



HSAPQ

High School Academic Pyramid Questions

2008-2009
NSC-Format Set #2

Round 10

Related Tossups &
Bonuses

1. In one of this artist's paintings, a naked two-headed woman stands on a rocky outcropping next to an old man and his two sons, who are being attacked by snakes. That painting, *Laocoon*, shares a similar dark sky with his painting *St. Martin and the Beggar*. In another of his paintings, a line of faces divides a funeral procession from heaven, where angels assist the title character's soul as it ascends to Jesus. He depicted the white buildings of his native city in his *View of Toledo*. For 10 points, name this painter of *The Burial of Count Orgaz*, a Spanish Mannerist born on Crete.

ANSWER: El Greco [or Domenicos Theotokopolous]

Bonus: El Greco was not the only artist to paint a "View" of a city. For 10 points each:

[10] This artist of *View of Delft* produced transparency through applying paint in granular layers, and created *Girl with a Pearl Earring*.

ANSWER: Jan Vermeer [or Johannes Vermeer]

[10] His *View of Fort Putnam* is not nearly as famous as his series *The Course of Empire*, or his study of part of the Connecticut River, *The Oxbow*.

ANSWER: Thomas Cole

2. In special relativity this quantity's four-vector includes an "energy over the speed of light" term, and the time derivative of its expectation appears in the common form of Ehrenfest's theorem. The fact that this quantity does not commute with position gives rise to Heisenberg's Uncertainty Principle. Newton's Second Law gives force as equal to the time derivative of this quantity, and it is conserved in both inelastic and elastic collisions. For 10 points, name this quantity whose change is equal to impulse and which is equal to mass times velocity.

ANSWER: linear momentum

Bonus: First modeled by Coulomb, it comes in static and kinetic varieties. For 10 points each:

[10] Name this force that resists the lateral movement of two objects.

ANSWER: friction

[10] The magnitude of friction is given in Coulomb's model as equal to the coefficient of friction times the magnitude of this force, the perpendicular force exerted by a surface.

ANSWER: normal force

3. One author from this country wrote about a Calcutec who discovers that a scientist in a laboratory beneath a sewer installed a separate consciousness in his brain. Another author from this country wrote a novel about a stuttering acolyte who burns down a religious building. The authors of *Hard-Boiled Wonderland and the End of the World* and *The Temple of the Golden Pavilion* are from this country, the setting of "In a Grove" and "Rashomon." For 10 points, name this island nation home to Murakami Haruki, Mishima Yukio, and Akutagawa Ryunosuke.

ANSWER: Japan

Bonus: This work imagines a "sea of faith" that is ebbing. For 10 points each:

[10] Name this poem that ends with the image of ignorant armies clashing by night on a darkling plain, written by Matthew Arnold.

ANSWER: "**Dover Beach**"

[10] The post-apocalyptic novel *On the Beach* was written by Nevil Schute, an author from this country whose other novelists include the author of *Voss*, Patrick White.

ANSWER: Commonwealth of **Australia**

4. Arnold of Brescia was a 12th-century monk who helped establish a commune that ruled this city for a time and allied with the Ghibellines, and it was once ruled by a man named Lando who led the "Pornocracy." This city won the Samnite Wars and defeated Jugurtha in North Africa, and it fought against its own allies during the Social War. It was defeated at the Battles of Lake Trasimene and Cannae by its greatest rival, against whom it fought three wars. For 10 points, name this home town of Claudius and Julius Caesar, the center of a namesake empire.

ANSWER: **Rome** [or **Roma**]

Bonus: This nation was the site of the miracle of the Marne in World War I, which led to much of the war's "Western Front" being located here. For 10 points each:

[10] Name this country whose "fifth republic" was first led by Charles de Gaulle, and which was home to the Vichy Republic in World War II.

ANSWER: **France**

[10] This first Jewish and Socialist French premier spearheaded the creation of the anti-Fascist Popular Front.

ANSWER: Leon **Blum**

5. This man stated that the vestiges of sentiments can be observed in residues in his theory of nonrational motivation, and he stated that upper classes in society hold non-rational authority over the lower classes by using rationalizing derivations. The formulator of the theory of the circulation of the elites, this author of *Mind and Society* introduced the use of indifference curves. For 10 points, name this Italian social scientist whose namesake optimality occurs when the welfare of one individual cannot be improved without reducing the welfare of another.

