



# HSAPQ

High School Academic Pyramid Questions

2008-2009  
ACF-Format Set #3

Round 4

Tossups

**1. For species that behave like this system, all atomic orbitals with the same principle quantum number are degenerate. It is the only atomic system for which the Schrödinger equation can be solved exactly, and the Rydberg equation can be used to obtain its (\*) Balmer spectral series. When an electron is removed from this atom it can protonate water to yield an acidic species, and this is the only atom for which the Bohr model holds. For 10 points, name this atom consisting of a proton and an electron, the first element on the periodic table.**

ANSWER: hydrogen atom

**2. This author wrote "The Cross of Snow" to commemorate his wife's death in a fire. One of his poems tells of the title character's search for Gabriel Lajeunesse, and begins "This is the forest primeval." One of his poems tells of how the title character's "brawny (\*) arms" cause sparks to fly under the "spreading chestnut-tree," and another of his poems tells of how Alden steals the love of Priscilla Mullins. For 10 points, name this author of *Evangeline*, "The Village Blacksmith," and "The Courtship of Miles Standish," who wrote about Minnehaha in *The Song of Hiawatha*.**

ANSWER: Henry Wadsworth Longfellow

**3. "Elegaic" works in this form were written by Charlotte Smith, reviving them in England. One of these begins "With how sad steps, O Moon, thou climb'st the skies." Milton wrote six ones in Italian, as well as English ones like "When I (\*) consider how my light is spent." This form makes up Edmund Spenser's *Amoretti* and Philip Sidney's *Astrophil and Stella*, as well as a poem asking "How do I love thee? Let me count the ways." For 10 points, name this poetic form deriving "from the Portuguese" in a work by Elizabeth Barrett Browning, which has fourteen lines.**

ANSWER: sonnets

**4. Involvement with Nicolas Cop led to this man's flight from France following the Affair of the Placards. This author of a commentary on Seneca's *De Clementia* defended his faith in a letter to Jacopo Sadoletto. This man's followers tried and executed Michael Servetus, and he preached for a time with Martin Bucer in (\*) Strasbourg. He also worked with Guillaume Farel and wrote *Institutes of the Christian Religion*. For 10 points, name this protestant leader who preached that God would save only the predestined Elect during his time in Geneva.**

ANSWER: John Calvin [or Jean Cauvin]

**5. This man used *The Ice Maiden* as the basis for his ballet *The Fairy's Kiss*, which was commissioned on behalf of Ida Rubenstein after she could not obtain performing rights to his earlier ballet *Apollo*. Late in life, his major works were mostly serialist elegies, such as *In Memoriam Dylan Thomas*. His most well-known work contains a series of irregularly-accented chords during the "Dances of the (\*) Youths and Maidens," which is preceded by a bassoon solo. For 10 points, name this composer of the *Firebird* suite and *The Rite of Spring*.**

ANSWER: Igor Stravinsky

**6. This region includes Tenaya Valley, and an old tradition here consisted of pushing a bonfire off a cliff in a namesake “firefall” on Glacier Point. This park is near a cliff of polygonal basalt columns, Devils Postpile National Monument, and it includes Bridalveil Fall. Its namesake (\*) falls drop into the Merced River, and, like Sequoia National Park, its creation was instigated by John Muir. Its notable features include El Capitan and Half Dome. For 10 points, name this national park located in the Sierra Nevadas of eastern California.**

ANSWER: Yosemite National Park

**7. His older sister Tricia swam in the 1988 Olympics, and as a youth this athlete was a competitive swimmer who turned to another sport when his pool was destroyed by Hurricane Hugo. He beefed up for the 2008 season with a workout of throwing large tires, and referee Joey Crawford was suspended after a (\*) confrontation with this player. An injury to David Robinson allowed his team to draft him first overall from Wake Forest in 1997. For 10 points, name this three-time NBA Finals MVP, a power forward for the San Antonio Spurs.**

