the death of a politician, and the protagonist listens to a children's story about a "moocow" meeting a "tuckoo." In this novel, the protagonist attends Clongowes and nearly converts to Catholicism after listening to Father Arnall's sermon on hell. For 10 points, name this stream-of-consciousness novel about the coming-of-age of Stephen Dedalus, written by James Joyce.
ANSWER: *A **Portrait of the Artist as a Young Man***
<British Literature>

Bonuses

1. In the Last Supper scene at the center of an altarpiece named for this town, an artist inserted a portrait of himself as a waiter and a portrait of a priest as one of the apostles. For 10 points each:
[10h] Name this town inhabited by a man who is shown wearing a floppy black hat in a 1529 portrait. An artist from this town used a winged-serpent signature and painted Adam and Eve against a black background.
ANSWER: **Wittenberg**
[10m] That portrait of Martin Luther is by this sometime Mayor of Wittenberg, who also painted *The Stag Hunt of Elector Frederick the Wise*. He is known as the "Elder" to distinguish him from his son, an artist of the same name.
ANSWER: Lucas **Cranach** the Elder [or Lucas **Cranach** der Ältere]
[10e] The Lutheran Church officially venerates Cranach the Elder and this other artist on April 6. This artist became a rival of Cranach the Elder due to the success of his woodcuts, like *Melencolia I* and *Knight, Death, and the Devil*.
ANSWER: Albrecht **Dürer**
<Painting/Sculpture>

2. During this historiographical period, the Garamantes mined amazonite in the Tibesti Mountains and the Nok culture sculpted terracotta statues in Nigeria. For 10 points each:
[10h] Identify this broad African historical period that is often dated from around 500 BCE to 1000 CE. Sorghum and millet spread southward in this period, which depleted savanna hardwoods to fuel double bellows technology.
ANSWER: African **Iron Age** [accept Early **Iron Age** Industrial Complex]
[10m] In much of Southern Africa, the Iron Age corresponds with a long-term "expansion" out of Cameroon by this ethnolinguistic group, who likely created the Lydenburg heads. These peoples include the Sotho–Tswana and Nguni.
ANSWER: **Bantu** peoples [accept Southern **Bantu** languages; accept **Bantu** expansion or **Bantu** migrations; prompt on Niger–Congo languages or Atlantic–Congo languages]
[10e] The Bantu migrations spread the "Chifumbaze complex," which included wattle-and-daub architecture, cattle kraals, and starchy crops like yams and this fruit traded from Malaysia. This tropical fruit is related to the plantain.
ANSWER: **banana**s [or *Musa*; accept specific types of banana; prompt on curved yellow fruits]
<Other History>

3. This play's protagonist is called a "squashed cabbage leaf" and a "draggletailed guttersnipe" because she speaks "kerbstone English." For 10 points each:
[10m] Name this play whose lead role was written for Mrs. Patrick Campbell. At this play's premiere, Campbell's delivery of the phrase "not bloody likely" caused possibly the longest audience laugh in English stage history.
ANSWER: ***Pygmalion***
[10e] The word "bloody" was called a "Shavian ("SHAY-vee-in") adjective," named for this Irish playwright of *Pygmalion*, who lamented that "triviality can go no further" about the audience's reaction to the expletive.
ANSWER: George Bernard **Shaw**
[10h] Shaw's play *Arms and the Man* was adapted into an Oscar Straus operetta titled for a soldier nicknamed for this food. In *Arms and the Man,* Captain Bluntschli puts this food in his pockets instead of ammunition.
ANSWER: **chocolate** [accept **chocolate**-cream soldier; accept *The **Chocolate** Soldier* or *Der **Praliné**-Soldat*; prompt on cream; prompt on *Der tapfere Soldat* by asking "what food is that operetta alternatively named for?"]
<British Literature>

4. The electron anomalous magnetic moment is calculated with a function named for these points. For 10 points each:

[10h] Name these points, the number of which in a loop indicates the order of the associated term in the perturbation series. In quantum electrodynamics, each of these points has two fermionic lines and one bosonic line leading in or out.

