Tossups

1. The allocation of these non-housing goods inspired an algorithm refinement called Top Trading Cycles and Chains. A New England Program that allocates these goods was founded in part by the economist Alvin Roth. In an article on the introduction of monetary incentives for these goods, Gary Becker suggested prices of 15,000 and 38,000 dollars for two types of them. One type of these goods uniquely has a legal market in Iran. Art Caplan has advocated changing a policy about these goods to be opt-out by default. These goods are allocated in a Never Ending Altruistic Donor chain. HLA constraints make it difficult to match recipients and donors of these goods, as does blood type. For 10 points, name these goods, one type of which is transplanted into patients with renal failure.
ANSWER: **organ**s [accept **organ** donations, accept **kidney**s or **liver**s or any other human organ, prompt on human tissue or biological material]
<Social Science>

2. As this person's "rays" create "thoughts of love, actions, and words," the narrator of a poem laments "there is no longer any Spring for me." In a poem addressed to this person, the author claims to be an "old tale" before describing the "clearest knowledge" that "the world's delight is a brief dream." Many poems about this person were [emphasize] *translated* by Thomas Wyatt, who introduced those poems to the English court. A poem describes being "bound" by this person's "lovely eyes" on a day "when the sun's ray was darkened in pity for its Maker." A collection dedicated to this person addresses her as "You who hear the sound, in scattered rhymes." For 10 points, the collection *Il Canzoniere* ("eel can-zon-YEH-ray") includes many sonnets to what woman, the muse of Petrarch?
ANSWER: **Laura** [accept **Laura** de Noves]
<European Literature>

3. In prokaryotes, this process is ended by Tus ("T-U-S") protein binding to ter ("T-E-R") sites. This process begins at sites that can be bound by the SV40 large T antigen. In eukaryotes, this process begins with the binding of cdc6 ("C-D-C-6") and cdt1 ("C-D-T-1"), which then recruit six MCM proteins. In *E. coli*, sites that control this process have a 9-mer repeat that binds to DnaA ("D-N-A-A"). A protein key to this process is cleaved by subtilisin to form the Klenow ("KLEN-ow") fragment. An experiment in which *E. coli* were alternately grown in nitrogen-15 and nitrogen-14 media showed that this process is semi-conservative. In eukaryotes, this process requires ligase to join Okazaki fragments on the lagging strand. For 10 points, name this process by which DNA copies itself.
ANSWER: DNA **replication** [accept **DNA synthesis**; prompt on synthesis or S phase; prompt on cell cycle]
<Biology>

4. A precursor to this system was represented by a medieval mnemonic device that associated each entry of the gamut ("GAM-ut") with the joint of a hand. To teach this system, John Curwen designated a clenched fist as the first entry in a series of hand signs. It's not typically written, but this system's entries were originally named based on the text "Ut queant laxis" ("oot kway-ant lack-sis") by the monk Guido of Arezzo. The Kodály ("KO-dai") method of pedagogy is largely based on a "moveable" form of this system of solmization. A song from *The Sound of Music* based on this system associates its first entry with "a deer, a female deer" and its second with "a drop of golden sun." For 10 points, name this set of seven syllables used to teach people to sing, which starts with do ("doe"), re ("ray"), and mi ("mee").
ANSWER: **solfège** ("sol-FEZH") [or **solfeggio**; or **sol-fa**; or **solfa**; or **solfeo**, accept **hexachord**; prompt on solmization before read; prompt on "do, re, mi, fa, so, la, ti" before mentioned; prompt on musical notes]
<Classical Music>

5. This artist's injunction to study anatomy led one of his students to create a racist series of sculptures in Chicago called *The Races of Mankind*. This artist's students included Malvina Hoffman and one who may have depicted him in a work that shows an old man being dragged away from a young woman by an older woman. This artist taught an artist who created a work in which two naked dancers embrace. This artist taught the sculptor of *The Mature Age* and *The Waltz*, Camille Claudel. *Fleeting Love* is among this artist's works that depict Paolo and Francesca, who are entwined in his sculpture *The Kiss*. The *Divine Comedy* inspired this artist's sculptural group that includes a pensive Dante. For 10 points, name this sculptor of *The Gates of Hell*, which includes *The Thinker*.
ANSWER: Auguste **Rodin** [or François Auguste René **Rodin**]
<Painting/Sculpture>

6. This ethnicity's Atlanta fraternal order AHEPA ("uh-HEP-uh") gave their homeland a statue of Harry Truman that was vandalized by PAME ("P-A-M-E"). An anarchist of this ethnicity wrote the labor history *I do mind dying*. In 1909, racists burned this ethnic group's enclave in South Omaha. Teddy Roosevelt sent warships to end the 1904 kidnapping of a millionaire of this ethnicity in Tangier. This was the ethnicity of a centrist Maine senator with surname Snowe and a governor credited with the "Massachusetts miracle." This ethnic group founded many 24-hour diners and a Detroit "Town" that appears in the novel *Middlesex*. A shipping tycoon of this ethnicity part-owned Monaco's SBM and Monte Carlo Casino and married the widow Jackie Kennedy. For 10 points, name this ethnicity of Michael Dukakis and Aristotle Onassis.
ANSWER: **Greek**-Americans [or **Ellino**amerikanoí or **Hellene**s or **Élline**s; accept **Aromanian**s or **Vlach**s or **Armãnji** or **Rrãmãnji** or **Wallachian**s; accept **Greek**town or **Greek** Town Riot; accept American **Hellenic** Educational Progressive Association; prompt on Mediterranean or Southern European] (Dan Georgakas wrote *Detroit, I do mind dying*. The millionaire was Ion Perdicaris. The Maine senator was Olympia Snowe. Jeffrey Eugenides wrote *Middlesex*.)
<American History>