ANSWER: Timothy “Tim” Duncan

**8. The first stage of this operation was a false flag raid on the Gleiwitz radio station. It ended after four weeks, leading to Hans Frank becoming governor, and it provoked the seven-month “phony war.” Beginning eleven days after the signing of the (\*) Molotov-Ribbentrop Pact, this operation included a tank battalion fighting against horse-mounted cavalry. Two weeks after it started, the Soviets launched a similar operation from the east. For 10 points, name this September 1939 aggression by Germany which began the European theater of World War II.**

ANSWER: the Nazi invasion of Poland [accept anything reasonable that refers to the invasion of Poland in 1939 by either Nazis or Germany; or Fall Weiss; or Case White; or Polenfeldzug; do not accept answers referring to the Soviet invasion of Poland, as no clues in the question describe that]

**9. They typically produce a single polycistronic mRNA, and one of these sequences known as *araBAD* controls arabinose metabolism. The Z, Y, and A genes in one of these sequences code for permease, transacetylase, and beta-galactosidase. Tetrameric protein repressors can prevent RNA polymerase from binding to these (\*) gene sequences, and they can produce enzymes that synthesize tryptophan and metabolize lactose. For 10 points, name these regulatory systems in bacteria and viruses, series of structural genes that are controlled by a promoter, like the *lac* one.**

ANSWER: operon

**10. This opera sees an on-stage orchestra quote from Vincente Martin y Soler’s *Una Cosa Rara* as well as an aria from an earlier opera by its composer, “Non più andrai.” In the aria “Vedrai, carino,” Zerlina consoles her lover Masetto after the title character gives him a good thrashing. Leporello sings this opera’s (\*) “Catalogue Aria,” in which he details the title character’s conquests, and, in the end, a statue of Don Pedro shows up to dinner and drags the title character to hell. For 10 points, name this “dramma giocoso” about the title libertine, by Wolfgang Amadeus Mozart.**

ANSWER: Don Giovanni [accept *The Rake Punished*; or K.527]

11. This molecule is the namesake of a system discovered by Fire and Mello in *C. elegans* that makes use of an induced silencing complex and the enzyme Dicer. One type of this molecule possesses a cloverleaf structure that contains a D-loop and acceptor stem. Primase is an enzyme that produces this molecule, and all (\*) primers are segments of this molecule. Unlike a similar molecule, it contains the base uracil. For 10 points, name this usually single-stranded molecule that is complementary to the DNA strand from which it is transcribed.

ANSWER: RNA [or ribonucleic acid]

12. One novel set in this country sees the title character fall “like a pile of stones” when Abundio Martinez kills him in Comala, a town full of ghosts. One poet from this country wrote “I travel your length like a river” in a poem based on the Aztec calendar, *Sunstone*. An industrialist from this country recounts his schemes on his deathbed in *The Death of (\*) Artemio Cruz*, a novel by an author from this country, home to such authors as Juan Rulfo, Carlos Fuentes, and Octavio Paz. For 10 points, name this country, locale of *The Old Gringo*, a novel featuring Pancho Villa.

ANSWER: Mexico [or United Mexican States; or Estados Unidos Mexicanos]

13. This man served as a naval captain for Rio Grande do Sul in its rebellion against Brazil, and also fought in the Uruguayan civil war. He defeated a French army that intended to restore the government of Pope Pius IX in an 1849 battle fought on the Janiculum Hill. His best-known military campaign saw victories at (\*) Calatafimi, Milazzo, and Palermo, and was dubbed the Expedition of the Thousand. For 10 points, name this Italian general who led volunteer forces known as the Red Shirts in the capture of Sicily and Naples.

ANSWER: Giuseppe Garibaldi

14. The creators of this work aimed to stratify the types seen in Frege's *Begriffsschrift*. Kurt Gödel combined the formal systems in this work with the Zermelo-Fraenkel axiom system. Based on Peano Arithmetic, it states that it is impossible to speak of the “set of all sets,” an idea expanded into one of its creator's namesake (\*) paradoxes. Gödel's two incompleteness theorems were necessitated by its shortcomings, and it contains a proof of the statement “ $1+1 = 2$ ”. For 10 points, name this foundational work in mathematics by Russell and Whitehead.