ANSWER: **Feynman diagram vertices** [or equivalents such as a **vertex** within a **Feynman diagram**; prompt on Feynman diagrams with "what component?"; prompt on particle interactions or similar answers with "how are they represented?"; prompt on vertex or vertices with "in what structures?"]

[10m] Feynman diagrams with extra vertices arise when considering the existence of these particles. Forces are mediated by the exchange of gauge ("gayj") bosons of this type that only exist for brief periods of time.

ANSWER: **virtual** particles [prompt on quantum fluctuations or vacuum fluctuations]

[10e] The bosonic lines that connect to each vertex in QED represent these particles. The electromagnetic force is mediated by virtual examples of these quanta of light.

ANSWER: **photon**s [accept virtual **photon**s]

<Physics>

5. Many modern myths of this city stem from a 19th-century book by Ignatius J. Donnelly, which argues that all gods are based on its rulers and heroes. For 10 points each:

[10e] Name this sunken city and supposed root of modern civilization. Most theories concerning this city's location assume it's in the ocean that closely resembles its name.

ANSWER: **Atlantis** [or **Atlantis** nesos; accept **Island of Atlas**; prompt on the Atlantic Ocean]

[10h] This other mythical city disappeared into the sea when its princess Dahut opened its dikes while drunk. This Breton city was ruled by King Gradlon and is often translated as "low city."

ANSWER: **Ys** ("EES") [or Ker-**Ys**; accept Ville d'**Ys**]

[10m] This hero's home island of Lyonesse sank in one night while he was staying at King Mark's court. This Cornish knight accidentally drinks a love potion that makes him fall for the king's bride-to-be.

ANSWER: Sir **Tristan** [or **Tristram**; accept close equivalents such as **Tristain** or **Trystan**; accept **Drustan**us]

<Mythology>

6. Organisms that benefit from the social form of this interaction tend to be closely related to their targets, according to Emery's rule. For 10 points each:

[10e] Name this form of interspecies interaction in which one species benefits and the other is harmed. The relationship between tapeworms and humans exemplifies this interaction.

ANSWER: **parasitism** [or word forms such as **parasite**]

[10m] This statement explains the evolution of sex as a response to parasitism. This hypothesis states that a species must constantly evolve in order to avoid extinction.

ANSWER: **Red Queen** hypothesis

[10h] Fungi that parasitize plants often also function as this type of decomposer. These decomposers feed on the decaying organic matter of the plants they kill.

ANSWER: **saprophyte**s [or **saprotroph**s or **saprobe**s or **saprotrophic** nutrition or **lysotrophic** nutrition]

<Biology>

7. The BHK interpretation outlines how to perform proofs within the framework of this philosophical position. For 10 points each:
[10h] Name this position devised by L.E.J. Brouwer ("BROW-er"), which holds that mathematics is purely a mental construct and does not exist in objective reality.
ANSWER: mathematical **intuition**ism [or neo-**intuition**ism]
[10m] One of the basic tenets of intuitionism is the rejection of this logical principle. This principle holds that either a proposition or its negation is true.
ANSWER: law of the **excluded middle** [or principle of the **excluded middle**; or law of the **excluded third** or principle of the **excluded third**; or *principium **tertii exclusi***]
[10e] Intuitionism rejects the "actual" type of this property and instead holds that it is always "potential." Brouwer argued that the process of counting possesses this mathematical property because it has no clear end step.
ANSWER: **infinity** [or word forms like **infinite**; accept potential **infinity**]
<Philosophy>

