

TOSSUPS

1. This character declares, “thou to me art all things under heaven,” in an embedded sonnet alluding to dreams “some great good presaging.” This character recalls, “I started back, it started back, but pleased I soon returned,” as she observed the “smooth wat’ry image” of her own reflection. This character’s “unadorned golden tresses” wave “in wanton ringlets...as the vine curls her tendrils,” in contrast to the shoulder-length “hyacinthine locks” of her husband. This character wonders at the “language of man pronounced by tongue of brute” when a creature “erect amidst his circling spires” praises her, after which he offers to lead her to the tree whose fruit gave him the power of speech. A squadron of angels with a flaming sword drive this character and her husband from the title location of an English epic. For 10 points, name this character from *Paradise Lost*, the wife of Adam.

ANSWER: **Eve**

2. This anthropologist developed the “closed corporate community” framework to understand why Mesoamerican and Javanese peasant economies exhibited similar behavior. He studied the formation of ideologies under social stress among the Kwakiutl, the Aztecs, and the Nazis in his book *Envisioning Power*. During the Vietnam War, he collaborated with Marshall Sahlins to lead the first “teach-in” at Michigan. In his major work, this author critiqued the static conception of culture, which he redefined as a “series of processes” that “construct, reconstruct, and dismantle” existing cultural symbolism in response to “identifiable determinants.” In that book, this anthropologist identified “kin-ordered,” “tributary,” and “capitalist” modes of production, and analyzed cultural transformations among displaced peasants and colonized peoples in response to the overflows of industrial capitalism. For 10 points, name this Marxist anthropologist who wrote *Europe and the People Without History*.

ANSWER: Eric **Wolf**

3. Labeling biomolecules with maleimide requires first applying T·C·E·P to cleave any occurrences of this functional group. Iodoacetamide is an alkylating agent used to block the formation of this functional group. Ammonium glycolate cleaves this functional group. A coenzyme that contains a bond of this type in a five-membered ring uses a “swinging arm” to carry the acetyl group between the E1 and E3 subunits of the pyruvate dehydrogenase complex. A six-membered ring containing this functional group and two alcohols occurs in the oxidized form of DTT. A seleno-cysteine-containing peroxidase catalyzes the dimerization of a tripeptide antioxidant by forming one of these functional groups. Sweetening gasoline involves catalyzing the synthesis of these bonds to reduce gas odor and toxic emissions. Beta-mercaptoethanol is used to reduce these bonds before a protein is run on a PAGE gel. For 10 points, name this functional group formed when two cysteines are oxidized, named for the presence of two atoms of a certain element.

ANSWER: **disulfide** bonds or bridges [prompt on cysteines or cystines]

4. During a conversation about history in this novel, a character describes the human Will standing alone in a public square, where his flesh melts off when the God of Inevitability proclaims that Chance does not exist. In another episode from this novel, two exchange students sift through two hundred yards of wet grass for an emerald-set gold ring engraved with the faces of two *yaksha*. In this novel, the maid Tadeshina (tah-day-SHEE-nah) helps a teenager who keeps a prophetic dream-diary arrange secret trysts with a woman from the declining Ayakura family. At the end of this novel, Satoko joins Gesshu Temple to become a nun, causing her lover to become deathly ill and promise to see his friend again “beneath the falls.” Set during the early Taisho era, this novel follows a young member of the upstart Matsugae (mah-tsu-GAH-eh) clan with three moles on his left side, which reappear on his subsequent incarnations as Isao and Ying Chan. For 10 points, name this novel about the friends Kiyooki Matsugae and Shigekuni Honda, the first novel in Yukio Mishima’s *Sea of Fertility* tetralogy.

ANSWER: **Spring Snow** [or **Haru no Yuki**; prompt on the *Sea of Fertility*]

5. This country's government juiced up the economy with debt-financed "Pharaoh projects" and the "correction for inflation" scheme. In this country, the October 8 Revolutionary Movement ransomed US Ambassador Charles Burke Elbrick for fifteen prisoners. This country's government responded to the March of the Hundred Thousand student-led protest by cracking down on its "restricted democracy" with the Fifth Institutional Act. A focal point for dissent in this country was the death of journalist Vladimir Herzog in an OBAN facility. Incremental reforms in this country, under the banner of "opening" and "distension," gave rise to the oppositional slogan "Direct elections now!" The Johnson administration approved Operation Brother Sam, which backed a coup against this country's democratic Goulart (goh-LAHRT) government. From 1964 to 1985, this country was controlled by a military junta, whose working-class opposition coalesced into the Workers' Party. For 10 points, name this country whose authoritarian government tortured future president Dilma Rousseff.