ANSWER: Principia Mathematica

15. One work by this author sees Boris Lvovich impregnate Leni Pfeiffer, who constantly draws genitalia. One of his works centers on the breakup of Marie Derkum and Hans Schnier, and another sees Werner Totges ask for a “bang.” Innocent “lambs” are contrasted with fascist “buffalo” in his work about the reconstruction of St. Anthony's Abbey. This author of *Group Portrait with Lady*, *The Lost Honor of Katarina Blum*, and *The Clown* also wrote a novel about the (\*) Faehmel family. For 10 points, name this German author of *Billiards at Half-Past Nine*.

ANSWER: Heinrich Theodor Böll

16. One work by this artist depicts a woman wearing a red sash who is pointing with one finger to the ground. In addition to that portrait of the Duchess of Alba, this artist painted works like a dog drowning and two men fighting with sticks on the walls of the Quinta del Sordo, which comprise his (\*) *Black Paintings* that include *Saturn Devouring His Son*. Another work by this court painter to Charles IV is a companion to *The Charge of the Mamelukes*, which includes a phalanx of French soldiers firing at Spanish captives. For 10 points, name this painter of *The Third of May, 1808*.

ANSWER: Francisco Goya

**17. One member of this set has a namesake “anomaly” because it is so readily absorbed in plagioclase that it is either very enriched or depleted. Another of them forms, with iron and boron, the strongest known magnets. All of them are trivalent, and this class of (\*) elements displays a namesake contraction. Examples include lutetium, europium, samarium and neodymium. For 10 points, identify this set of elements, defined by their filling of the 4f subshell, one row above the actinides.**

ANSWER: lanthanides [or lanthanoids]

**18. A part of this creature was buried under a rock near the road to Elaeus. A giant crab that was an ally of this creature was made into the constellation Cancer by Hera. The charioteer who helped fight this creature was the son of Iphicles and combated it using a (\*) burning brand. Pholus, Chiron, and Paris were all killed with arrows that had been dipped in the venom of this creature. Iolaus helped cauterize wounds of this resident of Lerna as Heracles methodically removed its body parts. For 10 points, name this mythical multi-headed snake.**

ANSWER: the hydra

**19. When a client of this man described a dream involving a scarab beetle as a similar beetle flew into the room, he postulated an “acausal connecting principle” between events that he called synchronicity. His work *Psychology of the Unconscious* marked his split with (\*) Freud, and other concepts he advanced include animus and anima as well as introversion and extroversion. He also postulated the existence of an indirect knowledge that everyone possesses. For 10 points, name this Swiss psychologist famous for his idea of the collective unconscious.**

ANSWER: Carl Jung

**20. This man oversaw the hanging of Arnold of Brescia and forced Eugenius III to sign the Treaty of Constance. He convened the Diet of Roncaglia, and, according to legend, is sleeping in Kyffhauser Castle. This nephew of Conrad III was opposed by Henry the Lion and was defeated at Legnano by the (\*) Lombard League. This man was crowned by Pope Adrian IV in 1155, and drowned while trying to cross the Saleph River during the Third Crusade. For 10 points, name this Swabian Holy Roman Emperor who had a red beard.**

ANSWER: Frederick Barbarossa [or Frederick I Hohenstaufen; or Frederick III of Swabia; prompt on Frederick; prompt on Frederick III]

**21. This man was court martialed in 1907 for grounding the *USS Decatur*, and in 1949 he was named Plebiscite Administrator for Kashmir by the United Nations. This man raised funds to restore the battleship *Mikasa*, which was Togo's flagship at the Battle of Tsushima. Following the attack on Pearl Harbor, he (\*) replaced Husband Kimmel. In 1944, he received the newly created rank of fleet admiral. For 10 points, name this Commander in Chief of the Pacific Fleet in World War II who served as U.S. signatory to the Japanese surrender aboard the *USS Missouri*.**

ANSWER: William Chester Nimitz [accept William or Chester as his first name]