8. Because Tallinn is the birthplace of companies such as Skype, it has been compared to this location "on the Baltic Sea." For 10 points each:
[10e] Name this location, which is often used as a nickname for centers of the technology industry elsewhere. This California region was named for its early semiconductor production.
ANSWER: **Silicon Valley** [prompt on a partial answers; do not accept or prompt on "Santa Clara Valley"]
[10h] Akademgorodok ("ah-KAH-dem-gor-OH-doak"), a part of this city, has been called the "Silicon Taiga." This city, which contains the Tolmachevo Airport, developed after it was chosen as the site of a railroad bridge across the Ob River.
ANSWER: **Novosibirsk**
[10m] This city has often been called the "Silicon Valley of India" because it houses the headquarters of tech companies like Flipkart. This capital of Karnāṭaka ("cur-NAH-tuh-kah") state contains the Lal Bagh botanical garden.
ANSWER: **Bangalore** [or **Bengaluru**]
<CE/Geo/Other/Pop Culture>

9. Rival "Statists" and "Vonckists" led the 1789–1790 Brabant Revolution against this state, which chartered the Ostend Company and fought the brief "Kettle War" against the Dutch over barrier forts. For 10 points each:
[10m] Name this state whose 18th-century realms included Hainaut ("eh-no"), Namur, and Flanders. This state's rivalry with Prussia, "German Dualism," continued after it allied with France instead of Britain in the "diplomatic revolution."
ANSWER: **Austria** [or Archduchy of **Austria**; or Erzherzogtum **Österreich**; accept **Habsburg** Empire or **Habsburg** Monarchy or **Habsburger**monarchie or **Danubian** Monarchy or **Donau**monarchie; accept **Austria**n Netherlands; do not accept or prompt on "Austria-Hungary" or "Austro-Hungarian Empire"]
[10e] The Austrian Netherlands included much of Belgium and this duchy, whose fortress was besieged by French Republicans. The Belgian Revolution partitioned this still-extant Low Country that became a grand duchy in 1815.
ANSWER: **Luxembourg** [or Grand Duchy of **Luxembourg** or Groussherzogtum **Lëtzebuerg** or Grand-Duché de **Luxembourg** or Grossherzogtum **Luxemburg**; accept Duchy of **Luxembourg** or Ducatus **Luxemburg**ensis]
[10h] *German name required.* Joseph II promised Luxembourg to France to bolster his plan to trade the Austrian Netherlands for Bavaria, which provoked Frederick the Great into creating this German alliance in 1785.
ANSWER: **Fürstenbund** [or Deutsche **Fürstenbund**; prompt on translations like "League of Princes" or "Union of Princes" or "Confederation of German Princes"]
<European History>

10. Answer the following about depictions of disabled characters that Rosemarie Garland Thomson examines in her literary study *Extraordinary Bodies*, for 10 points each.
[10m] Thomson discusses this novel, which contrasts the "cut-up" Prue and the "partially blind" Hagar with the angelic Eva St. Clare. In this novel, Ophelia is asked to educate the young girl Topsy.
ANSWER: *__Uncle Tom's Cabin__* [or *Uncle Tom's Cabin; or, __Life Among the Lowly__*] (by Harriet Beecher Stowe)
[10e] Mrs. Hedges, "a mountain of woman" who is covered in a "mass of scars" from a fire appears in Ann Petry's novel *The Street,* which is set in this location. This New York neighborhood names a 1920s literary "Renaissance."
ANSWER: __Harlem__
[10h] Thomson also cites this author, who wrote about her experience of becoming physically debilitated after spending seven years confined in a tiny crawl space in her autobiography *Incidents in the Life of a Slave Girl.*
ANSWER: Harriet __Jacobs__ [accept Linda __Brent__]
<American Literature>

11. This instrument is played offstage just before some Watchers sing "It shines!" during a scene from Edward Elgar's *The Apostles*, although it is often replaced with a flugelhorn in performance. For 10 points each:
[10h] Name this instrument, which is imitated by the brass in the first movement of Ernest Bloch's *Schelomo* for cello and orchestra.
ANSWER: __shofar__ [prompt on ram's horn]
[10m] A moment reminiscent of a shofar blast has been theorized as one of several Jewish influences on this C minor symphony. This symphony sets a text from *Des Knaben Wunderhorn* ("dess K'NAH-ben VOON-der-horn") in its fourth movement "Urlicht" ("OOR-leekt") for solo alto.
ANSWER: Gustav __Mahler__'s symphony no. __2__ [or the "__Resurrection__" symphony or "__Auferstehung__ssinfonie"; or obvious equivalents; prompt on partial answers]
[10e] Jewish-inspired themes in classical music are more commonly played by this instrument, such as in Prokofiev's *Overture on Hebrew Themes*. This single-reed woodwind often plays the melody in klezmer bands.
ANSWER: __clarinet__
<Classical Music>