7. An author from this country wrote a novel in which a saxophone teacher snitches on Stanley's relationship with the 15-year-old Isolde. That author from this country wrote about a séance ("SAY-ahnce") for Emery Staines in the novel that followed her debut *The Rehearsal*. A 2013 novel from this country, in which the protagonist investigates the death of Crosbie Wells alongside twelve characters who represent the zodiac, was the longest novel ever to win the Booker Prize. The prospector Walter Moody appears in *The Luminaries* by this country's author Eleanor Catton. In a story by an author who was born in this country, the protagonist directs the placement of a marquee and brings cream puffs to the house of her dead neighbor Mr. Scott. Laura Sheridan hosts the title "Garden Party" in a story from, for 10 points, what home country of Katherine Mansfield?
ANSWER: **New Zealand** [or **Aotearoa** or **NZ**; prompt on Canada by asking "where does that author live?"]
<World Literature>

8. A person with this occupation was apocryphally killed after Saint Mercurius disappeared from an icon where Saint Basil was praying, before reappearing with a bloody spear. The daughter of a person with this occupation may have helped found the first church of Saint Agnes. A saint tried to convert a person with this occupation to Christianity after that saint was healed by Saint Irene. The mother of a person with this occupation sent him the nails used to crucify Christ. Just after trying to convert a person with this occupation, Saint Sebastian was clubbed to death. Another person with this occupation, whose mother was Saint Helena, converted to Christianity after being told "in this sign you will conquer" before the battle of Milvian Bridge. For 10 points, name this office held by Constantine the Great.
ANSWER: **Roman emperor** [or **emperor of Rome**; accept **Augustus** or **Caesar** or **imperator** or **Princeps** Civitatis; accept **Byzantine emperor**; prompt on emperor or ruler or leader or commander or politician or equivalents]
<Religion>

9. A language from this region is often transliterated with the Wylie system. In that language of this region, an *Ophiocordyceps* ("OH-fee-oh-COR-diss-eps") fungus that forms a mainstay of the rural economy is called "summer grass, winter worm." Painters from this region originated elaborate cloth artworks called *thangkas* ("TONG-kahs"). People in this region often mix roasted barley flour with butter tea. The Jokhang Temple in this region, which contains the traditional provinces of Kham and Amdo, is maintained by the Gelug school. Most prayer flags originate from this region, which is the center of the Bön religion. A former seat of this region's government is the Potala Palace. For 10 points, name this region, a current territory of China formerly controlled by the Dalai Lama.
ANSWER: **Tibet** [or **Xīzàng**; or **Zàng**qū; accept **Bod** or **Bö** or **Poi**; accept Kingdom of **Tibet** or **Tibet** Autonomous Region or the **Tibet**an Plateau; prompt on Western China or Zhónggúo or Xībù; prompt on the Himalayas]
<CE/Geo/Other/Pop Culture>

10. This author addressed the poem "Elegy" to a "cold kind man brave in his narrow pride" who was "too proud to cry" and "too proud to die." Another poem by this author depicts the dead "Robed in the long friends, / The grains beyond age, the dark veins of her mother." This poet wrote about the "majesty and burning of the child's death" during the London Blitz. This author described men whose "words had forked no lightning" in another poem whose speaker prays "Curse, bless, me now with your fierce tears." That poem evokes men whose "Blind eyes could blaze like meteors and be gay," a reference to this poet's dying father. For 10 points, name this Welsh poet who commanded "Rage rage against the dying of the light" in "Do not go gentle into that good night."
ANSWER: Dylan **Thomas** [or Dylan Marlais **Thomas**]
<British Literature>

11. This book is said to outline three "disciplines" of perception, action, and will in Pierre Hadot's ("ah-DOH's") *The Inner Citadel*. This book claims that "your own soul" is the most peaceful place to escape to in a section that calls the root of all problems "providence or atoms." In this book's section "Debts and Lessons," its author thanks one of his teachers for telling him to "read attentively" and "discipline [his] character." This book, whose original title was *Ta eis heauton* ("TAH AY-ees hay-OH-ton"), encourages its reader to wipe out judgments of pain to avoid being hurt by external objects. This book promotes *apatheia* by telling its readers not to fear death in its third section, which was written while its author was campaigning in Carnuntum. For 10 points, name this Stoic text of personal writings by the Emperor Marcus Aurelius.
ANSWER: ***Meditations*** of Marcus Aurelius [or The ***Thoughts*** of the Emperor ***Marcus Aurelius*** Antoninus; accept ***Ta eis heauton*** before read]
<Philosophy>

12. An ansatz wavefunction describing this phenomenon includes a namesake function multiplied by [read slowly] "*e* to the quantity *i* times *k* times radius, all over radius." Partial wave analysis produces that function named for this phenomenon, whose imaginary part in the forward direction is used to describe this phenomenon in the optical theorem. A namesake angle governing this phenomenon can be found in terms of the impact parameter. The square of this phenomenon's amplitude is equal to the differential cross-section. Planck's constant over the product of electron mass and the speed of light gives a wavelength that governs the magnitude of a form of this phenomenon named for Arthur Compton. For 10 points, name this phenomenon, the deflection of one particle by another.
ANSWER: **scatter**ing [accept specific types of scattering such as Compton **scatter**ing; accept **scattering** amplitude]
<Physics>