**22. Near the end of this novel, the title character kills the murderous criminal Jim Hall. In this novel's chapter "The Reign of Hate," the protagonist is severely injured by Cherokee. The title character is terrorized by Lip-lip while living with Gray Beaver before being (\*) sold to Beauty Smith, who trains him to become a vicious fighter. Eventually, the title character is adopted by Weedon Scott, who takes him to California. For 10 points, name this Jack London novel about a wolf that becomes a peaceful dog.**

ANSWER: White Fang

**23. Composing multiplication by this number with the exponential function gives a function that is equal to the negative of its second derivative. Multiples of this number plus one-half give all non-trivial zeros of the zeta function via the Riemann hypothesis. It forms a basis for the (\*) quaternions alongside one and two similar numbers with which it anti-commutes. The first non-trivial fourth root of unity, this number has magnitude 1 and polar angle 90 degrees in the complex plane. For 10 points, identify this complex number, the square root of negative one.**

ANSWER:  $i$  [or the **imaginary number**; prompt on square-**root of negative one**]



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Bonuses

1. It took place between the fifteenth and eighteenth centuries during the transition from Middle English to Modern English. For 10 points each:

[10] Name this linguistic event which saw a change in the pronunciation of long sounds.

ANSWER: Great **Vowel Shift**

[10] This Danish linguist coined the term “Great Vowel Shift.”

ANSWER: Otto **Jespersen**

[10] The Great Vowel Shift explains why words like “wine” and “Latin” rhyme in this Geoffrey Chaucer collection of stories told by people making a pilgrimage to the title location.

ANSWER: *The* **Canterbury Tales**

2. He depicted “Jacob Wrestling with the Angel” in *Vision after the Sermon*. For 10 points each:

[10] Name this Frenchman who spent two months with Vincent van Gogh in 1888, and painted *Where do we come from? What are we? Where are we going?*.

ANSWER: Paul **Gauguin**

[10] From 1895 to 1901, Paul Gauguin lived on this island in the South Pacific, which was the setting of the painting *The Spirit of the Dead Keep Watch*.

ANSWER: **Tahiti**

[10] Located in the Albright-Knox Art Gallery in Buffalo, this Gauguin work depicts the crucifixion of the colorful title individual near three praying women.

ANSWER: *The* **Yellow Christ**

3. A major example of this event ended the Age of Bronze, and was caused by Lycaon (ly-KAY-ohn) sacrificing a child to Zeus. For 10 points each:

[10] Name this type of natural disaster, a nine-day event from Greek mythology, which also occurred to the town where Baucis and Philemon lived.

ANSWER: **flood** [or **deluge**]

[10] This son of Prometheus hid in a chest with his wife Pyrrha, surviving the flood.

ANSWER: **Deucalion**

[10] Themis told Deucalion to repopulate the Earth by throwing the bones of his mother, which Deucalion correctly interpreted to mean these objects.

ANSWER: **rocks** [accept obvious equivalents like **stones**]

4. In one part of this work, the title character wears a barber's bowl as the "golden helmet of Mambrino." For 10 points each:

[10] Name this long novel in which the title character travels aboard a donkey accompanied by Sancho Panza.

ANSWER: **Don Quixote** [accept *El ingenioso hidalgo don Quixote de la Mancha, part 1*]

[10] *Don Quixote* is a novel by this Golden Age Spanish author, who also wrote the *Novelas Ejemplares* and *La Galatea*.

ANSWER: Miguel de **Cervantes**

[10] Another Golden Age author is this playwright, who penned *Life is a Dream* and *The Mayor of Zalamea*.

ANSWER: Pedro **Calderon** de la Barca

5. It is prohibited during the 'Eid Days, and it is recommended on a voluntary basis during the months of Rajab and Sha'ban on Mondays and Tuesdays. For 10 points each:

[10] Name this activity of the Arkan al-Islam, which is also known as sawm and does not occur during Id-al-Fitr.

ANSWER: **fasting**

[10] Fasting is primarily conducted during this ninth and holy month of the Muslim year during which abstinence is required from dawn till dusk.