12. The Staudinger ligation was among the first reactions developed within this framework, which adopts some reactions from click chemistry. For 10 points each:
[10h] Name this field of chemistry pioneered by Carolyn R. Bertozzi. It studies reactions that can occur within living systems without interfering with them.
ANSWER: __bioorthogonal__ ("bio-orthogonal") chemistry [prompt on orthogonal chemistry]
[10e] Bertozzi developed a bioorthogonal variant of the azide-alkyne cycloaddition that removed the need for this cytotoxic catalyst. This transition metal is found with lithium in Gilman reagents and is alloyed with zinc in brass.
ANSWER: __copper__ [or __Cu__]
[10m] Instead of using copper catalysis, the bioorthogonal azide-alkyne cycloaddition is promoted by this general property. The ring and angle forms of this property prevent bridgehead carbons from participating in double bonds by Bredt's rule.
ANSWER: __strain__ [accept ring __strain__ or angle __strain__]
<Chemistry>

13. Answer the following about Indian actors who entered politics, for 10 points each.
[10m] Bollywood actor Amitabh Bachchan ("buh-chuhn") resigned as an MP after he was implicated in the Bofors Scandal that involved this Indian prime minister. A suicide bomber assassinated this Indian prime minister at Sriperumbudur ("SHREE-peh-rum-buh-thoor").
ANSWER: **R**ajiv **Gandhi** [or **R**ajiv Ratna **Gandhi**; prompt on Gandhi]
[10h] N.T. Rama Rao served three terms as chief minister of this state. The Nandamuri–Nara family still holds much influence in this predominantly Telugu-speaking state, whose northwestern neighbor was split from it in 2014.
ANSWER: **Andhra** Pradesh [or **AP**]
[10e] Dharmendra and his son Sunny Deol have joined the Bharatiya Janata Party, which is currently the party of this prime minister. Smriti Irani, a former television actress, serves in this current Indian prime minister's cabinet.
ANSWER: Narendra **Modi** [or Narendra Damodardas **Modi**]
<World History>

14. In a scene in this film, a character takes a lamp out of a house that he has lit on fire as the camera cuts between a bed, a doll's house, and a burning teddy bear. For 10 points each:
[10h] Name this film in which the garbage collector Kit Carruthers, played by Martin Sheen, murders the father of his girlfriend Holly Sargis and goes on a cross-country murder spree with her.
ANSWER: ***Badlands***
[10m] *Badlands* was the feature-film debut of this director, who was the last American to win the Palme d'Or for his film *The Tree of Life*. He also directed *The Thin Red Line* and *Days of Heaven*.
ANSWER: Terrence **Malick** [or Terrence Frederick **Malick**]
[10e] *Badlands* is similar in plot to this 1967 Arthur Penn film, which stars Warren Beatty and Faye Dunaway as the title real-life criminal couple who rob banks before they are killed in a hail of bullets in the film's climax.
ANSWER: ***Bonnie and Clyde***
<Other Arts>

