Tossups

1. **This dynasty was founded by a man nicknamed Prince Golden Cradle and one of its rulers instituted a policy that gave each person land according to their caste, the field-power system. This dynasty frequently warred with its neighbor the Lanna Kingdom, and became wealthy after capturing the city of Mergui where this kingdom would massacre citizens of the U.K. after an attempted British invasion. Under its King** (*) Naresuan, this dynasty defeated an Eastern invader at the Battle of Nong Sarai. Destroyed by the forces of Alaungpaya, the founder of the Burmese Konbaung Dynasty, this dynasty was succeeded by the Thonburi Dynasty led by Taksin the Great. For 10 points, name this kingdom that ruled from 1351 to 1768 in a country formerly known as Siam.
ANSWER: **Ayutthaya** Kingdom (or Empire or Dynasty)

2. **In the preface to this philosophical book, the author compares himself to a poet and says he is not a philosopher. This book claims that it is a paradox that the individual "determines his relation to the universal by his relation to the absolute," not vice versa. This book discusses how** (*) Agamemnon has to decide between his duty to his country and his duty to his daughter Iphigenia. This book, which has been interpreted as being about the failure of the author's relationship with Regine Olsen, asks whether there is an absolute duty to God and whether there is a teleological suspension of the ethical. In this book, the knight of faith is exemplified by Abraham and his willingness to sacrifice Isaac. For 10 points, name this book by Søren Kierkegaard with a title derived from Philippians 2:12.
ANSWER: *Fear and Trembling* (or *Frygt og Baeven*)

3. **Denardo and Fox implemented this algorithm using multi-level buckets, an improvement on a simple bucket implementation of it known as Dial's algorithm. The best implementation of this algorithm uses a data structure consisting of a collection of heap-ordered trees in which nodes can lose at most one child before they themselves are cut off and become roots. If the heuristic in the** (*) A-star algorithm is set to zero, then it becomes this algorithm. This algorithm initially sets the distance of all nodes to be infinity and then repeatedly finds the closest unvisited node and updates its neighbors. Unlike Bellman–Ford, this algorithm does not return a solution when there is a negative edge cycle. For 10 points, identify this shortest-path algorithm named for a Dutchman.
ANSWER: **Dijkstra**'s algorithm

4. **The protagonist of this novel encounters a hermit who shows him the heart of a hanged black man that he bought for two hundred dollars. A character in this novel saves the shit-eating idiot James Robert Bell from drowning in a river and later leads him around on a leash. That character frequently makes sketches of the surrounding wildlife and expresses a desire to become "suzerain of the earth" before declaring that** (*) "War is god." The protagonist of this novel joins Captain White's militia after burning down a hotel with an earless man named Louis Toadvine. At the end of this novel, the judge dances nude with several whores in a saloon after confronting the kid in an outhouse. For 10 points, name this novel about the kid's adventures with the Glanton Gang of scalpers, written by Cormac McCarthy.
ANSWER: *Blood Meridian* or the Evening Redness in the West

5. **This is the shape of Tony Rosenthal's sculpture *Alamo*, which is located on the traffic island in Astor Place in New York. Piet Blom designed a set of houses in this shape in Rotterdam. The most famous series of**

sculptures by David Smith is named after this shape. Isamu Noguchi sculpted a red one of the shapes with a cylindrical (*) hole in the middle. An art movement named after this shape included the sculptor Alexander Archipenko. That movement, which included Jean Metzinger and Albert Gleizes, had "analytic" and "synthetic" phases and produced works like *The Weeping Woman* and *Les Demoiselles d'Avignon*. For 10 points, identify this shape, which names an art movement founded by Braque and Picasso.
ANSWER: **cube**s (accept ***Cubi***, prompt on "parallelepiped" or "hexahedron")