ANSWER: Federative Republic of **Brazil** [or República Federativa do **Brasil**]

6. In the *Thebaid*, Statius explicitly writes that the outcome of one of these events foreshadows that Adrastus will be the only survivor of the Seven Against Thebes. A participant in one of these events mentions a king named Echetus who kills everyone who comes near him and recounts the story of how Eurytion's drunkenness led to the war between the Lapiths and Centaurs in an unsuccessful attempt to dissuade a bystander from becoming involved. The participants in that one of these events make use of a huge ball of lard brought by the goatherd Melanthius. In the *Aeneid*, an omen likened to a shooting star occurs during one of these events, after which Aeneas gives an engraved bowl to Acestes. At the funeral games of Patroclus, Meriones defeats Teucer in this event. For 10 points, name this type of contest that Odysseus wins immediately before slaughtering the suitors of Penelope.

ANSWER: **archery** contests [prompt on funeral games or marriage contests]

7. Cells undergoing this process can be identified by the Thy1 ("thigh" "one") marker in flow cytometry and have a lineage denoted Sca-1 positive, c-kit positive, and lin negative. Those cells can also be identified by plating them on a stromal feeder layer and observing the formation of a cobblestone-like region. Purpuras caused by the occurrence of this process outside of its normal location can lead to blueberry muffin babies. That extra-medulla-ry form of this process occurs in the thymus, liver, and spleen. Colony-stimulating factors direct the different branches of this process. This process begins with either a common myeloid or common lymphoid progenitor derived from one of its namesake stem cells. The kidney secretes a hormone that stimulates this process known as erythropoietin and it occurs predominantly in the bone marrow. For 10 points, name this process in which blood cells are made.

ANSWER: **hemato-poiesis** (hee-MAT-oh-poy-EE-sihs) [or **hemo-poiesis**; or **hemato-genesis**; or specific forms, such as **erythro-poiesis**, **lympho-poiesis**, and **myelo-poiesis**; or obvious equivalents, such as **making blood cells**, until "blood cells" is read]

8. Judge Fuld of the New York Court of Appeals held that a company in this industry could avoid liability by contributing one asset each into ten separate corporations in the seminal veil-piercing case *Walkovszky v. Carlton*. Fiorello LaGuardia confiscated police billy clubs to prevent clashes during a months-long strike of this industry sparked by an unpopular nickel tax. In London, workers in this industry are required to study for up to four years for a comprehensive test known as "the Knowledge." In Paris in 2016, thousands of striking workers in this industry blocked traffic to the airports and set tire fires in the streets. The largest player in this industry in San Francisco declared bankruptcy due to the shrinking value of its "medallions," the licenses required to enter this industry in many American cities. For 10 points, name this industry that has lost significant market share to the ride-sharing apps Lyft and Uber.

ANSWER: regulated **taxi** industry

9. Samuel Eliot Morison's history of this document argued that Article III, which provided tax support for "Protestant teachers of piety," slipped through without a valid two-thirds vote. An early draft of this document was rejected thanks to the arguments of Theophilus Parsons, whose description of the need for "vigour, secrecy, and dispatch" was paraphrased in *Federalist* 70. This document required governors to hold one thousand pounds of property, in accordance with its author's earlier *Thoughts on Government*. The slaves Elizabeth Freeman and Quock Walker won suits for freedom on the basis of this document's "Declaration of Rights," which began, "All men are born free and equal." This document was the earliest to implement Montesquieu's separation of powers between an executive, an independent judiciary, and a bicameral legislature. It adopted many of its provisions from a political lobby that John Hancock nicknamed the "Essex Junto." For 10 points, name this oldest continuously valid constitution in history, adopted in 1780 after being authored by James Bowdoin, Samuel Adams, and John Adams.

ANSWER: the State **Constitution** of **Massachusetts**

10. In the Netherlands, an artist with this attribute created an installation called the "Arnhem Trolleybus Station" and was known as the "King of Stations." A Victorian artist with this attribute painted cute cats playing at human activities, such as golf. Hans Prinzhorn published a collection of artworks by people with this attribute that was a major influence on Jean Dubuffet, who accordingly studied Adolf Wolfli. Another artist with this attribute depicted his father as an apothecary in the top right of a detailed painting in which a woodsman prepares to split a hazelnut with an axe with Oberon and Titania watching. In a series of paintings of people with this attribute, a man wears a black cap and a medal signifying military command, and the white-bonneted "Hyena of Salpetriere" (sahl-pet-ree-AIR) has red-rimmed eyes representing envy. Etienne-Jean Georget (zhor-ZHAY) commissioned Theodore Gericault to create a series of portraits of people with this attribute. For 10 points, identify this class of people that includes many "outsider artists" and several people housed with Vincent van Gogh in Saint-Remy.