13. During a conflict in this country, 36 French businessmen were accused of illicitly supplying arms in the Mitterrand–Pasqua ("MEE-teh-ron PAH-skwah") affair. A politician from this country praised the Heritage Foundation for urging the repeal of the legislation that ended the CIA's Operation IA Feature here, the Clark Amendment. In this country, a neighboring country's exiled SWAPO militants were targeted by the South African Operation Savannah. At this country's Battle of Quifangondo ("key-FAHN-goan-doo"), opposing sides were aided by South Africa and Cuba. During this country's independence war, Agostinho ("AH-gohs-teen-yoo") Neto and Jonas Savimbi led rival parties. Along with Mozambique and Guinea-Bissau, this mainland African country fought the Overseas War against the Estado Novo. For 10 points, name this former Portuguese colony led from Luanda.
ANSWER: **Angola** [or Republic of **Angola** or República de **Angola**; accept **Angola**gate]
<World History>

14. In this geometry, the positioning of electronegative ligands ("LIG-unds") is subject to the apicophilicity ("a-pi-co-phil-icity") rule. A distorted version of this geometry is preferentially adopted by D6 complexes. In this geometry, the d orbitals have three levels, with the "d-sub-z-squared" orbital at the highest energy, while the "d-sub-x-z" and "d-sub-y-z" levels are at the lowest energy. F-19 NMR experiments on complexes with this geometry were unable to distinguish its two populations of ligands due to Berry pseudorotation. The intermediate in SN2 reactions has this geometry, which has a central atom with dsp3 ("D-S-P-3") hybridization bound to two axial and three equatorial ligands. This is the geometry of phosphorus pentachloride. For 10 points, name this molecular geometry in which a central atom is surrounded by five ligands and no lone pairs.
ANSWER: **trigonal bipyramid**al [do not accept or prompt on "trigonal pyramidal" or "trigonal planar"]
<Chemistry>

15. In the 13th century, this resource was prefixed with "sea" since it was shipped as ballast, before "Hostmen" supplied it to prepare mortar from lime. Early supplies of this resource came from areas like India's Raniganj, Silesia's Jaworzno ("yah-VAWZH-naw"), and Belgium's Borinage ("boar-ee-nazh"). A Joseph Skipsey poem honored workers who died collecting this resource in the 1862 Hartley disaster, which was similar to the 1966 Aberfan ("ah-ber-VAHN") disaster. The 2014 film *Pride* shows Mark Ashton's "Lesbians and Gays" protesting this resource's South Wales pit closures. Humphry Davy invented a lamp to prevent firedamp during the extraction of this resource in Newcastle prior to its refinement by coking. Arthur Scargill's trade union led a 1984–85 strike of this resource's miners. For 10 points, steel and what fuel name a precursor of the EU?
ANSWER: **coal** [accept **coal** mining or **collierie**s; accept **bitumen** or **bituminous** coal or **anthracite** coal or **lignite** coal; accept sea-**coal**; accept **coke** or **coking**; accept European **Coal** and Steel Community; prompt on fossil <u>fuel</u>s or sedimentary <u>rock</u>s] (Lime-burners used coal in their kilns, causing early pollution.)
<Other History>

16. It's not the saxophone, but a player of this instrument wrote a standard first recorded on Joe Henderson's album *Page One*, titled "Blue Bossa." A player of this instrument worked with Sonny Rollins and Sonny Stitt on the album *Sonny Side Up*. This instrument was played by Kenny Dorham and by a musician who drew on Paul Whiteman's song "Whispering" to write "Groovin' High." A musician who mainly played this instrument covered "My Funny Valentine" on a 1954 album titled "[that musician] Sings." This instrument was played by Chet Baker and by the composer of "A Night in Tunisia." A player of this instrument, who worked with Charlie Parker to pioneer bebop, played a "bent" type of this instrument with puffed cheeks. For 10 points, name this brass instrument played by Dizzy Gillespie.
ANSWER: **trump**et
<Other Arts>

17. When its covariance matrix has this property, the multivariate normal distribution does not have a density. If a matrix has this property, then its condition number is infinite. A matrix has this property if and only if its characteristic polynomial has no constant term. For a matrix A with an eigenvalue lambda, this property is possessed by the matrix [read slowly] "A minus lambda times the identity matrix." A square matrix has this property if it is rank-deficient, or equivalently if Gauss-Jordan elimination can produce a row that consists of only zeros. A matrix has this property if and only if its determinant is equal to zero. For 10 points, name this property possessed by square matrices for which there does not exist any other matrix that multiplies it to yield the identity.
ANSWER: **singular** [or word forms such as **singularity**; accept **non-invertible** or other answers indicating that the matrix has **no inverse**; accept **not full rank** before "rank-deficient"; accept **zero determinant** before "determinant"]
<Other Science>