6. **One disease caused by a member of this phylum can be diagnosed using the Kato technique and had its disease cycle first elucidated by Piraja da Silva; that disease's acute form is also called Katayama's fever. One class possesses opisthaptors, while another class possesses proglottids. Microtriches are folds that line the tegument that cover the members of this phylum, whose members include one that causes** (*) schistosomiasis. One group of structures possessed by organisms of this class are called solenocytes if flagellated and flame cells if ciliated. Those structures are called protonephridia, and unlike other organisms with bilateral symmetry, these organisms have no body cavity. For 10 points, name this phylum contrasted with annelids and nematodes, which consists of flukes, tapeworms, and other flatworms.
ANSWER: **Platyhelminthes** (accept **flatworms**)

7. **This country's FDJ party sent Friendship Brigades to train workers in several African nations. This nation signed the Treaty of Zgorzelec with an Eastern neighbor and it had to buy Vietnamese beans during its three-year long "coffee crisis." This country signed the Transit Agreement with a neighboring country loosening border restrictions shortly before signing the Basic** (*) Treaty with that neighbor. The SED party led this country for its existence and its last leader, Egon Krenz, resigned after the destruction of a barrier built by Walter Ulbricht. Led from 1971 to 1989 by Erich Honecker, for 10 points, name this country in which the Stasi kept order and the Berlin Wall was built, the communist neighbor of West Germany.
ANSWER: **East Germany** (accept **G**erman **D**emocratic **R**epublic or **Deutsche Demokratische Republik** or **DDR**; prompt on "Germany" before the end)

8. **In one painting with this name, a man in red with his hand extended behind his back heads toward the main figure, who is collapsed on the ground; that painting is by James Barry. On the left side of this painting, a red-clad runner approaches the scene waving his hat in his left hand and holding a flag in his right. The two rightmost people in this painting both look at the title figure with their hands** (*) clasped. The figures in this painting are depicted wearing contemporary clothing, despite Joshua Reynolds' insistence that the artist dress them in classical clothing. A native American in a pose similar to The Thinker is looking at the title figure of this painting. For 10 points, name this painting of the final moments of a British general by Benjamin West.
ANSWER: The ***Death of General Wolfe***

9. **In one story by this author, Olivia obsesses over Aztec human sacrifice and whether the dead people would be cannibalized. In another story, the Big Bang happens when Mrs. Ph(i)Nk0 offers to make noodles for everyone located in the same point. This author of "Under a Jaguar Sun" wrote of the moment that a lion hunter shoots an arrow and the possible pasts and futures surrounding that moment in another work. In one story by this man, characters like Captain** (*) Vhd Vhd and the narrator's deaf cousin jump to the moon to collect milk. This man's stories "All at One Point" and "The Distance of the Moon" are narrated by Qfwfq, who also narrates his *t zero*. A novel by this author contains the sisters Lotaria and Ludmilla and notably uses second-person narrative. For 10 points, name this Italian author of *Cosmicomics* and *If on a winter's night a traveler*.
ANSWER: Italo **Calvino**

10. **Wildlife native to this island include its namesake striped rabbit, and other unique species can be found**

on the Mentawai islands to its west. In 2001, military units hired as security for ExxonMobil workers on this island's gas fields were accused of human rights abuses. A province on this island was granted control of the Leuser Ecosystem thanks to an agreement with a separatist movement called GAM. This is the smaller of the two islands to which the largest (*) flower on earth, *Rafflesia arnoldii*, is endemic. This island's Barisan Mountains include the supervolcano Toba. This island contains the province of Aceh ("ah-chay"), which was hit hard by the 2004 Indian Ocean tsunami. It is separated from the Malay Peninsula by the Strait of Malacca, and is the sixth largest island in the world. For 10 points, name this Indonesian island.
ANSWER: **Sumatra** (or **Sumatera**)