ANSWER: Vilfredo **Pareto**

Bonus: For 10 points each, name the following psychological experiments that examined the human potential for harming others.

[10] In this 1963 experiment at Yale, the namesake psychologist tested whether people would be willing to obey commands to shock another person with electricity. He discovered that they were.

ANSWER: Stanley **Milgram** Experiment

[10] In this experiment, kids watched an adult beat up the namesake toy. Then, kids were put into a room with a similar toy, to see if they would copy the adults and beat it up too. They did.

ANSWER: **Bobo Doll** Experiment [prompt on Albert **Bandura**'s experiment]

6. This protein consists of two identical heavy chains, two regulatory light chains, and two essential light chains. Each heavy chain contains an alpha helix in the neck region, which associates with the light chains, as well as a tail domain and a globular head domain. This molecule forms the A band of the sarcomere. When ATP is hydrolyzed, this protein's head changes shape and dissociates from an actin filament. For 10 points, name this protein that, along with actin, is responsible for the sliding-filament model of muscle contraction.

ANSWER: **myosin**

Bonus: In addition to the A band, the sarcomere contains the I band, which stretches on each side of this line to the ends of the myosin filaments. For 10 points each:

[10] Name this desmin-containing "disk," which makes the sarcomeres line up correctly.

ANSWER: **Z** disk [accept **Z** line]

[10] Muscle fibers also contain this structure, which associates with T-tubules and stores calcium ions.

ANSWER: **sarcoplasmic reticulum**

7. This country was home to a cult known as the Skoptzy, whose members castrated themselves. After the reforms of Bishop Nikon, Christians in this country were split over how many fingers should be used to make the Sign of the Cross, with two fingers used by the "Old Believers." Jews in this country were once required to live in the "Pale of Settlement." Famous churches here include St. Basil's Cathedral, known for its many Onion Domes. For 10 points, name this country, whose own Orthodox Church is based in Moscow.

ANSWER: **Russia**

Bonus: Name the following concepts from Buddhism, for 10 points each.

[10] The goal of Buddhism is to reach this state, in which one breaks free of the cycle of birth and rebirth.

ANSWER: **Nirvana**

[10] Sometimes, Buddhists will hold off on achieving Nirvana and let themselves be reborn, so as to help others achieve enlightenment. Mahayana Buddhism uses this term for such figures.

ANSWER: **bodhisattvas**

8. This country's war for independence was sparked by such affronts as the Tenth Penny tax and the Council of Blood. That war saw its Sea Beggars come to the aid of a leader later assassinated by Balthasar Gerard, William the Silent. For centuries, its namesake East India Company ruled from a city called Batavia over Indonesia. This country also colonized Bonaire, Curacao, Suriname, and Aruba, and its settlers became the Boers of South Africa. For 10 points, name this country, the homeland of Anne Frank, whose inhabitants like to build dikes.

ANSWER: the **Netherlands**

Bonus: This nation was the site of the Carlist Wars. For 10 points each:

[10] Name this country, in which the 1700 death of Charles II, its last Hapsburg king, sparked a war over [its] succession.

ANSWER: **Spain** [or **Espana**]

[10] This series of treaties ended the War of Spanish Succession. It gave Britain the asiento policy to use Spanish colonies for slave traders, and made Philip V the successor.

ANSWER: Treaties of **Utrecht**



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Category Quiz
Bonus Choices

Arts
Current Events
Geography
History
Literature
Math Calculation
Mythology
Social Science

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Category Quiz Tossups

9. To the north of this region is at-Tinah Gulf, and ancient cities in this region included Pelusium. The Giddi and Mitla passes of this region have been of military importance, and oil was first discovered in this region at Mount Tanakah. The Wadi al-Arish dominates the northeastern part of this region, whose Ras Mohammed National Park is a popular tourist destination. Home to Taha, Dahab, Sharm ash-Sheikh, and St. Catherine's Monastery, for 10 points, name this Egyptian peninsula known for a namesake Biblical mountain.