ANSWER: the **insane** [or equivalents, such as **schizophrenics**; or **mad** people; or **asylum** inmates; prompt on **outsider artists**]

11. Observables for these objects that have one-over-Q power dependence include a universal two-loop correction term called the Milan factor. Measurements of these objects are complicated by "splash-in" effects like underlying event and pile-up contamination. The anti-k-sub-t algorithm is the standard method for reconstructing these objects because it does not create "dark towers" and is unaffected by diffuse radiation, in addition to being infrared- and collinear-safe. These objects appear cone-shaped when graphing transverse momentum versus pseudorapidity and azimuthal angle for an array of calorimeters on a lego plot. The Ellis-Karliner angle characterizes collisions that produce three of these objects, which provide experimental evidence for the existence of gluons. For 10 points, name these collimated energy signatures that are detected in particle accelerators due to the hadronization of free quarks.

ANSWER: particle **jets** [or particle **showers**; or particle **sprays**; prompt on **energy signatures**; do not accept "resonances" or "particles" or "quarks" or "gluons" or "hadrons" or any other answer that refers to individual particles]

12. One film includes a close-up of the trembling hand of a member of this organization as he tries to get a fly crawling on a broken grate to step onto his finger. Another film, about two brothers in this organization, ends with a long shot of one of the brothers wheeling his motorcycle away from a woman moaning over a letter he had just given her along with a pendant. In that film, members of this organization watch from hiding as men violently shave that woman's head and force her to watch her house burn. In another film, a 17-minute static long take of two men smoking and talking at a table leads into a recollection about drowning a dying foal on a cross-country team trip, which a member of this organization uses to justify his actions to a priest. In that film, depictions of the brutality during this organization's "blanket" and "no-wash" protests are followed by a lengthy sequence of a prisoner's body deteriorating under the title condition. For 10 points, name this organization depicted in Ken Loach's *The Wind That Shakes the Barley* and Steve McQueen's *Hunger*, in which Michael Fassbender plays Bobby Sands.

ANSWER: the **IRA** [or the **Irish Republican Army**]

13. Surveyors of these institutions abhorred the shocking prevalence of “daughter-in-law rights,” in which fathers chose wives for their underage sons so they could rape them. Liberals responded to August von Haxthausen’s (HOCKST-“how”-zen’s) valorization of these institutions by tracing their origin back to 18th-century tax policies. Young people labeled “propagandists” to these institutions were rounded up and imprisoned for the “Trial of the 193.” A reform to these institutions was pitched as a “wager on the strong and sober.” During the “Mad Summer of ‘74,” students recalled from Switzerland donned shoddy clothes to join these institutions as part of the “going to the people” movement. Early 20th-century reforms sought to eliminate their periodic “repartitions” by replacing these institutions with *otrub* and *khutors*. These institutions were made into a national symbol by the Slavophile movement and idealized as embryonic socialism by the *narodniki*. For 10 points, name these peasant communes in Tsarist Russia.

ANSWER: **obshchina** [or **mir**; or peasant **communes** in **Russia** before “Russia” is read; prompt on peasant **communes**; do not prompt on “collective farms”]

14. This concept was the subject of a 2003 book by Gregory Currie and Ian Ravenscroft focusing on what they define as its “recreative” form. Kant discussed the “transcendental” form of this concept in the first edition of his *Critique of Pure Reason*, but omitted it from the subsequent editions. Christopher Hill’s writings on this concept have drawn on Thomas Nagel’s lengthy footnote in “What Is It Like to Be a Bat?” distinguishing between the “perceptual” and “sympathetic” forms of this concept. Kant identified this concept with the synthesis of reproduction, which he grouped along with apprehension and recognition as one of the three mental faculties. This faculty’s “primary” form was identified as “the living power and prime agent of all human perception” by Samuel Taylor Coleridge, who contrasted this faculty with another that merely rearranges preexisting materials in his distinction between this faculty and “fancy.” For 10 points, name this mental faculty used in creating works of art.