15. Like Pythagoreanism, a religion named for this person believed in vegetarianism and the reincarnation of the soul. For 10 points each:
[10e] Identify this person who names a religion that also worshiped Dionysus. This mythical musician descended into the underworld in order to rescue his wife Eurydice.
ANSWER: **Orpheus** [accept **Orphism** or **Orphic** religion or **Orphic**ism or **Orphiká**]
[10h] A major Orphic rite involved eating raw meat to commemorate Zagreus dying in this manner and then being eaten by the Titans. The king Pentheus was also killed in this way.
ANSWER: **dismemberment** [or word forms such as **dismember**ing; or equivalents like being **torn apart**; accept being **decapitate**d or word forms; accept **sparagmos**; prompt on anything that indicates being killed by a mob]
[10m] Many Orphic gold leaves, which were often found in burials, invoke this goddess. This was the younger of the two deities worshipped in the Eleusinian Mysteries.
ANSWER: **Persephone** [or **Proserpina** or **Persiphassa** or **Persiphatta**; accept **Kore** or **Kora**]
<Religion>

16. Answer the following about split personalities in European literature, for 10 points each.
[10e] In Stefan Zweig's ("ZVEIG's) novel *The Royal Game*, Dr. B develops the personalities White and Black while playing this game. At the novella's climax, Dr. B has a mental breakdown and plays an illegal bishop check in this game.
ANSWER: **chess** [or **Schach**]
[10h] In this novel, Medardo of Terralba literally becomes two people, one good and one evil, after a cannonball splits him in half. This novel is the first in its author's trilogy *Our Ancestors*.
ANSWER: The ***Cloven Viscount*** [or Il ***visconte dimezzato***] (by Italo Calvino)
[10m] This Portuguese author used over 75 "heteronyms" like Álvaro do Campos and Ricardo Reis. This author used the heteronym Bernardo Soares to write the fragmentary work *The Book of Disquiet*.
ANSWER: Fernando **Pessoa** [or Fernando António Nogueira **Pessoa**]
<European Literature>

17. Although more African-Americans became Loyalists, historians like William Cooper Nell have examined "forgotten Black heroes" of the Patriot cause. For 10 points each:
[10e] *First Martyr of Liberty* appraises the legacy of the Afro-Wampanoag stevedore Crispus Attucks, who died in this event. Serena Zabin's "family history" considers the wives of the British soldiers who led this "massacre."
ANSWER: **Boston** Massacre [or "Incident on **King Street**"; accept The ***Boston*** *Massacre: A Family History*]
[10m] This revolutionary petitioned to free the enslaved man James Armistead after he spied on Benedict Arnold as a double agent. This subject of Mike Duncan's *Hero of Two Worlds* took an 1824 "grand tour" of the U.S.
ANSWER: Marquis de **Lafayette** [or Gilbert du **Motier**, Marquis de Lafayette; or Marie-Joseph Paul Yves Roch Gilbert du Motier, Marquis de **La Fayette**; accept James Armistead **Lafayette**; accept *Hero of Two Worlds: The Marquis de **Lafayette** in the Age of Revolution*]
[10h] John Laurens tried to recruit a "Black Battalion" before his death at a 1782 battle on this river. A Black feminist "collective" is named for this river near Beaufort, South Carolina, where Harriet Tubman led an 1863 raid.
ANSWER: **Combahee** ("kum-BEE") River [accept Battle of the **Combahee** River; accept Raid on **Combahee** Ferry; accept **Combahee** River Collective]
<American History>

18. Sudha brings some of these objects to Amal shortly before the arrival of the king in the play *The Post Office*. For 10 points each:
[10h] Name these things. After seeing discarded iron that had pierced some of these things, that play's author was inspired to write another play titled for a specific type of these things in which the despotic King kills Ranjan.
ANSWER: **flower**s [or *Red **Oleander**s* or *Rakta**karabi***]
[10e] This Bengali playwright of *The Post Office* and *Red Oleanders* asked the listener to "Pluck [a] little flower" in the sixth poem from his collection *Gitanjali* ("gee-TAHN-jah-lee").
ANSWER: Rabindranath **Tagore** ("rah-BIN-dra-nath tah-GORE")
[10m] This author, who led a 1913 production of *The Post Office* at the Abbey Theatre, described Tagore's evocations of "flowers and rivers, the blowing of conch shells" in his introduction to *Gitanjali*.
ANSWER: W. B. **Yeats** ("yates") [or William Butler **Yeats**]
<World Literature>