11. The Catholic bishop Emmanuel Milingo has attracted controversy for his close relationship with this religion, including his 2001 participation in one of its rituals. After studying members of this religion for seven years, Eileen Barker wrote a book about the process of conversion to this religion. This religion holds that people can be restored to a prelapsarian state through the process of (*) indemnity. One ritual in this religion, which begins with the participants striking each other three times, is intended to make its participants part of God's sinless lineage. This religion's major scripture is the *Divine Principle*. This religion's "blessing ceremony" is a ritual in which large numbers of couples are married or have their marriages rededicated. For 10 points, name this church founded by Sun Myung Moon.
ANSWER: **Unification** Church (or the Holy Spirit Association for the **Unification** of World Christianity; or the Family Federation for World Peace and **Unification**; prompt on "Moonies")

12. This author collaborated with Louise Birt on the screenplay for *The Three Weird Sisters*. One poem by this author describes people being run through by "the unicorn evils." That poem also describes what will happen to corpses "when their bones are picked clean and the clean bones gone," and predicts "though they sink through the sea they shall rise again" and "though lovers be lost (*) love shall not." In another poem, he wrote about good men "crying how bright their frail deeds might have danced in a green bay." That poem declares that "old age should burn and rave at close of day" and tells its addressee to "rage, rage against the dying of the light." For 10 points, name this author of "And Death Shall Have No Dominion" and "Do Not Go Gentle into That Good Night."
ANSWER: Dylan Marlais **Thomas**

13. This man identified four "parties to industry" in a dense book subtitled "A Study in the Principles Underlying Industrial Reconstruction." This author of *Industry and Humanity* spearheaded the passage of the Industrial Disputes Investigation Act of 1907. This man's reputation was damaged by the Beauharnois Scandal, and he appointed Cairine Wilson, the first female Senator. He oversaw the passage of the Canadian Citizenship (*) Act and was the first person recognized as a citizen under it. This man briefly lost the premiership after a motion put forth by Conservative MP H. H. Stevens. Arthur Meighen replaced this man as prime minister after governor general Lord Byng of Vimy refused his request for a general election, leading to their namesake doubly-eponymous affair. For 10 points, name this longest-serving prime minister of Canada.
ANSWER: William Lyon Mackenzie **King**

14. One way of calculating this quantity compares it to a standard of this value which can be calculated by the Edlen equation and involves finding the angle of minimum deviation. This quantity is modeled by the sum of a constant term and a term inversely proportional to wavelength squared in the (*) Cauchy equation, which is generalized to a three-term expansion by the Sellmeier equation. This quantity is related to polarizability by the Lorentz–Lorenz equation, and it equals the square root of the product of relative permeability and permittivity. The Fresnel equations describe light moving between media with different values for this quantity, which is one for a vacuum. For 10 points, name this quantity which appears in Snell's law, the ratio of the speed of light in a vacuum to that in a medium.

ANSWER: <u>index of refraction</u> (or <u>refractive index</u>; do not accept "refraction")

15. **A factory whistle opens a thirteen-voice chorus in the first work of this type by this composer. A triumphant march in the first movement of another of these works by this composer uses low strings, a bassoon, and a bass drum and picks up from a theme about a small girl that consists of a bass solo with celesta accompaniment. The third movement of that work of this type by this composer uses strophic variations and represents the sighs of tired women in a market with string glissandi. Eight lines of one of these works by this composer had to be changed from their original adaptation from the poetry of** (*) Yevtushenko. The tapping of a snare drum opens a twenty-two bar "invasion theme" in another of these works by this composer. For 10 points, name these works by a Russian composer, including ones called *Babi Yar* and *Leningrad*.
ANSWER: <u>symphonies</u> by <u>Shostakovich</u>