ANSWER: **imagination** [or **imagining**]

15. In a midrash, the Emperor Hadrian mocks a 100-year-old man for engaging in this action, but rewards him with gold a year later. Rabbi Johanan ben Zakkai told his followers that if they were doing this action when the Messiah came, to finish it before greeting him. Leviticus 19:23 includes the *orlah*, a three-year period after completing this action during which it is forbidden to benefit from it, followed by a year in which only Israel may benefit. A passage in the Babylonian originated the custom of doing this upon the birth of a child to prepare for its eventual marriage. The Jewish National Fund, which annually helps 80,000 tourists complete this action in Israel, claims to have done it 250 million times as part of its central mission. In the twentieth century, it became the central ritual of the agricultural new year celebrated on Tu B'Shvat. For 10 points, name this action which, when done upon the birth of a child, later provides building material for a chuppah.

ANSWER: **planting trees** [or **planting a fig tree**]

16. In this play, a man’s sudden appearance in a doorway “as though from the air” interrupts an argument in which another man exclaims “The promise that a stallion gives a mare I gave that girl!” after grabbing his rifle. In this play’s second act, a man observes “we are only what we always were, but naked now. Aye, naked! And the wind, God’s icy wind, will blow!” as the curtain falls on a girl sobbing “I cannot, I cannot,” over and over. In this play, a man is berated for suggesting other people “think to go like saints,” after which he says, “I speak my own sins; I cannot judge another,” then angrily cries out, “I have no tongue for it.” That man in this play is hanged after insisting, “I have given you my soul; leave me my name!” The first act of this play ends with the gleeful cries of a fever-stricken Betty Parris, who rises from bed and joins Abigail in shouting accusations such as “I saw Goody Hawkins with the Devil!” For 10 points, name this play about John Proctor set during the Salem Witch Trials and written by Arthur Miller.

ANSWER: *The* **Crucible**

17. After defeating Eurylochus at the Battle of Olpae, a man of this name allowed his Spartan enemies to escape and get into a squabble with the Ambraciots. In another victory, a commander of this name encircled Epitadas' hoplite unit with redeployed trireme rowers carrying rocks. In 425 B.C., a general of this name fortified Pylos into a safe haven for escaped helots, then won the naval Battle of Pylos to maroon 400 Spartiates on an island in Navarino Bay. That general's capture of those Spartan prisoners at the Battle of Sphacteria forced Sparta to agree to the Peace of Nicias. That general, who was executed with Nicias after the Sicilian Expedition, shares this name with a man who shaved half his head to force himself to stay inside and hone his craft. This name is shared by a rival of Aeschines whose "On the Crown" speech recounts his history of opposing Macedon. For 10 points, give this name shared by an Athenian general and the Greek orator who delivered ten *Philippics*.

ANSWER: **Demosthenes**

18. In a short story, a young man tasked with picking out one of these beings among a group of maidens playing "hawk and chickens" is rewarded with a mysterious letter for his father the mayor. In that story, the iron claws of one of these beings leave marks on the throat of a maiden, who chops off its hand and drowns herself in the pond beside her father's house. In another story, one of these beings stomps on the earth, turning it translucent with fire and enabling a youth to see the treasure buried under his feet. In that story, a man suffering from amnesia regains his memory upon seeing one of these beings and throws his ax at her, recalling how she drank the blood of the boy Ivas in Bear's Ravine. Basavriuk (bah-SAHV-ree-uck) introduces Petro to one of these beings in Nikolai Gogol's story "St. John's Eve." Another character trashes the literary critic Latunsky's apartment after becoming one of these beings by smearing Azazello's cream on her naked body. For 10 points, name these supernatural beings, examples of whom include Margarita after she makes a deal with Woland and gains the ability to fly.

ANSWER: **witches** [prompt on cats]

19. Dividing the area over which this phenomenon occurs into multiple discrete sections increases the isoplanatic patch radius. The Tatarski model of this phenomenon assumes a Gaussian random distribution with a second-order structure function. SCIDAR and the Hufnagel-Valley model are methods for constructing the C-sub-N squared profile of this phenomenon in order to compute the Greenwood time constant and Fried coherence length. A technique for mitigating the effects of this phenomenon uses a reference laser tuned to the 589.2 nanometer emission line of sodium in order to create a guide star. Other corrective devices for this phenomenon include Shack-Hartmann wavefront sensors and MEMS-based deformable mirrors. For 10 points, name this phenomenon that motivates the development of adaptive optics because it limits the resolution of images taken at astronomical observatories.