ANSWER: **Sinai** Peninsula [or Shih Jazirat **Sina'**]

10. This effect causes Kirchoff's loop rule to fail, as it is merely a special case of another rule governing this effect. Motors based on this effect are based on the concept of eddy currents. The result of this effect must be in the opposite direction of its cause by Lenz's Law. The most common law governing this effect states that the emf is equal to the time derivative of magnetic flux and is known as Faraday's Law. For 10 points, name this effect in which a magnetic field acting on a conductor causes current to flow.

ANSWER: electromagnetic **induction**

11. This man first brought Zhao Ziyang to prominence, then had him purged, and he served as commissar to Liu Bocheng. He formed a political alliance with Liu Shaoqi, and he later won a power struggle with Hua Guofeng, who had rehabilitated this man after he was purged after Zhou Enlai's death. A supporter of pragmatic economic policies, he introduced "socialism with Chinese characteristics," though late in his career he put down the Tiananmen Square protests. For 10 points, name this man who became the de facto leader of China following the death of Mao.

ANSWER: **Deng** Xiaoping

12. This play is the basis for W.H. Auden's *The Sea and the Mirror*. One speech in this play begins "our revels now are ended" before claiming "we are such stuff as dreams are made on." One character remains unseen while repeating "thou liest" to the drunken Trinculo and Stefano, who scheme with the son of the witch Sycorax. In this play, Alonso, the King of Naples, searches for his son Ferdinand, who falls in love with Miranda. For 10 points, name this Shakespeare play featuring Caliban and Prospero, set on an island after a shipwreck.

ANSWER: *The* **Tempest**

13. Twenty-two members of this profession were fired in 1999 during a miscalculated labor action led by Richie Phillips. Notable ones included Ron Luciano, who wrote five books about this career, and Cy Rigler, who invented their system of hand signals. One of them, John Hirschbeck, was spat upon by Roberto Alomar, and Tom Connolly and Bill Klem were the first to enter the Hall of Fame. Six of them are used for the World Series, but, for 10 points, during the regular-season, four of what officials make safe and out calls in Major League Baseball games?

ANSWER: MLB umpires

14. This work's composer once compared it unfavorably to Sylvia, and it includes a movement in which one protagonist carouses with his teacher Wolfgang and friend Benno. The first act includes the "Dance with Goblets" at a court, but more famous are a pas de deux and the nationalistic dances representing women courting Prince Siegfried. Siegfried dies after accidentally pledging himself to the daughter of the evil von Rothbart, who had put a curse on the woman he fell in love with, Odette. For 10 points, name this Tchaikovsky ballet in which a beautiful girl is turned into the titular bird.

ANSWER: Swan Lake



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Category Quiz
Bonuses

Arts: His *Color Numeral* series complements a more important print series, *The Seasons*. He may be better known for a *Map of the United States* visible under a lot of red, yellow, and blue paint. For 15 points, name this artist who also painted the American flag in many contexts.

ANSWER: Jasper Johns

Current Events: This person was stalked by a man who jumped over a fence at a Dancing with the Stars shoot. For 15 points, name this gymnast who won gold on the balance beam and silver to American teammate Nastia Liukin at the 2008 Olympics.

ANSWER: Shawn Machel Johnson

Geography: Cities on this peninsula include Humptulips, Port Townsend and Port Angeles, and it is separated from Kitsap County by the Hood Canal. For 15 points, name this Northwestern peninsula.

ANSWER: Olympic Peninsula

History: This organization used the symbol of a black Aztec eagle. For 15 points, name this union that organized migrant workers in many strikes against grape and vegetable growers, which was led by Cesar Chavez.

ANSWER: United Farm Workers

Literature: Its last three words are all “shantih,” and in “The Burial of the Dead,” we learn that Madame Sorostris had a bad cold. For 15 points, name this T.S. Eliot poem beginning “April is the cruellest month.”

ANSWER: *The* Waste Land

Math Calculation: For 15 points, given an unknown function star, if 6 star 3 is 33, 10 star 7 is 93, and 8 star 13 is 51, then what is the value of 9 star 5?