ANSWER: **Ramadan**

[10] During the evening of the twenty-seventh day of Ramadan, Muslims take part in this celebration that commemorates the revelation of the Qur'an to Muhammad.

ANSWER: **Laylat al-Qadr** [or **Shab-e-Qadr**; or **Night of Decree**; or **Night of Power**; or **Night of Measures**]

6. He assumed the throne after his father Charles Albert resigned in the face of Austrian pressure. For 10 points each:

[10] Name this first king of a united Italy.

ANSWER: **Victor Emmanuel II** [prompt on **Victor**; prompt on **Victor Emmanuel**]

[10] Charles Albert and Victor Emmanuel II belonged to this royal house, which also included the seventeenth-century Austrian military leader Eugene.

ANSWER: **Savoy**

[10] Before Italy was united, Victor Emmanuel II was ruler of this kingdom, named after the two areas he controlled: a mainland region containing Turin and an island north of Corsica.

ANSWER: **Piedmont-Sardinia** [prompt on **Piedmont**; prompt on **Sardinia**]

7. Name these South American novelists, for 10 points each.

[10] This female author wrote *Eva Luna* and a novel about the Trueba family, *House of the Spirits*.

ANSWER: Isabel **Allende** Llona

[10] This Argentine author wrote *Betrayed by Rita Hayworth* and *Heartbreak Tango* in addition to a novel about Valentin and Molina's time in prison, *The Kiss of the Spider Woman*.

ANSWER: Manuel **Puig** [accept Juan Manuel **Puig** Delledonne]

[10] This novelist wrote about the Screwery's kidnapping of "the Vip" in *A Manual for Manuel* in addition to a novel about Horacio Oliveira with "expendable chapters," *Hopscotch*.

ANSWER: Julio **Cortázar** [accept Jules Florencio **Cortázar**]

8. While at rest, neurons possess an ion gradient across their membranes that results in different intracellular and extracellular ion concentrations. For 10 points each:

[10] This gradient is primarily maintained by what integral membrane protein that transports two atoms of a certain cation into the neuron and three atoms of another cation out of the neuron.

ANSWER: **sodium-potassium ATPase** [or **sodium-potassium pump**; or **Na<sup>+</sup>, K<sup>+</sup> ATPase**]

[10] Activation of voltage-gated ion channels for sodium and potassium triggers this transient depolarization of the neuron membrane that results in the propagation of an electrical signal.

ANSWER: **action potential** [or **nerve impulse**]

[10] Sodium-potassium pumps are important to this kind of cell transport, contrasted with processes that require no input energy.

ANSWER: **active** transport

9. Name some twentieth-century architects, for 10 points each.

[10] This Canadian-American has used his trademark flowing titanium exteriors in works like the Experience Music Project, the Walt Disney Concert Hall, and the Guggenheim in Bilbao.

ANSWER: Frank **Gehry**

[10] This German, a prominent Bauhaus figure known for the saying “less is more,” worked with Philip Johnson on the Seagram Building and created the Farnsworth House.

ANSWER: Ludwig **Mies** van der Rohe

[10] This Italian designed the Kansai Airport Terminal in Osaka and collaborated with Richard Rogers on a structure whose façade features a series of tubes, the Pompidou Centre.

ANSWER: Renzo **Piano**

10. Velocity is one, but speed is not. For 10 points each:

[10] Name this term used to indicate a quantity that has both magnitude and direction, as opposed to a scalar.

ANSWER: **vector**

[10] This operation on vectors is a multiplication of corresponding components of the vectors and returns a scalar.

ANSWER: **dot product** [or **inner product**; prompt on **scalar product**]

[10] This inequality, a special case of Holder’s inequality, states that the dot product of two vectors is less than or equal to the product of the magnitudes of the two vectors.

ANSWER: **Cauchy-Schwarz**-Bunyakovsky inequality [accept names in any order]

11. Its namesake and founder was the third of the “great unifiers,” succeeding Oda Nobunaga and Toyotomi Hideyoshi during the Warring States Period. For 10 points each:

[10] Name this Japanese shogunate, which lasted from 1600 until the reassertion of Imperial rule during the Meiji Restoration of 1868.