ANSWER: **atmospheric turbulence** [or **optical turbulence**; or **atmospheric distortion**; or astronomical **seeing**; or **speckle** patterns; or **twinkling**; or **scintillation**; prompt on turbulence; prompt on image distortion or similar answers describing problems with telescopes; do not accept "atmospheric extinction"]

20. *Note to players: composer and type of piece required.* Many parts in these musical compositions were written for their composer's students Giulia Frasi and Caterina Galli. The composition of these works resulted in the incidental invention of the organ concerto, since their composer wrote and played his organ concertos as interludes during them. Near the end of their composer's life, an early one of these compositions in Italian was reworked by Thomas Morell. In the last of these compositions, written while their composer was going blind, the second part concludes with the chorus "How dark, O Lord, are thy decrees." The success of these works inspired their composer to abandon Italian opera, a genre in which he had composed such successes as *Giulio Cesare* (JOO-lee-oh CHEH-zah-ray), *Rinaldo*, and *Agrippina*. Charles Jennens wrote the libretti for several of these compositions, including one featuring the iconic "Hallelujah" Chorus. For 10 points, name these compositions by a German-British composer, exemplified by *Messiah*.

ANSWER: **oratorios** by George Frideric **Handel** [prompt on oratorios]

TB. A short poem by this poet begins and ends all five stanzas with the words “now” and “me,” respectively, as in, “Now lies the earth all Danae to the stars, and all thy heart lies open unto me.” Another of his poems spoken by a shepherd instructs a maid to “cease...to set a star upon the sparkling spire” and “let the wild lean-headed eagles yelp alone,” inviting her to the valley where she will hear “the moan of doves in immemorial elms, and murmuring of innumerable bees.” Another poem by this man invokes “the first beam glittering on a sail that brings our friends up from the underworld” and “the earliest pipe of half-awakened birds to dying ears” in a series of similes leading into nostalgic refrains about “the days that are no more.” His narrative poem *The Princess* includes the interpolated lyrics “Now sleeps the crimson petal,” “Come down, O maid,” and “Tears, idle tears.” For 10 points, name this Victorian poet who also wrote “The Lady of Shalott.”

ANSWER: Alfred, Lord **Tennyson**

1. According to one account of this event, one participant grabbed the reins of the other's horse and asked him "Who is greater, Muhammad or Bestami?" For 10 points each:

[10] Name this oft-mythologized event, which in another version involved one participant throwing the other's books into a fountain, with the books remaining bone-dry.

ANSWER: the first **meeting** of Jalal ad-Din Muhammad **Rumi** and **Shams** of Tabriz [or obvious equivalents involving those two people meeting]

[10] Although Rumi wrote in Turkish, Arabic, and Greek, he is most famous for his verse written in this language, which was used by Omar Khayyam to write the *Rubaiyat*.

ANSWER: **Persian** [or **Farsi**]

[10] Rumi sometimes wrote in this poetic form of five or more couplets, in which either the same word or the same rhyme ends both lines of the first couplet and the second line of the remaining ones. The last couplet of these love poems usually mentions the poet's pen name.

ANSWER: **ghazals**

2. With Bergmann and Lebowitz, this physicist created the two-state vector formalism of quantum mechanics, in which each wavefunction has a component evolving backward in time as well as one evolving forward. For 10 points each:

[10] Name this physicist who worked with Albert and Vaidman to develop the theory of weak values, which he used to show that performing both pre- and post-selection of quantum states appears to retroactively affect measurements.

ANSWER: Yakir **Aharonov**

[10] Weak measurements can be made using this experimental setup, in which individually detected particles form an interference pattern on a screen. The original version of this experiment demonstrated the wave nature of light.

ANSWER: Young's **double-slit** experiment

[10] Scully and Drühl proposed this variant of the double-slit experiment, in which no interference pattern forms when measuring which path each particle takes unless the which-path data is prevented from reaching a detector.

ANSWER: **quantum eraser**

3. Answer the following about paintings inspired by the Spanish Civil War, for 10 points each.

[10] In a Salvador Dali painting titled "Soft Construction With" these food items, an arm bursting upward from a human leg twists the breast of a humanoid monster. That painting, which contains many of these food items, is subtitled "Premonition of Civil War."

ANSWER: boiled **beans**

[10] A gored horse and a bull appear in this famous Pablo Picasso painting responding to the bombing of the title Basque town by the Condor Legion.

ANSWER: **Guernica**

[10] Franco's defeat of the Spanish Republic inspired Max Ernst to create this 1937 painting, in which a red, blue, and orange dragon appears to be celebrating. Ernst said it depicted "a clumsy oaf which destroys everything."

ANSWER: *The **Fireside Angel*** [or *L'**ange du foyer***; or *The **Triumph of Surrealism***; or *Le **Triomphe du Surrealisme***]

4. This word is uttered after its speaker begins “to recognize this thing that was approaching to possess her” as “she was striving to beat it back with her will—as powerless as her two white slender hands would have been.” For 10 points each:

[10] Name this word that, in a short story, a woman repeatedly whispers to herself as she thinks of “the face that had never looked save with love upon her, fixed and gray and dead.”