16. **A playwright born in this country wrote a play in which a lector reads *Anna Karenina* to a group of factory workers. A novel from this country takes place in the aftermath of the French Revolution, when the cousins Sofia and Esteban meet the real-life figure Victor Hugues. The author of *Anna in the Tropics*, Nilo Cruz, was born in this country. A poet from this country wrote that he treats "a sincere friend who gives me his hand frankly" and "the cruel person who tears out the heart with which I live" the same by cultivating a** (*) white rose for both of them. This country, which produced the author of *Explosion in a Cathedral*, also produced a poet whose collection Versos Sencillos is the source of a poem on which the song "Guantanamera" is based. For 10 points, name this home of Alejo Carpentier, a country whose "apostle of independence" was José Martí.
ANSWER: <u>Cuba</u>

17. **This figure created the first dogs after cutting off the heads of the elderly Tata and Nene and putting them on their rears. The Toxcatl ritual involved the sacrifice of a boy who impersonated this figure for a year; at the end of the year, the boy's skull would be put on display and his flesh was eaten by the nobles of the city. This figure, also identified with Tepeyollotl, kidnapped the goddess of** (*) flowers, Xochiquetzal, from her husband Tlaloc. This deity lost his foot after he used it as bait for the crocodile Cipactli. This god was overthrown by his greatest rival while ruler of the world of the first sun, after which he turned into a jaguar. This figure carried a magic mirror that gave off smoke, and had a piece of obsidian as a foot. For 10 points, name this Aztec deity, the rival of Quetzalcoatl.
ANSWER: <u>Tezcatlipoca</u>

18. **During one election, this man quipped that he could not tell whether he was running for office "or the penitentiary." This man helped to popularize the utopian theories of Albert Brisbane and the dietary reforms of Sylvester Graham, the inventor of the graham cracker. He beat out Jeremiah Black to win the candidacy of one party, and in that election he ran with Benjamin Gratz** (*) Brown. Abraham Lincoln declared "I would save the Union" in a letter to this man responding to his 1862 editorial, "The Prayer of Twenty Millions." He was the Liberal Republican candidate for president in 1872, but died before the electoral votes were counted and is often credited with coining the phrase "go West, young man." For 10 points, name this American abolitionist and social critic, the founder and editor of the *New York Tribune*.
ANSWER: Horace <u>Greeley</u>

19. **Barton–McCombie deoxygenation converts tributyltin hydride into one of these compounds in order to remove a hydroxyl group. They can be reacted with nitrones or nitroso compounds to form a stable spin adduct, allowing for the measurement of hyperfine splitting due to spin coupling with the nucleus; that is the spin trapping technique. AIBN is used to create these compounds with a net release of nitrogen gas. They are** (*) often created by treating reagents with peroxide and light, since the oxygen-oxygen bond in peroxide easily

undergoes homolytic cleavage, and they can be analyzed by electron spin resonance. Reactions involving them, such as anti-Markovnikov additions and chain polymerizations, consist of initiation, propagation, and termination steps. For 10 points, name these compounds removed by antioxidants that have unpaired electrons.
ANSWER: free **radical**s

20. **In *Connected*, Christakis and Fowler claimed that influence spreads over this many degrees in social networks. In *Toward Social Renewal*, Rudolf Steiner promoted the increased interdependence of this many societal realms, and his educational theory posited this many stages of childhood development. John Carroll's theory of cognitive ability has this many strata. Georges** (*) Dumézil divided Proto-Indo-European society into this many classes based on their functions. Max Weber's theory of social stratification posits this many factors. Though there are six stages in Kohlberg's model of moral development, they are grouped into this many levels. For 10 points, Auguste Comte divided societies into how many stages?
ANSWER: **three**

21. **The theory that these phenomena result from the deceleration of ultrarelativistic matter, perhaps resulting from internal shocks, solves the so-called compactness problem. Their spectra can be described by the Band function. The BATSE experiment searched for these phenomena. Long-duration instances of these phenomena are likely caused by** (*) hypernova explosions. These phenomena, which were first detected by the Vela satellites, are followed by longer-wavelength emissions known as the "afterglow." The "short" variety of these phenomena may be caused by the merger of binary neutron stars. For 10 points, name these bright electromagnetic events in which extremely high-energy photons are emitted.
ANSWER: **gamma ray burst**s (or **GRB**s)