ANSWER: **Tokugawa** Shogunate [or **Edo** Period]

[10] During the Tokugawa, the only Japanese port at which foreign traders were permitted was this southwestern city, which later became the target of the Fat Man atomic bomb.

ANSWER: **Nagasaki**

[10] The Tokugawa Shogunate made Christianity illegal following the Shimabara Rebellion, a revolt of people whose community was converted in 1551 by this Jesuit missionary.

ANSWER: Francis **Xavier**

12. For 10 points each, name these possibly infernal things.

[10] This novel by Fyodor Dostoevsky was inspired by an 1869 assassination and features the madman Kirilov. A similarly named long poem was written by Lermontov.

ANSWER: The Demons [accept The Demon; or The Devils; or The Possessed; or Besy]

[10] This impish creature operates a trapdoor that lets faster-than-average molecules through but not slower-than-average molecules, thus violating the second law of thermodynamics.

ANSWER: Maxwell's Demon

[10] This first-ever U.S. National Monument lies near the Belle Fourche River in Wyoming.

ANSWER: Devil's Tower

13. This man wrote *A Lincoln Portrait*, which was barred from being played at Eisenhower's inauguration due to this composer's communist sentiments. For 10 points each:

[10] Name this composer, who also wrote *El Salon Mexico* and a ballet for Martha Graham, *Appalachian Spring*.

ANSWER: Aaron Copland

[10] This work by Aaron Copland is scored for brass and timpani. It was commissioned by Eugene Goossens, and was incorporated into Copland's Third Symphony.

ANSWER: Fanfare for the Common Man

[10] This Shaker song was written by Elder Joseph Brackett. Aaron Copland wrote a series of five variations on it in *Appalachian Spring*.

ANSWER: "Simple Gifts" [or "The Gift To Be Simple"]

14. Just to its west is the cave of Qumran, where a set of famous 2000-year-old scrolls was discovered in 1947. For 10 points each:

[10] Name this salty body of water whose shores have the lowest elevation of any dry land on earth.

ANSWER: Dead Sea [or Yam Ha-Melah; or al-Bahr I-Mayyit]

[10] The Dead Sea is fed primarily by this river. Appropriately, Israel's West Bank lies directly to its west.

ANSWER: Jordan River [or Nehar Hayarden; or Nahr al-Urdun]

[10] Located south of the Dead Sea is this desert, which covers over half of the nation of Israel. Its name is Hebrew for "dry."

ANSWER: Negev Desert [or Negeb Desert; or al-Naqab Desert]

15. Cleitus the Black once saved this man's life by cutting off the sword-wielding arm of Spithridates. For 10 points each:

[10] Name this man who thus survived to win the Battle of the Granicus, and also won at Gaugamela during his fourth-century BCE conquest of most of southern Asia.

ANSWER: Alexander the Great [or Alexander III of Macedon(ia); prompt on Alexander of Macedon(ia)]

[10] Alexander the Great took over the Persian empire from this last Achaemenid emperor, the third of his name, who was killed in Bactria after fleeing from his final loss in battle.

ANSWER: Darius III

[10] This 333 BCE battle on the Pinarus River saw the final defeat of Darius and the Persians at a cost of only four hundred fifty Macedonians, and was the battle from which Darius was fleeing when killed.

ANSWER: Battle of Issus

16. In the 1950s, authors from this country like Alain Robbe-Grillet pioneered the "new novel." For 10 points each:

[10] Name this country, home to Georges Perec and Raymond Queneau, the founders of the literary movement Oulipo.

ANSWER: **France**

[10] This French author presented his existentialist philosophy in plays such as *The Flies* and *No Exit*.

ANSWER: Jean-Paul **Sartre**

[10] In this novel by Sartre, Antoine Roquentin perceives objects divorced from their external characteristics, resulting in the title condition.

ANSWER: **Nausea** [or *Le Nausee*]

17. At ground level, it forms via the reaction of hydrocarbons and nitrous oxides with sunlight, thus becoming a major component of photochemical smog. For 10 points each:

[10] Give the common name for tri-atomic oxygen, beloved by all for its ability to absorb deadly ultraviolet radiation.