18. The female Christian warrior Bradamante ("BRAH-dah-MON-tay") carried a magical object of this kind able to remove anyone from their horse. Diarmuid ("DEER-mid") was gored by a boar after failing to bring a red object of this kind while hunting. One of these objects was kept in a cauldron of water to prevent it from catching on fire and guaranteed victory to the warrior Lugh ("loo"). During the First Crusade, the monk Peter Bartholomew had a vision of one of these objects that caused blood and water to come out of a man. One of these objects made from the bones of a sea monster was used by a warrior to gruesomely kill his half-brother Ferdiad. A soldier named Longinus ("lon-JAI-nuss") wielded one of these objects that inflicted one of the Five Holy Wounds. For 10 points, Cu Chulainn's ("coo CULL-in's") Gáe Bulg ("gay bool-gah") is what type of weapon with a long shaft and pointed tip?
ANSWER: **spear** [accept **lance** or **javelin** or **polearm**; accept **Gáe** Bulg before read; accept the **Lance** of Longinus or Holy **Lance**]
<Mythology>

19. This modern-day country's Frankopan nobility took power in the 1288 Vinodol Statute. A chronicle from Dioclea lists this country's "Red" and "White" lands in Liburnia. Battles at Krbava ("cur-bah-vah") Field and Sisak bookended this country's long war with the Ottomans, whose siege of its Klis Fortress was repelled by Uskok ("oos-coke") pirates from Senj ("seh-nyuh"). The Trpimirović ("ter-pee-mee-roh-veech") dynasty created this country's Sabor parliament, before, in 1102, it became a banate ("BAN-ate") in personal union with King Coloman's Hungary. To pay Venetian debts before Constantinople, Enrico Dandolo had crusaders sack a port in this country during the Fourth Crusade. This country contained the mercantile cities of Ragusa and Zara, as well as Diocletian's Palace in Split. For 10 points, what Balkan country on the Adriatic contains most of Istria, Slavonia, and Dalmatia?
ANSWER: **Croatia** [or Republic of **Croatia** or Republika **Hrvatska**; accept Banate of **Croatia**; accept Kingdom of **Croatia** or Kraljevina **Hrvatska** or Regnum **Croatiae**; accept Duchy of **Croatia** or Kneževina **Hrvatska**; accept Red **Croatia** or White **Croatia**]
<European History>

20. A maid in this novel tells people that she is an "amanuensis" ("uh-MAN-yoo-EN-siss") and sleeps with a man who covers his room with calendars. After breaking into her lover's house, a woman in this novel freezes before trying to stab him for the seventh time in six months. An old "colorless" woman named Circe directs this novel's protagonist to a cave where a brother and sister once discovered gold. While on a hunting trip in this novel, a man whispers "Your day has come" to the protagonist before he chokes him with a wire. This novel opens with Robert Smith attempting to fly by jumping off a hospital roof, causing Ruth to go into labor. Against the wishes of his father Macon, this novel's protagonist befriends his navel-less aunt Pilate. For 10 points, name this novel about Milkman Dead, written by Toni Morrison.
ANSWER: ***Song of Solomon***
<American Literature>

21. Most experiments to determine the peroxide value of oils use a solution of this compound and one of three organic solvents. A coordination polymer of this compound and the uranyl cation is a common negative stain in electron microscopy. Either borate or this compound is found alongside TRIS and EDTA in the two most common buffer solutions for gel electrophoresis. Industrial synthesis of this compound involves the carbonylation of methanol and switched from a rhodium-based catalyst to an iridium-based one. The anhydrous form of this acid forms ice-like crystals and is thus termed "glacial." This acid is synthesized in both the Cativa and Monsanto processes. For 10 points, name this acid with formula CH3COOH, which is found in vinegar.

ANSWER: **acetic** acid [or **acetate**; or **ethanoic acid** or **ethanoate**; accept **CH3COOH** before read]

<Chemistry>

Bonuses

1. Regions attacked by this weapon are doomed to have no rainfall for over three trillion years while all of their inhabitants become infertile. For 10 points each:
[10h] Name this superweapon from Hindu mythology that is capable of annihilating the world. This weapon, which is named after the god who created it, can only be summoned via intense concentration on destroying an enemy.
ANSWER: **Brahmāstra** [accept **Brahmashira Astra**; accept **Brahmadanda Astra**; prompt on Brahmā weapons]
[10e] Due to a curse, Karna forgets the mantra to summon the Brahmāstra, leading to his defeat by this Pāndava warrior. The *Bhagavad Gita* relates how Krishna revealed himself as this warrior's charioteer.
ANSWER: **Arjun**a [or **Pārth**a or **Dhanañjay**a]
[10m] Arjun defeats Karṇa and almost uses the Brahmāstra himself in this war between the Pāndavas and Kauravas. The *Mahābhārata* is mainly set during this war.
ANSWER: **Kurukshetra** War [or the Battle of **Kurukshetra**; prompt on *Mahābhārata* War]
<Mythology>

2. This particle's predicted electric dipole moment is five orders of magnitude smaller than is currently detectable. For 10 points each:
[10m] Name this particle. Experiments to measure this particle's electric dipole moment make use of ones that have been slowed down from spallation sources using moderators.
ANSWER: **neutron**s [prompt on n]
[10h] The neutron electric dipole moment is caused by charge-parity symmetry violation due to a complex phase in this phenomenon. The Cabibbo angle describes this phenomenon, a mismatch between quark flavor and mass states.
ANSWER: quark **mixing** [or flavor **mixing**]
[10e] The small magnitude of the neutron electric dipole moment suggests that this force unusually preserves CP symmetry. Gluons hold the quarks in a neutron together through this fundamental force.
ANSWER: **strong** nuclear force [or **strong** interaction or similar answers]
<Physics>