Bonuses

1. Identify the following experimental applications of lasers. For 10 points each:
[10] Chu, Cohen-Tannoudji, and Phillips won the Nobel for using lasers to do this to isolated atoms. This process is necessary to form superconductors because above a critical point, thermal interactions bridge the band gap for system and the system stops being a condensate.
ANSWER: laser **cooling** (accept anything that mentions going to **low temperatures**)
[10] One form of laser cooling uses a "slower" named for this physicist. This physicist also names an effect which transitions to the Paschen–Back effect at high magnetic fields.
ANSWER: Pieter **Zeeman**
[10] Steven Chu also worked with these devices, invented by Arthur Ashkin in the 1980s. They use radiation pressure from a Gaussian laser beam to trap small dielectric objects.
ANSWER: **optical tweezers**

2. Historical characters who appear in this book include Marcion and Nebuchadnezzar. For 10 points each:
[10] Name this book, written in the form of a play, which was inspired by a Bruegel painting. Its title character resists his desire for Ammonaria and the lure of the satanic Hilarion.
ANSWER: The **Temptation of Saint Anthony** (or La **Tentation de Saint Antoine**)
[10] The Temptation of Saint Anthony is by this author, who also created the adulterous Emma Bovary.
ANSWER: Gustave **Flaubert**
[10] This other Flaubert novel details Frederic Moreau's infatuation for Madame Arnoux.
ANSWER: **Sentimental Education** (or **L'Education sentimentale**)

3. This man's namesake tape looping technique was popularized by Brian Eno. For 10 points each:
[10] Name this guitarist who recorded the albums Exposure and The Gates of Paradise and played lead guitar on David Bowie's "Heroes."
ANSWER: Robert **Fripp**
[10] Robert Fripp is best known as the guitarist for this progressive rock band whose albums include In the Wake of Poseidon and Larks' Tongues in Aspic. Their debut album features songs like "Moonchild" and "Epitaph," and famously features a weird painting of a screaming dude on its cover.
ANSWER: **King Crimson**
[10] King Crimson's "21st Century Schizoid Man" is sampled in this Kanye West song, the lead single from My Beautiful Dark Twisted Fantasy. Its lyrics declare that "no one man should have" too much of the title thing.
ANSWER: "**Power**"

4. This song is the first track on the album Heavy Weather. For 10 points each:
[10] Name this jazz standard written by Joe Zawinul, which is a tribute to a New York jazz club.
ANSWER: "**Birdland**"
[10] The jazz club Birdland is named in honor of this saxophonist, who was nicknamed "Bird." This bebop pioneer composed "Ornithology" and "Yardbird Suite."
ANSWER: Charlie **Parker**
[10] On the album Jazz at Massey Hall, Parker played with Dizzy Gillespie, Bud Powell, Max Roach, and this bassist, who released the albums Tijuana Moods and The Black Saint and the Sinner Lady.
ANSWER: Charles **Mingus**

5. The attacking force in this battle used Tangier Island as a staging point and the defending side was led by WIlliam Winder. For 10 points each:

[10] Name this battle in which troops under Robert Ross defeated a numerically superior American opponent. This battle often has the word "races" applied to the American's quick retreat.
ANSWER: Battle of **Bladensburg**
[10] The Battle of Bladensburg preceded this event in which Dolly Madison actually did nothing and her slaves saved old paintings. The British lit the White House on fire during this event.
ANSWER: **burning** of **Washington**, D.C. (accept equivalents)
[10] John Armstrong Jr. resigned after the Burning of Washington following in the footsteps of this other Secretary of War and future governor of Massachusetts who had resigned at the start of the War of 1812.
ANSWER: William **Eustis**