ANSWER: **free**

[10] The aforementioned events occur in “The Story of an Hour,” a work by this woman who lived in New Orleans and created Edna Pontellier.

ANSWER: Kate **Chopin**

[10] In this other Chopin story, Mrs. Sommers goes on a shopping spree with \$15 she had intended to use to buy clothes for her children after her attention is captured by the title articles of clothing.

ANSWER: “A **Pair of Silk Stockings**”

5. Answer the following about the ancient Greek Sophists, for 10 points each.

[10] The Sophist Gorgias of Leontini wrote a notorious “Encomium” arguing that this mythological character was free of blame because speech can affect the soul in the same way that drugs affect the body.

ANSWER: **Helen** of Troy

[10] In this dialogue, Socrates shows a student of Gorgias that Sophists cannot teach virtue because virtue cannot be taught. Socrates demonstrates that fact by helping a slave perform geometry.

ANSWER: **Meno**

[10] This Sophist was famous for orating on the “Choice of Heracles” between Virtue and Vice. His larger philosophical project involved drawing subtle distinctions between words to enforce the correct use of names.

ANSWER: **Prodicus** of Keos

6. This city was the birthplace of Averroes and Maimonides, and flourished as the center of a caliphate governed by several rulers named Abd al-Rahman. For 10 points each:

[10] Name this city whose “Mosque-Cathedral” was shared by Muslim and Christian worshippers in medieval Andalusia.

ANSWER: **Cordoba**

[10] Other examples of cultural mingling include the coins minted by this king of Mercia, which displayed the message “There is no god but Allah alone” upside-down because he thought the Arabic he couldn’t read looked pretty. He also built a namesake “dike.”

ANSWER: **Offa** of Mercia

[10] The Moroccan geographer Muhammad al-Idrisi attended this 12th-century Norman king of Sicily, who combined Byzantine and Arabic influences in the spectacular Palatine Chapel in Palermo.

ANSWER: **Roger II**

7. An example of two groups with this property are the hydrogens on the CH₂ group of 2-bromobutane. For 10 points each:

[10] Name this relationship that exists between two identical groups on the same carbon atom, if the carbon is adjacent to a chiral center, and changing one of these groups would result in a certain kind of stereoisomer. Although those two groups are technically identical, they split each other on an NMR diagram.

ANSWER: **dia-stereo-topic** [or **dia-stereo-topicity**]

[10] In NMR, exchangeable protons can be identified by adding this compound to an NMR tube and shaking it to observe the disappearance of that proton’s peak.

ANSWER: **D₂O** [or **deuterium oxide**, or **heavy water**]

[10] The peaks of an NMR signal that is split have heights that can be predicted by this construction, named for a French mathematician, in which each element in a row is equal to the sum of the two elements above it.

ANSWER: **Pascal**’s triangle

8. This ruler's subordinate Constantius Chlorus was forced to deal with Carausius' revolt in Britain after he himself failed. For 10 points each:

[10] Name this Roman emperor, a co-ruler of Diocletian who held the title of *augustus* from 286 to 305. This ruler reclaimed the throne in 307 in service of his son.

ANSWER: **Maximianus**

[10] Maximian held the title of *augustus* with Diocletian, while Constantius Chlorus and Galerius held the title of *caesar*, as part of this system of rule imposed by Diocletian to resolve the 3rd Century Crisis.

ANSWER: the **Tetrarchy**

[10] Maximian and Constantius Chlorus ruled from this city in modern-day Germany, an imperial residence in the late Empire. Like Mainz and Cologne, this city's archbishop was an elector in the Holy Roman Empire.

ANSWER: **Trier** [or **Augusta Treverorum**]

9. Answer the following about the psychology of group conflict, for 10 points each.

[10] This psychologist found that "superordinate goals" could help integrate two previously opposed groups in a seminal experiment for realistic conflict theory.

ANSWER: Muzafer **Sherif** [the experiment is the Robber's Cave]

[10] Henri Tajfel developed this experimental method to measure ingroup bias by dividing participants based on meaningless criteria, such as whether they were told they preferred paintings by Klee or Kandinsky.

ANSWER: **minimal group** paradigm

[10] Students behaved differently based on their designation as "guards" or "inmates" in this notorious experiment conducted by Philip Zimbardo.

ANSWER: **Stanford Prison** Experiment

10. The originator of these constructs applied them to the Oedipus legend, creating a matrix of four vertical columns whose components are the elements of the story. For 10 points each:

[10] Name these fundamental elements into which folktales are broken in the structural analysis of Claude Levi-Strauss.