3. This architectural term often refers to so-called "false arches" lacking a keystone, which instead are constructed from several offset horizontal pieces of stone that meet in the center. For 10 points each:
[10h] Give this architectural term. This term also refers to related solid architectural features that jut out from a wall to support balconies, or other weights, above them.
ANSWER: **corbel**s [accept word forms like **corbel**ling]
[10m] Corbelled vaults are characteristic of this civilization's architecture, as seen at the Governor's Palace at Uxmal ("oosh-MAL"). A 1920's and '30s architectural "revival" was named for this civilization.
ANSWER: **Maya**n civilization
[10e] The Mayan site of Chichen Itzá includes a temple named for having a thousand of these architectural features. In classical architecture, the orders of these features included Ionic, Doric, and Corinthian.
ANSWER: **column**s
<Other Fine Arts>

4. This character claims to find herself in a "desert" after going to her maid's room, which she describes as a "minaret." For 10 points each:
[10h] Name this character who, in a novel titled for her by Clarice Lispector, finds a drawing of two people and a dog on the wall, and kills and eats a cockroach that emerges from a wardrobe.
ANSWER: **G.H.** [accept *The Passion According to **G.H.*** or *A paixão segundo **G.H.***]
[10e] *The Passion According to G.H.* is a novel from this South American country. Like Lispector, most authors from this country, such as Jorge Amado ("ZHOR-zhee ah-MAH-doo"), wrote in Portuguese.
ANSWER: **Brazil** [or **Brasil**; or Federative Republic of **Brazil**; or República Federativa do **Brasil**]
[10m] Other dogs in Brazilian novels include Quincas Borba, who is owned by the identically-named philosopher Quincas Borba in a novel by this author of *The Posthumous Memoirs of Bras Cubas* and *Dom Casmurro*.
ANSWER: **Machado** de Assis ("muh-SHAH-doo jee uh-SEES") [or Joaquim Maria **Machado** de Assis]
<World Literature>

5. Sorghum molasses inspired the nickname of one of these places, which included a site visited by the surgeon Mary Edwards Walker called Castle Thunder. For 10 points each:
[10h] Identify these locations exemplified by Cahaba, the "Old Brick Capitol," Point Lookout, and Johnson's Island. The Dix–Hill Cartel regulated these places, which included Libby, the site of a rodent nest nicknamed "Rat Hell."
ANSWER: U.S. **Civil War prison** camps [or U.S. **Civil War POW camp**s or equivalents; accept **Confederate prison** camps or **Union prison** camps or equivalents; prompt on camps or prisons or stockades; prompt on POW camps or prison camps by asking "during what conflict?"]
[10m] The National Prisoner of War Museum is now held at the site of this typhoid-plagued Civil War prison camp commanded by the Swiss Confederate Henry Wirz. John L. Ransom kept a diary at this infamous camp in Georgia.
ANSWER: **Andersonville** Prison [or **Camp Sumter**; accept **Andersonville** National Historic Site]
[10e] Deaths at Andersonville skyrocketed after prisoners were briefly moved to Florence and Salisbury to avoid the camp's liberation by this general, whose scorched earth campaign inspired the song "Marching Through Georgia."
ANSWER: William Tecumseh **Sherman** [or William T. **Sherman**; accept **Sherman**'s March to the Sea]
<American History>

6. Victor LaValle's novella *The Ballad of Black Tom* is a subversion of this author's story "The Horror at Red Hook" and follows a black street hustler who has the power to summon the monstrous "Sleeping King." For 10 points each:
[10e] Name this racist author of horror stories like "The Shadow over Innsmouth." In LaValle's novella, Black Tom refers to this author's creation with his last words, "I'll take Cthulhu ("cuh-THOO-loo") over you devils any day."
ANSWER: H. P. **Lovecraft** [or Howard Phillips **Lovecraft**]
[10h] In Lovecraft's original story, the protagonist of "The Horror at Red Hook" has this profession. A Michael Chabon ("SHAY-bon") novel titled for this profession is set in an alternate history in which Jewish refugees settle Alaska.
ANSWER: **police** officer [or **cop** or **law enforcement** or equivalents; accept police **detective**; accept *The Yiddish **Police**men's Union*; prompt on officer]
[10m] The deity Hastur in Lovecraft's Cthulhu mythos first appeared in a story by this author of "Moxon's Master." The protagonist of one of this author's stories imagines embracing his wife at the exact moment that his neck snaps.
ANSWER: Ambrose **Bierce** (The story in the second sentence is "An Occurrence at Owl Creek Bridge.")
<American Literature>

7. This piano piece begins with a *grave* introduction based on music sung to the text "A cenar teco m'invitasti." For 10 points each:
[10h] Name this Franz Liszt piece, which also contains a set of A major variations on the same theme that formed the basis for Frédéric Chopin's first work for piano and orchestra.
ANSWER: *__Réminiscences de Don Juan__* ("ray-mee-nee-SONS de don zhu-ON")
[10m] *Réminiscences de Don Juan* was one of the pieces that caused this Russian composer of *Prometheus: The Poem of Fire* to damage his hand while learning them. In response, this synesthesiac composer wrote the funeral march of his first piano sonata.
ANSWER: Alexander **Scriabin** [or Alexander Nikolayevich **Scriabin**]
[10e] Liszt also used themes from *Don Giovanni* in a posthumously-published piece of this type. This type of piece is alluded to in the title of a 1940 Disney film that consists of eight animated segments accompanied by classical music.
ANSWER: **fantasy** [or **fantasia** or **fantasie**]
<Classical Music>