6. The "truth tracking" theory of epistemology was originally formulated in this work. For 10 points each:
[10] Name this work which also features the author's response to the Gettier Problems. This work published eight years after *The Examined Life* includes the author's addition of "variation" and "adherence" conditions to an externalist theory of knowledge.
ANSWER: ***Philosophical Explanations***
[10] *Philosophical Explanations* was itself written seven years after this work, which features a debate with Michael Walzer, whom the author taught a course with. Its concept of a minarchist state was criticized by Murray Rothbard.
ANSWER: ***Anarchy, State, and Utopia***
[10] Both *Philosophical Explanations* and *Anarchy, State, and Utopia* were written by this Harvard philosopher, whose last work, *Invariances*, presents new philosophical theories that take account of recent scientific advances.
ANSWER: Robert **Nozick**

7. This poet described how "The bear / Drops dead in sight of the window" in his poem "Glazunoviana." For 10 points each:
[10] Name this poet of the Henry Darger inspired *Girls on the Run*, who described an object which shows an "image / Glazed, embalmed, projected at a 180-degree angle" in another poem.
ANSWER: John **Ashbery**
[10] John Ashbery, along with other poets like Frank O'Hara and Kenneth Koch, was part of a school of poetry centered in this city. Langston Hughes and Countee Cullen were members of the Harlem Renaissance, a cultural movement in this city.
ANSWER: **New York** City (or **NYC**)
[10] Koch's "Variations on a Theme by William Carlos Williams" parodies this Williams poem in which the speaker entreats "Forgive me / they were delicious / so sweet / and so cold" after consuming "the plums / that were in / the icebox."
ANSWER: "**This Is Just To Say**"

8. This man put together the 23-point "Sentiments of the Nation" document, and his army was destroyed shortly after he abandoned the city of Cuautla. For 10 points each:
[10] Name this religious and military leader who became the leader of the Mexican Independence movement after Father Hidalgo's death.
ANSWER: Father Jose Maria **Morelos** y Pavon
[10] Father Morelos was probably a big fan of this speech given by Father Hidalgo named after a small Mexican town that kickstarted Mexican Independence.
ANSWER: **Grito de Dolores** (accept **Cry of Dolores** or **Shout of Dolores**)
[10] A guy who probably wasn't a big fan of the Grito de Dolores was this guy who led Royalist forces before teaming up with Vicente Guerrero and issuing the Plan of Iguala. He was the first Emperor of Mexico.
ANSWER Augustin Cosme de **Iturbide** y Aramburu (accept **Augustin** I)

9. One anomalous phenomenon in this region may be explained by proposed phenomena known as nanoflares. For 10 points each:
[10] Identify this layer of the sun which reaches temperatures of one to three millions of kelvin, despite lying atop a layer that exists at 5800 kelvins.
ANSWER: **corona**
[10] Coronal loops are loops of twisted magnetic flux that terminate on these features on the photosphere, which exhibit intense magnetic activity and lower-than-normal temperatures, and have cycles of varying activity lasting about eleven years.
ANSWER: **sunspot**s
[10] The coronal spectrum displays a line at 530.3 nanometers that was once thought to be due to a new element, tentatively called coronium, though today we know it is due to an ion of this element in the +13 oxidation state.
ANSWER: **iron**

10. Name these mythological figures associated with seals. For 10 points each:
[10] This Norse god fought Loki in the form of a seal in order to get back Freya's necklace Brisingamen. More famously, this deity owns the Gjallarhorn and guards Bifrost.
ANSWER: **Heimdall**
[10] This Greek shapeshifter was captured by Menelaus after he came out of the sea to sleep among his seals. This figure then told Menelaus that Odysseus was trapped on Calypso's island.
ANSWER: **Proteus**
[10] This Nereid was the wife of Proteus. She was captured by Aeacus and tried to escape by turning into a seal; after failing to do so, she bore him Phocus.
ANSWER: **Psamathe**