ANSWER: 76 [a star b equals a squared minus b]

Mythology: It tells of the evil demon Zipacna, and ends with the defeat of the lord of Xibalba by the Hero Twins. For 15 points, name this most famous religious text of the Mayans.

ANSWER: Popol Vuh

Social Science: Giffen goods are classified as a type of this kind of good, as their demand decreases as consumer income increases, giving it a negative elasticity of demand. For 15 points, name this type of economic good, often contrasted with normal goods.

ANSWER: inferior good



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Stretch Phase

15. This compound used to be manufactured with the use of a nitrogen dioxide catalyst, though a vanadium oxide catalyst is now more common. It can be used as a desiccant, as its reaction with water is highly exothermic and may release enough energy to boil the water. The lead-chamber process has been replaced by the contact process as the most common method for producing this compound, the most synthesized industrial chemical in the United States. For 10 points, name this acid produced by adding water to sulfur trioxide.

ANSWER: **sulfuric acid** [or **H₂SO₄**]

Bonus: She collaborated with Langston Hughes on *Mule Bone* and described life in an all-black Florida town in "How It Feels to Be Colored Me." For 10 points each:

[10] Name this Harlem Renaissance author of *Mules and Men* and a book in which Tea Cake gets rabies during the Okeechobee Hurricane of 1928.

ANSWER: Zora Neale **Hurston**

[10] Name that novel in which Janie shoots Tea Cake and returns to Eatonville, having married and gotten rid of Logan Killicks and Joe Starks along the way.

ANSWER: **Their Eyes Were Watching God**

[10] In this Hurston novel, John Pearson's career as a preacher is ruined by his promiscuous sexual relationships.

ANSWER: **Jonah's Gourd Vine**

16. This god was the father of the Argonaut Nauplios by the Danaid Amymone, and his seduction of Iphimedeia produced two giants that imprisoned Ares in a bronze jar before being outwitted by Artemis and killing each other, Otus and Ephialtes. Zeus allowed this man to sleep with Eurynome; that union produced a hero that would slay the Chimera, Bellerophon. In some myths he is the father of Theseus. For 10 points, name this Greek god whose wife Amphitrite presumably minded his dalliances with mortal women less than Hera did, the Greek god of the sea.

ANSWER: **Poseidon**

Bonus: Gregory of Tours chronicled the life of this man, who converted to Christianity on the advice of his wife Clothild. For 10 points each:

[10] Name this founder of the Merovingian Dynasty.

ANSWER: **Clovis I** [or **Chlodovocar**]

[10] Clovis was a king of this Germanic people, and extended their possessions south of the Loire River. They lend their name to a modern-day country.

ANSWER: **Franks**

[10] Another king of the Franks was this son of Pepin the Short, who founded the Carolingian Dynasty and is considered the first Holy Roman Emperor.

ANSWER: **Charlemagne** [or **Carolus Magnus**; or **Charles Magnus**]

17. The death of the fourth ruler of this name led to a power struggle between Mihnea the Evildoer and Radu the Great. The third ruler of this name was a hostage at the court of sultan Murad II. The second ruler of this name joined Holy Roman Emperor Sigismund's chivalric society, the Order of the Dragon. All of those figures served as *voivode* of Walachia, including the third, known as "Tepes" for his brutal methods of execution. For 10 points, "Dracula" and "The Impaler" were also nicknames given to kings of what name, who ruled in present-day Romania?

ANSWER: **Vlad**

Bonus: Members of this school, which included Melissus of Samos, rejected sense data. For 10 points each:

[10] Name this philosophical school founded by a man who believed in a single eternal "being," Parmenides.

ANSWER: **Eleatic** school [or **Eleaticism**]

[10] The Eleatic school also included this philosopher, known for paradoxes such as "Achilles and the tortoise" and one that claimed a flying arrow was motionless.

ANSWER: **Zeno** of Elea [do not accept "Zeno of Citium"]

[10] An unrelated Zeno of Citium founded this moral philosophy, which extolled virtue above all else, and whose later followers included Epictetus and Marcus Aurelius.