8. An empire based in this modern-day country sent the warship *Al-Sultanah* on a diplomatic mission to America. For 10 points each:
[10e] Name this modern-day country that gained the exclave of Gwadar ("GWAH-duhr") in Pakistan while under the rule of the Ya'rubid ("YAH-ruh-bid") dynasty. The House of Busaid ("boo-SAH-eed") currently rules this country east of Yemen from Muscat.
ANSWER: **Oman** [or Sultanate of **Oman**; accept Sultanate of Muscat and **Oman** or **Oman**i Empire]
[10h] Said ("SAH-eed") bin Sultan began recruiting soldiers of this ethnic group from Gwadar into the Omani military. People of this ethnic group, mainly from the Makran coast of Pakistan, make up around 30 percent of Oman's population.
ANSWER: **Baloch**i people [or **Baluch**i people, accept **Balushi** or al-**Balushi**]
[10m] The Omani Empire eventually split, with one half ruled from this territory. A sultanate based in this island territory lost a 38-minute war to the British and profited from its slave market in Stone Town.
ANSWER: **Zanzibar** [accept **Zanzibar** Sultanate or Sultanate of **Zanzibar** or Usultani wa **Zanzibar** or Sulṭanat **Zanjībār**; accept Anglo-**Zanzibar** War]
<World History>

9. MOPS ("mops"), HEPES ("hee-pees"), and Tris are commonly used chemicals of this type. For 10 points each:
[10e] Name these solutions that resist changes in pH when small amounts of acid or base are added to them. The Henderson–Hasselbalch equation is used to calculate the pH of these solutions.
ANSWER: **buffer** solutions
[10h] A popular buffer in biological applications is a saline solution named for the fact that it is titrated to a pH of 7.4 using derivatives of this ion. Calcium, hydroxide, and this anion are found in apatite.
ANSWER: **phosphate** [or **PO4 3-minus**; prompt on PO4]
[10m] Phosphate is in equilibrium with phosphoric acid, which is one of these acids that have multiple equivalence points on an acid-base titration curve.
ANSWER: **polyprotic** acids [or **polybasic** acids]
<Chemistry>

10. A "guerrilla" form of this activity may involve throwing "bombs" of clay and compost. For 10 points each:
[10e] Identify this activity showcased on a BBC program hosted by Monty Don. This hobby's seasonal tasks include mulching, tilling, mowing, transplanting perennials, and sowing annuals.
ANSWER: **garden**ing [accept **horticulture** or **floriculture** or plant **cultivation**; accept **landscap**ing or **groundskeep**ing or **yard**work or word forms; accept urban **farm**ing; accept *Garden**ers' World*** or guerrilla **garden**ing; prompt on general answers about <u>flower</u>s or <u>plant</u>s]
[10h] Gardeners can choose plants for their site with a USDA map named for this term for a plant's general growth tolerance. The map is colored by the annual extreme minimum temperature, which this trait helps plants withstand.
ANSWER: **hardiness** [or word forms like **hardy**; accept plant **hardiness** zones]
[10m] The spring flowers that grow from these geophytic structures thrive in hardiness zones 3 to 6, since they need cold winters to emerge from dormancy. Daffodils, lilies, irises, and tulips grow from these tuber-like storage organs.
ANSWER: ornamental **bulb**s [or variants like **bulb**iferous plants; accept **bulbil**s or **bulbel**s or **bulblet**s or similar; accept **corm**s or **bulbo**tubers]
<CE/Geo/Other/Pop Culture>

11. A novel set during this war opens with a tightrope walker playing a trick on some townspeople that causes them to fight over their shoes. For 10 points each:
[10h] Name this war during which Daniel Kehlmann's novel *Tyll* is set. In a play set during this war, a mother tells her daughter to avoid falling for soldiers after hearing the prostitute Yvette sing "The Fraternization Song."
ANSWER: **Thirty Years**' War [or **Dreissigjähriger** Krieg]
[10e] This author wrote about Anna Fierling's family and their struggles during the Thirty Years' War in *Mother Courage and Her Children*. This playwright's other "epic theater" dramas include *The Threepenny Opera*.
ANSWER: Bertolt **Brecht** [or Eugen Berthold Friedrich **Brecht**]
[10m] This other author wrote a trilogy of history plays about the Thirty Years' War general Albrecht von Wallenstein and his betrayal by Ottavio Piccolomini. This German author wrote the play *William Tell*.
ANSWER: Friedrich **Schiller** [or Johann Christoph Friedrich von **Schiller**]
<European Literature>

12. Robert Boyd and Peter Richerson's *Not By Genes Alone* discusses how the evolution of this concept is impacted by content-based and frequency-based biases. For 10 points each:
[10h] Name this concept which, according to dual inheritance theory, coevolves with genes to explain phenomena like lactase persistence.
ANSWER: **culture** [accept **cultural** evolution]
[10m] Some scholars argue that cultural evolution occurs via these discrete self-replicating entities that carry ideas or practices. Susan Blackmore wrote a 1999 book about the "Machine" of these entities.
ANSWER: **meme**s [or word forms like **memetic**s; accept *The **Meme** Machine*]
[10e] Mathematical modeling suggests that human culture is adaptive when the environment changes relatively rapidly, meaning it may have evolved in response to the climatic swings of this geological epoch that ended 11,000 years ago.
ANSWER: **Pleistocene** [accept Quaternary **Ice Age** or Quaternary **Glaciation** or Pleistocene **Glaciation** or **Last Glacial** Period or **LGP** or **Last Glacial** Maximum or **LGM** or **Younger Dryas**]
<Social Science>