11. This alliance was created by the Treaty of Pressburg, which effectively dissolved the Holy Roman Empire. For 10 points each:
[10] Identify this collection of German states allied with Napoleon Bonaparte, which lasted from 1806 to 1813. It was dissolved after Napoleon's defeat at the Battle of Leipzig.
ANSWER: **Confederation of the Rhine**
[10] The creation of the Confederation of the Rhine was prompted by Napoleon's victory at this battle in Moravia, at which he crushed the Third Coalition.
ANSWER: Battle of **Austerlitz**
[10] The primary states of the Confederation included Bavaria and this one, which was ruled by the 6-foot 11-inch Frederick I. It was combined with Baden to form a modern state of Germany with capital at Stuttgart.
ANSWER: **Wurttemberg**

12. This work of criticism was written by its author while he was in exile in Istanbul after being removed from Germany by the Nazi regime. For 10 points each:
[10] Name this comprehensive literary study by Erich Auerbach that examined the ways in which Western writers depicted the everyday lives of people.
ANSWER: *Mimesis*: *The Representation of Reality in Western Literature*
[10] The last section of *Mimesis* discusses Proust's *In Search of Lost Time* and this author's novel *To The Lighthouse*.
ANSWER: Virginia **Woolf**
[10] Woolf created the character of Judith Shakespeare in this feminist essay to show that a woman with Shakespeare's talent would not be as successful due to limited opportunities. It posits that the title location is necessary to a woman if "she is to write fiction."
ANSWER: "**A Room of One's Own**"

13. One a holiday commemorating this woman, Jews send gifts of food and drink known as *mishloach manot*. For 10 points each:
[10] Name this wife of Ahasuerus and cousin of Mordecai. Her story is the basis for the Jewish holiday of Purim.
ANSWER: **Esther**
[10] Esther and Mordecai were both members of the Hebrew tribe descended from this man. He and Joseph were the two sons of Rachel.
ANSWER: **Benjamin**
[10] Ahasuerus married Esther after rejecting this first wife of his, who fell into disfavor after she refused to appear before the king at a feast.
ANSWER: **Vashti**

14. One of these reactions generates a 1,2,3-triazole by reacting an azide and an alkyne. For 10 points each:
[10] Name these concerted reactions in which two new sigma bonds are formed and two pi bonds are broken.
ANSWER: 1,3-dipolar **cycloaddition** reactions (prompt on "pericyclic reactions")
[10] This doubly-eponymous cycloaddition, which won its discoverers the 1950 Nobel Prize in Chemistry, is a 4+2 cycloaddition. It generates a six-membered ring from the reaction of a diene with a dienophile.
ANSWER: **Diels–Alder** reaction
[10] The Diels–Alder reaction favors a transition state in this configuration, in which electron-withdrawing substituents on the dienophile are oriented towards the diene pi-bond system, despite the resulting steric hindrance.
ANSWER: *endo* configuration

15. His paper "Job Market Signaling" discussed information asymmetry in the labor market due to employers' lack of information regarding possible employees. For 10 points each:
[10] Name this winner of the 2001 Nobel Prize in Economics, along with Joseph Stiglitz and George Akerlof.
ANSWER: Andrew Michael **Spence**
[10] George Akerlof's best known essay may be this one, in which information asymmetry is discussed in the context of selling used cars.
ANSWER: "The **Market for Lemons**"
[10] Signaling, along with screening, are ways of reducing this specific type of information asymmetry. It is a situation in which undesired results come up in the market prior to the transaction, as opposed to its after-transaction counterpart that involves additional insulated risk.
ANSWER: **adverse selection**

16. This composer was among the first to notice the deafness of his teacher, Beethoven, whose *"Emperor" Piano Concerto* this man debuted. For 10 points each:
[10] Name this prolific Viennese composer of hundreds of études, contained in collections such as *The School of Velocity*.
ANSWER: Carl **Czerny**
[10] Two downward runs of an arpeggiated C7 chord feature in the simplest *Transcendental Etude* by this pupil of Czerny.
ANSWER: Franz **Liszt**
[10] An imitation of a violin tuning up represents the ensuing fervor of a Liszt work of this type, called *The Dance in the Village Inn*. Liszt also composed a C minor étude that is a variation of one of these works by Anton Diabelli.
ANSWER: **waltz**es (*The Dance in the Village Inn* is the first *Mephisto Waltz*)

17. The component states of this alliance were each governed by councils known as Riksradet. For 10 points each:
[10] Identify this state which intermittently unified Norway, Denmark, and Sweden from 1397 to 1523.