ANSWER: **mythemes** [do not accept or prompt on "myths"]

[10] French theorist Rene Girard argued that this mythological/religious mechanism of exile was the foundation of human society. Its name comes from a ritual in Leviticus involving an animal sent to Azazel.

ANSWER: **scapegoat** mechanism

[10] This French narratologist extended Vladimir Propp's work on folktales, identifying five elements of narrative syntax in Proust's *Remembrance of Things Past* in the book *Narrative Discourse*.

ANSWER: Gerard **Genette**

11. This unfinished piece of chamber music includes a brief violin cadenza with the unique instruction *ungemein rubato und leidenschaftlich* (UN-geh-"mine" roo-BAH-"toe" unt "LIE"-den-shahft-lish). For 10 points each:

[10] Name this piece whose first movement in A minor was preserved along with a sketch of the opening of the second movement, a G minor scherzo. It was composed a couple years before its composer's cantata *Das Klagende Lied* (das KLAH-gen-duh LEET).

ANSWER: **Mahler's Piano Quartet** movement [or the **Piano Quartet** movement by Gustav **Mahler**; prompt on **piano quartet**]

[10] Clara Schumann played the piano at the premiere of this composer's Piano Quartet in G Minor, his first of three works in the genre. His other compositions include *A German Requiem* and the *Academic Festival Overture*.

ANSWER: Johannes **Brahms**

[10] Brahms's Opus 18 and Opus 36 are his only two pieces in this genre. Arnold Schoenberg's Opus 4 is a one-movement piece in this genre inspired by a Richard Dehmel poem.

ANSWER: **string sextet** [prompt on **sextet**]

12. Eisenstein's power tower, which is "z to the z to the z" and so on, can also be written as the negative of this function of the negative natural log of z, all divided by the natural log of z. For 10 points each:

[10] Identify this function or family of functions, defined as z times e to the z, where z is a complex number.

ANSWER: **Lambert** omega function [or **Lambert**-W function; or Lambert **omega** function; or **product logarithm** function; or **W** function]

[10] If one performs this operation on the Lambert omega function, then the result will be "z" minus "z squared" plus "three halves z cubed", and so on. If this operation is centered on zero, then the Maclaurin series results.

ANSWER: **Taylor** series expansion [or **Taylor** expansion]

[10] The Lambert omega function appears in many solutions to this kind of differential equation, such that "x prime of t" is equal to some function of "x of t minus p", where p is a positive integer and t represents time.

ANSWER: **delay** differential equation [accept **time-delay** systems; prompt on **DDEs**]

13. This empire's ruler Kul Tegin, commemorated in its Orkhon Inscriptions, rides a snow leopard in an elaborate history painting honoring Nursultan Nazarbayev of Kazakhstan. For 10 points each:

[10] Name this 6th-to-8th century confederation of nomadic tribes under the leadership of the Ashina clan, which stretched from the Black Sea to Mongolia. They may have originally been blacksmith vassals under the Rouran Khanate.

ANSWER: **Gokturk** Khanate [or **Turkic** Khanate; or **Sky Turk** Khanate; or **Blue Turk** Khanate]

[10] Oghuz Turkic soldiers from modern-day Kazakhstan founded this Persianized empire in the 11th century, whose ruler Alp Arslan crushed the Byzantines at Manzikert.

ANSWER: **Seljuq** Empire

[10] Turkish nationalist movements often draw on elements of the Gokturk foundation myth, which holds this specific type of animal, named Ashina, rescued their tribe in the Ergenekon mountain range.

ANSWER: a grey she-**wolf**

14. Most of John Webster's collaborations with other playwrights were works in this genre such as *Anything for a Quiet Life* and *A Cure for a Cuckold*. For 10 points each:

[10] Name this biting satirical genre of Renaissance drama. Thomas Middleton's prolific output in this genre includes *A Chaste Maid in Cheapside*, the Thomas Dekker collaboration *The Roaring Girl*, and *A Mad World, My Masters*.

ANSWER: **city comedy** [prompt on **comedy**]

[10] This earlier genre of Renaissance comedy relies on broadly drawn characters exemplifying certain stock personality types, as indicated by the title of a seminal play in this genre about Knowell and his servant Brainworm.

ANSWER: comedy of **humours**

[10] *Every Man in His Humour* was written by this comic playwright of *Bartholomew Fair* who created the con artists Face and Subtle.

ANSWER: Ben **Jonson**

15. A planned 1952 strike in this industry prompted Harry Truman to seize several of its facilities. For 10 points each:

[10] Name this industry that was the subject of the Supreme Court's *Youngstown* decision.