ANSWER: **ozone** [prompt on **O-3**]

[10] Ozone is found primarily in this layer of the atmosphere, which lies above the troposphere and below the mesosphere.

ANSWER: **stratosphere**

[10] The stratosphere's stockpile of ozone is continually regenerated via this cycle, in which UV radiation splits an ordinary O-2 molecule into free atoms that then recombine as O-3.

ANSWER: **Chapman** cycle [prompt on **ozone-oxygen** cycle]

18. This author wrote "They know not well the subtle ways / I keep, and pass, and turn again" in his poem about a Hindu god, "Brahma." For 10 points each:

[10] Identify this essayist of "The Over-Soul" and "The American Scholar."

ANSWER: Ralph Waldo **Emerson**

[10] In this essay, Emerson asserts that "A foolish consistency is the hobgoblin of little minds," and argues "Whoso would be a man must be a nonconformist." It emphasizes that individuals should follow their personal convictions.

ANSWER: "**Self-Reliance**"

[10] This author satirized Emerson as Mark Winsome in *The Confidence-Man*. He criticized the practice of flogging in a novel set aboard the *Neversink*, *White-Jacket*.

ANSWER: Herman **Melville**

19. The first is a junction rule implying charge conservation, and the second is a loop rule stating that the sum of potential differences around a closed circuit must be zero. For 10 points each:

[10] Give the collective name for these two fundamental laws of circuits, named for a nineteenth century German physicist.

ANSWER: **Kirchoff's** circuit rules [or **Kirchoff's** circuit laws]

[10] This other circuit law states that the change in potential difference along a piece of circuit is equal to the current times the resistance, or  $V$  equals  $I$  times  $R$ .

ANSWER: **Ohm's** law

[10] The aforementioned change in potential is often associated with this so-called "force," the energy gained per unit charge that is given by an energy source such as a battery.

ANSWER: **electromotive** force [or **emf**]

20. The Jurassic period is sometimes referred to as the “age of” them, though they are now facing extinction. For 10 points each:

[10] Name this group of plants characterized by a stout trunk and a crown of compound leaves.

ANSWER: **cycads**

[10] Cycads fall under this group of plants whose seeds are not covered by fruit tissue. Accordingly, their name means “naked seed,” and they are contrasted with angiosperms.

ANSWER: **gymnosperms**

[10] This genus of gymnosperms has only one surviving species, *Biloba*, whose extracts are commonly used as memory enhancers.

ANSWER: **Ginkgo**

21. His namesake brief in the Supreme Court case *Muller v. Oregon* contained social-scientific data. For 10 points each:

[10] Name this man who later became the first Jewish Supreme Court justice, the namesake of a Massachusetts university.

ANSWER: Louis **Brandeis**

[10] The *Muller* case was decided three years after this decision in this case, in which the court held that New York mandating a maximum ten-hour workday violated the Constitution.

ANSWER: **Lochner v. New York**

[10] The ability of the government to regulate private industry was upheld in this 1877 case from Illinois in which a law supported by the Granger movement was upheld.

ANSWER: **Munn v. Illinois**

22. He wrote about Alexei, who works with the Germans against the Bolsheviks in the play *Days of the Turbans*. For 10 points each:

[10] Name this author of a novel in which the Devil and a talking cat named Behemoth travel to Moscow and get involved in the lives of the title lovers, *The Master and Margarita*.

ANSWER: Mikhail Afanasyevich **Bulgakov**

[10] This other Soviet author created the revolutionary machine gunner Ilia Bunchuk as well as Gregor Melekhov, who becomes an officer in the red army, in *And Quiet Flows the Don*.

ANSWER: Mikhail Alexandrovich **Sholokov**

[10] This other Soviet author wrote about Tonia Gromeko, who is loyal to her husband after the Revolution drives them apart, as well as Lara, who loves the title character, in *Doctor Zhivago*.

ANSWER: Boris Leonidovich **Pasternak**