ANSWER: **Kalmar Union**
[10] The Kalmar Union was formed by this woman, who united the kingdoms after the deaths of her husband Haakon VI and her son Olaf II. She appointed her great-nephew Eric of Pomerania as her successor.
ANSWER: **Margaret I**
[10] After the Englebrecht Rebellion, the Swedish gained some independence before this ruler's invasion in 1520. An ally of Gustav Trolle, he perpetrated the Stockholm Bloodbath. In karmic retaliation, Frederick I imprisoned this man for 27 years.
ANSWER: **Christian II** (prompt on "Christian")

18. The Verhulst model applies this function to population growth. For 10 points each:
[10] Name this sigmoid function, which in ecology is a solution to the differential equation for dP/dt, where P is population size and t is time.
ANSWER: **logistic** function (accept "equation" of "curve" in place of "function")
[10] Along with carrying capacity, this other constant appears in the differential equation for carrying capacity. This letter represents a type of selection characterized by earlier maturity, smaller size, and more dispersed offspring.
ANSWER: **growth rate** (accept equivalents like **rate of growth**; accept **_r_**)
[10] Paul Ehrlich developed an equation for human impact on the environment, which states that impact is the product of population and two other factors. Name either factor.
ANSWER: **affluence** or **technology**

19. One of the few discernible features of the first painting in this series is the number "6943," which appears under a column of smoke. For 10 points each:
[10] Identify this series of paintings nominally set at a train station which consists of "Farewells," "Those Who Go," and "Those Who Stay."
ANSWER: _**States of Mind**_ (or _**Stato d'animo**_)
[10] The artist of _States of Mind_ was inspired by a soccer player to create this bronze sculpture which depicts the effects of movement on an striding, armless humanoid.
ANSWER: _Unique Forms of **Continuity in Space**_ (or _Forme uniche della **continuità nello spazio**_)
[10] The creator of those works, Umberto Boccioni, was a member of this technology-focused art movement. Its namesake manifesto states that a "roaring car… is more beautiful than the Victory of Samothrace."
ANSWER: **Futurism** (or **Futurismo**, accept word forms like **Futurist**)

20. This location was founded by Perrault, who is now known as the High Lama. For 10 points each:
[10] Name this location discovered by some plane crash survivors including Mallinson and Miss Brinklow, as well as the World War I veteran Hugh Conway.
ANSWER: **Shangri-La**
[10] The Tibetan paradise of Shangri-La features prominently in this novel.
ANSWER: _**Lost Horizon**_
[10] This author of _Lost Horizon_ wrote about a teacher at Brookfield that marries Katherine in _Goodbye, Mr. Chips_.
ANSWER: James **Hilton**

21. Name these psychics and flim-flam artists. For 10 points each:
[10] This Southern American medium and psychic would talk about past lives and Atlantis while in a trance-like state. He could also supposedly absorb the knowledge from books by sleeping on top of them. Woodrow Wilson loved this guy.
ANSWER: Edgar **Cayce**
[10] This more modern and far less artful psychic hosted the show _Crossing Over_. He, like every other TV psychic, uses cold-reading in order to fake talking to dead people.

ANSWER: John **Edward**
[10] This Indian alternative health guru has written a million books and loves to make references to "quantum theory" when it comes to holistic medicine. He also founded the American Association of Ayurvedic Medicine.
ANSWER: Deepak **Chopra**