ANSWER: **steel** [prompt on "the **sheet and tube** industry"]

[10] This governor of Ohio rose to national prominence by handling the 1919 Great Steel Strike. He went on to lose the presidential election of 1920 to Warren Harding and to found a namesake communications conglomerate.

ANSWER: James Middleton **Cox**

[10] The CIO organized this 1937 strike, in which the CIO squared off against Republic Steel Company and Youngstown Sheet and Tube.

ANSWER: **Little Steel** Strike

16. One of these proteins associates with its namesake kinase to form the maturation promoting factor, which progress from the G2 phase of the cell cycle to the S phase. For 10 points each:

[10] Name this set of proteins whose periodically rising and falling levels regulate passage through the cell cycle.

ANSWER: **cyclins**

[10] This protein prevents the G1/S transition by binding to and inhibiting the E2F transcription factor. Mutations in this tumor suppressor protein, whose dysfunction inspired Knudson's two-hit model, can lead to the most common form of malignant eye cancer in children.

ANSWER: **retinoblastoma** [or **pRb**]

[10] This kinase is recruited to double-strand breaks where it phosphorylates proteins involved in initializing the DNA damage checkpoint. Mutations in this protein lead to its namesake disease, distinguished by a lack of coordination and small, dilated blood vessels. Name either the kinase or the disease it can cause.

ANSWER: **ATM** kinase [or **ataxia-tel-angi-ec-tasia** syndrome; or **A-T**; or **Louis-Bar** syndrome]

17. This singer made her 1944 debut as Elena in *Mefistofele*, an opera she later recorded under the baton of Tullio Serafin in 1958, singing the role of Margherita. For 10 points each:

[10] Name this lyric soprano who was featured opposite Mario del Monaco in a series of classic recordings of Puccini and Verdi operas for Decca.

ANSWER: Renata **Tebaldi**

[10] Tebaldi had an extremely productive relationship with the Met Opera. Her retirement roughly coincided with the appointment of this American conductor, who served as the Met's music director from 1976-2016.

ANSWER: James **Levine**

[10] Tebaldi and her rival Maria Callas both gave significant performances of this Puccini role, the lover of the painter Mario Cavaradossi and killer of Baron Scarpia.

ANSWER: **Tosca**

18. Many of this man's paintings, including a depiction of a haloed Madonna draped in the "banner of peace" he designed, are housed in his namesake museum, which is located in a brownstone on the Upper West Side. For 10 points each:

[10] Name this mystic and painter of the *Sancta* series who founded the Himalayan Research Institute in India with the support of American admirers.

ANSWER: Nicholas **Roerich**

[10] One of those American admirers was this politician, who used his role to fund Roerich's diplomatically disastrous expedition to Central Asia. His letters to Roerich were published as the "Guru letters" and damaged his later presidential campaign.

ANSWER: Henry Agard **Wallace**

[10] In his earlier life Roerich was best known for his work in stage design, especially the set and costumes he designed for the riotous 1913 premiere of this Igor Stravinsky ballet.

ANSWER: *The* **Rite of Spring** [or *Le* **Sacre du printemps**; or **Vesna svyashchennaya**]

19. Many of this poet's works, including his prose *Leyendas*, were only published in the newspaper *El Contemporaneo* during his lifetime. For 10 points each:

[10] Name this late Romantic Spanish poet of a collection of about a hundred untitled short lyrics called *Rimas*.

ANSWER: Gustavo Adolfo **Becquer** [or Gustavo Adolfo Claudio **Dominguez Bastida**]

[10] Becquer's contemporary Jose Zorilla wrote a two-part Romantic drama about this legendary character that became the most popular play in 19th-century Spain. In the play, he is shown a vision of hell by a statue of the murdered Don Gonzalo.

ANSWER: **Don Juan**

[10] Don Juan was introduced to the English stage by this 17th-century poet laureate in his play *The Libertine*. He is better known for being savaged by John Dryden in "Mac Flecknoe."

ANSWER: Thomas **Shadwell**

20. These objects are consecrated by being bathed in water, milk, or some other substance in a ritual called prana pratishta. For 10 points each:

[10] Name these idols from Hinduism which are central to worship in both Hindu temples and home shrines.

ANSWER: **murti** [or **murthi**; or **vigraha**; or **pratima**]

[10] Leaving offerings for a murti is the most common form of this ceremonial worship ritual in Hinduism.

ANSWER: **puja**

[10] Another bathing ritual is this initiatory rite in which a person is sprinkled with water or another liquid. It originated with a royal consecration rite in which a monarch was anointed with water from four oceans.

ANSWER: **abhiseka**