19. A statement about this action claims that systems for it cannot simultaneously satisfy four conditions including non-dictatorship and the independence of irrelevant alternatives. For 10 points each:
[10e] Name this action that is the subject of Arrow's Impossibility Theorem. Political scientists commonly cite a theorem about how the "median" person who performs this action is critical to deciding outcomes.
ANSWER: **voting** [or **electing**; or word forms; accept **voting** systems; accept median **voter**]
[10h] Along with this economist, Arrow names a type of security that pays one unit of the numéraire if a particular state and time is reached, which is prominently used in a equilibrium model they co-name.
ANSWER: Gérard **Debreu**
[10m] Arrow's convex set theory approach is typically used in modern proofs of the two fundamental theorems of this branch of economics, the first of which states that under complete markets any equilibrium is Pareto-optimal.
ANSWER: **welfare** economics
<Social Science>

20. Anomalies such as periods of erosion can cause parallel or angular unconformities between these things, which may be deformed by syncline or anticline folds. For 10 points each:
[10m] Name these things that conceptually group artifacts for seriation in a Harris matrix. Barring deformation, the oldest of these things lies below younger ones, per the law of superposition that underpins relative dating.
ANSWER: **strata** [or **stratum** or **stratification**; accept litho**stratigraphy**; accept litho**facies**; accept **lamina**e or **lamina**tion or **bed**s or **bed**ding; prompt on layers or rocks or sedimentary rock or igneous rock or soil or dirt]
(Archaeological stratigraphy is derived from geological principles, but studies different physical layers.)
[10h] In chemostratigraphy, Archean and Proterozoic layers of alternating chert and compounds of this element mark the Great Oxygenation Event. Victor Goldschmidt classified rhenium and iridium as "philes" of this element.
ANSWER: **iron** [or **Fe**; accept **iron** ores; accept banded **iron** formations or banded **iron**stone formations or **BIF**s; accept **siderophile**s or **siderophilic** elements]
[10e] Marine geochemists may assay iron flux from the ratio of total iron to highly reactive iron, which includes the sparkly sulfide mineral with this common nickname, pyrite. This two-word term references pyrite's metallic luster.
ANSWER: **fool's gold** [prompt on gold or Au]
<Other Science>

21. The 1992 MacSharry reforms introduced direct payments to this policy, which establishes protectionist "community preference" and promotes "rural development" since Agenda 2000. For 10 points each:
[10h] Name this policy that the Hallstein Commission and Inner Six hashed out at the 1958 Stresa Conference. The Mansholt Plan failed to reform this EU policy, which sets dumping-prone milk quotas and subsidizes beef.
ANSWER: **Common Agricultural** Policy [or **CAP**; accept **Common Market** Organizations or **CMO**s; prompt on agriculture]
[10e] In 2010, the European Commission allowed EU member states to restrict crops with this trait. Despite its approval from the European Food Safety Authority, Italy and Austria banned Monsanto corn with this trait.
ANSWER: **GM**Os [or **genetic**ally-**modified** organisms or **genetic**ally-**modified** crops or **GM** crops or **GM** foods or **genetic**ally-**engineered** or **GE** or **genetic**ally-**manipulated** or word forms; accept **new breeding technique**s or **NBT**s; prompt on biotechnology or synthetic biology]
[10m] This country, which is the "M" in the organization GUAM ("G-U-A-M"), bans GMOs in its plum, sunflower seed, and Cricova wine industries. The company Sheriff controls a Russian-speaking breakaway state on the river east of this post-Soviet republic.
ANSWER: **Moldova** [or Republic of **Moldova** or Republica **Moldova**; accept **Transnistria** or Pridnestrovian **Moldavia**n Republic or **PMR** or Pridnestrovskaya **Moldavskaya** Respublika or Republica **Moldovenească** Nistreană or Prydnistrovska **Moldavska** Respublika]
(GUAM stands for Georgia, Ukraine, Azerbaijan, and Moldova. The river is the Dniester River.)
<European History>