13. Andrew Israel Ross's *Public City/Public Sex* explores urban homosexuality during this historiographical period, when Liane de Pougy became a demi-monde icon at the Folies Bergère ("faw-lee bair-zhair"). For 10 points each:
[10m] Identify this period discussed "beyond Paris" in Dominique Kalifa's cultural history. The Second Industrial Revolution modernized this period of high-society frivolity from Haussman's remodeling of Paris to World War I.
ANSWER: La **Belle Époque** ("eh-POCK") [prompt on fin de siècle or turn-of-the-century or the late 19th century; prompt on Third Republic or Troisième République; prompt on translations like "beautiful era"]
[10h] During the "democratic six years" that overlapped with France's Belle Époque, this region's leaders led its country's First Republic. This region's textiles were its country's main industry under a king called "the African."
ANSWER: **Catalonia** [or **Catalunya** or **Cataluña** or **Catalonha**; accept **Catalan**; accept Principality of **Catalonia** or Principat de **Catalunya**; prompt on Spain or España or First Spanish Republic or Primera República Española; prompt on Barcelona or Tarragona or Girona or Gerona or Lleida or Lérida or Lhèida or Val d'Aran by asking "what larger cultural region is it part of?"] (The king was Alfonso XIII.)
[10e] The Catalan Renaixença ("ruh-nuh-SHEN-suh") peaked in the post-Bourbon Restoration 1880s, when Brush brought this technology to Spain. Paris's 1878 Exposition Universelle showcased this incandescent technology that replaced piped gaslights.
ANSWER: **electric** lighting [or **electric** lamps; or **electric** street lights; or **electricity** or **electric** power; accept **light bulb**s; prompt on arc lamps or street lamps or bulbs or incandescent lights or power or similar answers]
<European History>

14. The A-star algorithm adds a heuristic to an algorithm that finds the shortest of these constructs. For 10 points each:
[10e] Name these constructs, the shortest of which between two given points can be found with Dijkstra's ("DIKE-struh's") algorithm. The traveling salesman problem asks for the shortest of these constructs that passes through all points on a graph.
ANSWER: **path**s [accept **route**s]
[10h] These data structures are typically used to keep track of points in Dijkstra's algorithm. These data structures, often implemented using a heap, pair elements with a value that determines the order they should be accessed in.
ANSWER: **priority queue**s [do not accept or prompt on "queues" alone]
[10m] On an unweighted graph, Dijkstra's algorithm reduces to this algorithm since the priority queue becomes equivalent to a standard queue. This algorithm searches all neighbor nodes before continuing to the next node.
ANSWER: **breadth-first** search [or **BFS**]
<Other Science>

15. Unlike a less physical version by Caravaggio, a circa-1613 painting shows the servant Abra actively assisting this woman. For 10 points each:
[10e] Name this Old Testament woman who, in a common example of the "Power of Women" theme, is depicted slaying Holofernes.
ANSWER: **Judith**
[10m] This artist's bloody rendition of *Judith Beheading Holofernes* is often linked to her abuse by her teacher Agostino Tassi. She also painted *Susanna and the Elders* and *Self-Portrait as the Allegory of Painting*.
ANSWER: Artemisia **Gentileschi** ("jen-tee-LESS-kee") [or Artemisia **Lomi**]
[10h] Gentileschi's other self-inclusions as religious figures include her self-portrait as this saint, which was rediscovered in 2017. Due to their shape, stained glass "rose windows" are often named for this saint.
ANSWER: Saint **Catherine** of Alexandria [or **Catharina** Alexandrina; or The Great Martyr Saint **Catherine**; accept **Catherine** wheels; do not accept or prompt on "Saint Catherine of Siena"]
<Painting/Sculpture>

16. *Description acceptable.* This event led to a manhunt with over 10,000 people and involved an author whose most famous character was the first fictional person to receive an obituary on the front page of the *New York Times*. For 10 points each:
[10h] Name this 1926 event that lasted 11 days. Earlier in the year, this event's subject had published a novel featuring an unreliable narrator who blackmails the widow Mrs. Ferrars.
ANSWER: Agatha **Christie**'s **disappearance** [or equivalents like Agatha **Christie** going **missing**; accept Agatha **Miller** or Mary **Westmacott** in place of "Agatha Christie"; prompt on disappearance or equivalents by asking "Who disappeared?"]
[10e] During Christie's disappearance, police investigated one of her unfinished manuscripts titled for a "blue" example of these vehicles. Christie's *Murder on the Orient Express* takes place in one of these vechicles.
ANSWER: **train**s [accept equivalents like **locomotive** or **rail**road; accept *The Blue Train*]
[10m] *The Saturday Evening Post* quipped that the two unsolved mysteries in Christie's life were her disappearance and the success of this play, which takes place at Monkswell Manor and is the longest-running West End show.
ANSWER: *The Mousetrap*
<British Literature>