ANSWER: **stoicism**

18. This artist composed variations on Gluck's "Unser dummer Pöbel meint" and "Salve tu, Domine." This composer imitated the song of a starling in a sextet whose score is rife with incorrect notes, *A Musical Joke*, and dedicated six string quartets to Joseph Haydn, the last of which is nicknamed "Dissonance." He abandoned his unfinished opera *Zaide* to compose *Idomeneo*, and his works are catalogued by Kochel numbers. For 10 points, name this German composer of the Prague, Haffner, and Jupiter symphonies, as well as *Eine Kleine Nachtmusik* and *The Magic Flute*.

ANSWER: Wolfgang Amadeus **Mozart**

Bonus: This type of data structure comes in a "binary search" variety. For 10 points each:

[10] Name this type of data structure consisting of a set of linked nodes. Graphs that contain multiple ones are sometimes dubbed "forests."

ANSWER: **trees**

[10] One way to "traverse" a tree implements this type of "first in, first out" data structure, often used to model people waiting in line.

ANSWER: **queues**

[10] One type of self-balancing binary search tree was named by Guibas and Sedgewick for the fact that every node has the property of being either this color or black.

ANSWER: **red** [accept **red-black** binary search tree]

19. This poet described the title instruments scattering congregations and accompanying bugles in his "Beat! Beat! Drums!" In one of this author's poems, the speaker becomes "tired and sick" and looks "up in the perfect silence of the stars" after hearing "the learned astronomer." This author of "A Noiseless Patient Spider" celebrated the human body in "I Sing the Body Electric," and described a ship that "has weather'd every rack" in a tribute poem about Lincoln's death. For 10 points, name this poet of "O Captain, My Captain!" and *Leaves of Grass*.

ANSWER: Walt **Whitman**

Bonus: It came to power after winning the 1185 naval battle of Dan-no-ura, concluding the Genpei War. For 10 points each:

[10] Name this Japanese shogunate, dominated by the Morimoto family, which ruled until the Kemmu Restoration brought the Ashikaga to power.

ANSWER: **Kamakura** Shogunate

[10] A hundred years into the rule of the Kamakura Shogunate, these "divine winds" scuttled a Mongol invasion fleet. This name was later used for suicide pilots during World War II.

ANSWER: **kamikaze**

[10] The Mongols launched their Japanese invasion fleets from China, which they ruled after Kublai Khan established this dynasty.

ANSWER: **Yuan** Dynasty

20. In 1977, this object was discovered to have a faint ring system when scientists on Earth observed it occulting a star. An irregularity in this object's orbit was noticed by the French astronomer Urbain Le Verrier, who used that fact to predict the existence of one of this object's neighbors. Some scientists believe that this planet was struck by an Earth-sized object early in its history, which could explain why it is tilted 97 degrees and thus is almost completely on its side. For 10 points, name this planet discovered by William Herschel, which is between Saturn and Neptune.

ANSWER: **Uranus**

Bonus: This piece begins with twelve chords representing a clock tolling midnight. For 10 points each:

[10] Name this composition, which uses a xylophone to represent the sound of skeletons moving to a waltz played by Death.

ANSWER: **Danse Macabre**

[10] *Danse Macabre* was composed by this French composer, who also created *Carnival of the Animals*.

ANSWER: Camille **Saint-Saens**

[10] Saint-Saens also composed this opera. It includes the aria *Mon coeur s'ouvre à ta voix* and a bacchanale, and one title character betrays the other at the end of the Act II by cutting his hair.

ANSWER: **Samson et Delilah** [or **Samson and Delilah**]

21. This author wrote about two will-o-the-wisps that pay a ferryman with gold for crossing a river in his fairy tale "The Green Snake and the Beautiful Lily." This author's play *Gotz von Berlichingen* was an early work of the Sturm und Drang movement, and Thomas Carlyle translated many of this author's works into English, including *Wilhelm Meister's Apprenticeship*. This author wrote an epistolary novel whose title character shoots himself because Charlotte is betrothed to Albert. For 10 points, name this German author of *The Sorrows of Young Werther* and *Faust*.

ANSWER: Johann Wolfgang von **Goethe**

Bonus: Lucky kicks one character in the shin, and that character's feet hurt because his boots do not fit.