17. Eudoxus of Cyzicus and Aelius Gallus led expeditions to this peninsula, where the Qedarites and the Kingdom of Lihyan around Mada'in Salih ("mad-ah-IN sal-ih") controlled the spice and myrrh trades. For 10 points each:
[10e] Name this peninsula where hydreumata ("hee-dray-OO-mah-tah") supplied water to the Via Traiana. Rome's "Petraea" province was formed from the Nabatean ("na-buh-TEE-in") Kingdom in modern Jordan, which built Petra north of Sinai and this larger peninsula.
ANSWER: **Arabia**n Peninsula [or shibhu l-jazīrati l-ʿ**arabiyyah**; accept **Arabia** Felix or **Arabia** Petraea]
[10h] A son of Antigonus I with this name and the epithet "the Besieger" attacked the Nabateans to control Arabia's bitumen deposits. An "invincible" Greco-Bactrian ruler with this name invaded Arachosia in the Mauryan Empire.
ANSWER: **Demetrius** [accept **Demetrius** the Besieger or **Demetrius** I of Macedon or **Demetrius** Poliorcetes; accept **Demetrius** I of Bactria or **Demetrius** the Invincible or **Demetrius** I Aniketos or **Dharmamita** or **Damaytra**]
[10m] During the Seleucid dynastic wars, Demetrius III Eucaerus ("yoo-kai-russ") ruled from this city on the king's highway, which lost power after Seleucus I Nicator founded Antioch. This ancient capital city names a strong Wootz-type material.
ANSWER: **Damascus** [or **Dimašq** or **Darmswq**; accept **Damascus** steel]
<Other History>

18. This good, which comes in both gold and silver types, may sometimes bear the appearance of a banknote of a high denomination. For 10 points each:
[10h] Name this good that may be marked with images of common household items. This good is often burned during the Qīngmíng ("ching-ming") festival as an offering to spirits.
ANSWER: **joss** paper [or **jīn**zhǐ or **yīnsī**zhǐ or **míng bì**; prompt on paper or incense paper or hell money or hell bank notes or zhǐqián; do not accept "zhǐzā"]
[10m] During the Qīngmíng festival, people burn joss paper and clean these places. The Qīngmíng festival is sometimes named for the sweeping of these places.
ANSWER: **tomb**s [accept **grave**sites or **burial** sites; accept **fénmù** or **fen mo** or **fan mou** or **fùn-mu** or **fen bao**]
[10e] Joss paper is burned in order to send it to these dead people whose tombs are swept as part of their veneration in traditional Chinese religion.
ANSWER: **ancestor**s [accept equivalents like **fore-bearer**s; accept **zǔxiān** or **zou sin** or **chú-siên** or **zou sain**; prompt on family; prompt on relatives or specific relatives such as parents or grandparents]
<Religion>

19. The left recurrent laryngeal nerve hooks around this structure, which is inflamed in a condition named for Takayasu. For 10 points each:
[10e] Name this artery, whose arch contains the origins of the brachiocephalic ("BRA-kee-oh-SEH-fuh-lickk") trunk, the left common carotid, and the left subclavian. It is the largest artery in the human body.
ANSWER: **aorta**
[10m] Coarctation of the aorta is one of the symptoms of this chromosomal abnormality, in which women have only one X chromosome. This disease also causes a shield chest and a webbed neck.
ANSWER: **Turner** syndrome [or Ullrich–**Turner** syndrome; or Bonnevie–Ullrich–**Turner** syndrome; prompt on gonadal dysgenesis]
[10h] The aorta eventually splits into these arteries at the L5 spinal level, which then bifurcate into external and internal branches after crossing into the pelvis.
ANSWER: common **iliac** arteries [accept external **iliac** arteries or internal **iliac** arteries]
<Biology>

20. Longinus wrote an early treatise on this quality and its use by great works of literature to inspire emotions. For 10 points each:
[10m] Name this quality that is sometimes equated with greatness. A treatise by Edmund Burke associates this quality with the strong emotions invoked by fear, as opposed to beauty, which is invoked by love.
ANSWER: the **sublime** [or **sublimity**; accept *sublimis*]
[10e] The sublime and the beautiful are explored in this field of philosophy that focuses on the study of taste and art.
ANSWER: **aesthetic**s [accept word forms like **aestheticism**]
[10h] This book's section on aesthetics contains a five-level hierarchy of sublime feelings. This book argues that landscaping and architecture are the lowest art forms for only being the crudest imitations of ideas.
ANSWER: *The **World as Will and Representation*** [or *The **World as Will and Idea***; or *Die **Welt als Wille und Vorstellung***] (by Arthur Schopenhauer)
<Philosophy>

21. Dawn Turner chronicled her upbringing in this neighborhood with her sister and best friend in a 2021 memoir titled for *Three Girls in* [this neighborhood]. For 10 points each:
[10h] Name this neighborhood, which titles a 1945 collection that includes the sonnet sequence "Gay Chaps at the Bar." That collection titled for this neighborhood also includes a poem that opens "abortions will not let you forget."
ANSWER: **Bronzeville** [accept *Three Girls in **Bronzeville***; accept *A Street in **Bronzeville***; prompt on Chicago or the South Side of Chicago]
[10e] The collection *A Street in Bronzeville* is by this poet, who wrote about pool players who "lurk late" and "strike straight" in the poem "We Real Cool."
ANSWER: Gwendolyn **Brooks** [or Gwendolyn Elizabeth **Brooks**]
[10m] A Bronzeville native with this first name and the surname Martha titles Brooks's only novel. A judge meets a woman with this title first name in a John Greenleaf Whittier poem that claims the saddest words are "it might have been!"
ANSWER: **Maud** [accept *Maud* Martha or "**Maud** Muller"]
<American Literature>