For 10 points each:

[10] Name this play in which Vladimir and Estragon chat and play games to pass the time as they undertake the title activity.

ANSWER: **Waiting for Godot**

[10] This playwright of *Waiting for Godot* also wrote a work that occurs on the title character's sixty-ninth birthday, *Krapp's Last Tape*.

ANSWER: Samuel **Beckett**

[10] In this Beckett work, the legless Nagg and Nell argue constantly, and Clov must serve the blind and bedridden Hamm.

ANSWER: **Endgame**

22. He lobbied for a bill to avenge the mistreatment of Irish-American prisoners after he was captured at Queenston Heights, and he was victorious at Chippewa and Lundy's Lane. He led American forces at Cerro Gordo and Mexico City, and initiated the amphibious landing at Veracruz. He also developed the Anaconda Plan for the North during the Civil War, and lost to Franklin Pierce in the 1852 presidential election. For 10 points, name this American general known as "Old Fuss and Feathers."

ANSWER: Winfield **Scott**

Bonus: For 10 points each, answer some questions related to a thermodynamic law.

[10] This law states that the heat given off or absorbed in a reaction is independent of the path of the reaction or the number of steps it involves and is useful in calculating heats of formation.

ANSWER: **Hess's law**

[10] The Law of Dulong and Petit states that this quantity is a constant for an element. It gives the ratio of the heat absorbed by a material to its change in temperature.

ANSWER: **heat capacity**

[10] This other, similar quantity equals the ratio of the heat necessarily to raise a material's temperature one degree to the heat needed to raise an equal mass of water by one degree.

ANSWER: **specific heat** capacity



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Tiebreakers + Extras

1. In this work, the peat digger Haie Westhus aspires to be a village policeman, and the locksmith and bedwetter Tjaden is the first to get revenge on the tyrannical Himmelstoss. The main character's mother undergoes cancer treatment at Luisa Hospital. "Kat" Katczinsky serves as a father figure to the younger troops in this novel, whose main character is traumatized after stabbing a French soldier in a foxhole. For 10 points, name this novel about Paul Baumer's experiences during World War I, by Erich Maria Remarque.

ANSWER: *All Quiet on the Western Front* [or *Im Westen nichts Neues*]

2. He wrote a letter on the death of Valentine Walton and put down a Scottish revolt with victories at Dunbar and Worcester. His massacres at Drogheda and Wexford created a lifelong enmity with the Irish people, and he dissolved the Rump Parliament and established the Barebones Parliament upon his return to England. He gained the nickname "Old Ironsides" with victories at Marsten Moor and Naseby as leader of the New Model Army. For 10 points, name this Lord Protector who ruled England from 1653 to 1658.

ANSWER: Oliver Cromwell

3. Structures involved in processing this sense include the lateral geniculate nucleus and the superior colliculus. The main organ of this sense contains amacrine cells, which synapse with bipolar and ganglion cells. This sense is carried via cranial nerve II, and receptors for this sense contain opsins like iodopsin and rhodopsin. Lasix surgery corrects one problem with this sense, as can contact lenses or glasses. For 10 points, name this sense whose receptors are rods and cones.

ANSWER: sight [or clear knowledge equivalents like vision or seeing]

Extra 20-point bonus:

For 10 points each, name these operas with hellish endings.

[10] The title character murders the Commendatore and fails to seduce Anna, Zerlina, and Elvira in this opera that ends with the Commendatore's statue dragging him to hell.

ANSWER: *Don Giovanni*

[10] This Gounod opera sees Marguerite imprisoned for killing her child after the title character abandons her for a life of devilish debauchery.

ANSWER: *Faust*

Extra 30-point bonus:

Particles in them are arranged in an orderly pattern, types of which include “face-centered cubic” and “body-centered cubic.” For 10 points each:

[10] Identify these solid structures.

ANSWER: **crystals**

[10] This is the amount of energy needed to remove an atom from a crystal, or to separate it entirely into gaseous ions.

ANSWER: **lattice energy**

[10] In addition to face-centered cubic, this other crystal structure has the maximum packing efficiency of around seventy-four percent. It is exhibited by metals such as zinc and cobalt.

ANSWER: **hexagonal close packed** [or **hcp**]