



High School Academic Pyramid Questions

2008-2009
NSC-Format Set #1

Round 11

Related Tossups &
Bonuses

1. One atom of this element is found in rings called lactams, where it is bound to two carbons on the ring. A compound containing two atoms of it and four of hydrogen is synthesized in the Olin-Raschig process. A biological process involved in the reduction of this element uses an iron-molybdenum complex, while carbon is double bonded to this element in imines, and single bonded to it in amines. For 10 points, identify this element which constitutes about eighty percent of the atmosphere.

ANSWER: nitrogen [or N]

For a solid sphere, it is given by two-fifths $m r$ squared. For 10 points each:

[10] Name this rotational analog of mass.

ANSWER: moment of inertia [do NOT prompt or accept "inertia"]

[10] This theorem can be used to show that the moment of inertia is least when an object is rotated about its center of mass.

ANSWER: parallel axis theorem

2. Lesser known works of this movement include *Eaton's Neck* and *The Land of the Lotus Eaters*, while its name was coined by either Homer Martin or Clarence Cook. With members including Hermann Herzog and John Kensett, this group consisted of some members who also practiced Luminism. Paintings by members of this movement include *The Heart of the Andes*, *Kindred Spirits* and *The Oxbow*. Featuring members such as Frederic Church and Asher Durand, for 10 points, name this 19th century American landscape movement, founded by Thomas Cole.

ANSWER: Hudson River School

He wrote a work that has a slow introduction repeated by different groups of instruments before breaking into a waltz theme. For 10 points each:

[10] Name this composer of *The Invitation to the Dance*, as well as the operas *Oberon* and *The Freeshooter*.

ANSWER: Carl Maria von Weber

[10] Weber wrote two concertos for this instrument, as well as a Grand Duo Concertante for it and piano. The opening to *Rhapsody in Blue* is a solo for this woodwind.

ANSWER: clarinet

3. The first of these began when Hiero II put down a Mamertine uprising, and the second was sparked over control of the city of Saguntum in Spain. Gaius Flaminius and Lucius Aemilius Paulus died in them, and the first decided control of Sicily. Notable battles in them included Cannae and Zama, and they featured victories by two different men named Scipio Africanus, while Cato the Elder repeatedly called for the third and final one. For 10 points, name these wars, the second of which saw the defeat of Hannibal by Rome, and the third of which saw the fall of Carthage.

ANSWER: Punic Wars

They occurred in 1943 and mostly involved servicemen, who beat up Mexican-American youths wearing certain clothing. For 10 points each:

[10] Name these riots named for a style of clothing characterized by tight-cuffed trousers and an oversized jacket with wide, padded shoulders.

ANSWER: **Zoot Suit** Riots

[10] The Zoot Suit Riots took place in this city, which would see more rioting in its Watts neighborhood in 1965 following the arrest of Marquette Frye.

ANSWER: **Los Angeles**

4. One figure of this name was a daughter of Deucalion who with Zeus was the mother of Latinus and Graecus, while Deucalion's wife Pyrrha is the daughter of this figure. Athena taught this figure needlework and gave her clothing, and Hermes gave her the power of speech after Hephaestus molded her out of clay. The first woman, she was married to Epimetheus, and her most famous action left behind hope. For 10 points, name this woman who let loose the evils of the world by opening her namesake box.

ANSWER: **Pandora**

Answer the following about some named items from Norse myth, for 10 points each.

[10] The sword known as Nothung, Balmung, or Gram was owned by this son of Sigmund, killer of Fafnir, and hero of the *Volsung* cycle.

ANSWER: **Sigurd** [or **Sigfried**; prompt on "Hart"]

[10] Examples of these items include Frey's Skidbladnir, which could fold up and fit in a pocket, and Hrym's Naglfar, which was made of clipped fingernails and toenails.

ANSWER: **ship** [accept equivalents]

5. A porter delivers a Christmas tree during this play, and the maid Anne Marie takes care of the children Ivar, Bobby, and Emma. A terminally ill but wealthy doctor is secretly in love with the protagonist, who had forged her husband's name on a loan that funded his year in Italy. The protagonist convinces her husband to hire Christine Linde for a bank job, but that action results in the firing of Nils Krogstad. For 10 points, name this play in which Torvald Helmer is left by Nora, a work of Henrik Ibsen.

ANSWER: A ***Doll's House***

The final stage instructions of this work imply a loop with the Martin family instead of the Smith family, whose maid is named Mary. For 10 points each:

[10] Name this play whose title comes from a person mentioned in passing by the Fire Chief.

ANSWER: ***The Bald Soprano*** [or ***The Bald Prima Donna***; or ***La Cantatrice Chauve***]

[10] *The Bald Soprano* is a play by this Romanian-born French dramatist. He was associated with the Theater of the Absurd, and also wrote the play *Rhinoceros*.

ANSWER: Eugene **Ionesco** [or Eugen **Ionescu**]

6. Experiments which flew in the face of this school of thought included the preference of Harlow's monkeys for "cloth mother" over "wire mother." Two competing doctrines of this school are molar and molecular, the former dismissing the claimed proximal causes that the latter determines. One of its most famous proponents invented the operant conditioning chamber and studied the development of superstition in pigeons, B.F. Skinner. For 10 points, identify this school of thought in psychology which suggests that all actions ought to be interpreted as the eponymous phenomena.

ANSWER: **behaviorism**

It argues that the government does not need to intervene to offset externalities because the market will work them out on its own. For 10 points each:

[10] Name this economic theorem first presented in "The Problem of Social Cost."

ANSWER: **Coase's** theorem

[10] The Coase theorem deals with these types of goods, a case of positive externalities. The free rider problem arises because they are freely available and aren't consumed.

ANSWER: **public** goods

7. One of its victims may have lamented that he was killed at "[the hands] of a valet", or he may have unsuccessfully pleaded with Besme the German to "respect these white hairs". It was the result of a fight that broke out during the wedding of Marguerite of Valois, and the aforementioned Gaspard de Coligny was its most famous victim. Scholars differ as to whether Henry of Guise or Catherine de Medici was the orchestrator of this attack. For 10 points, name this 1572 massacre of over 30,000 Huguenots which occurred on a certain saint's day.

ANSWER: **St. Bartholomew's Day Massacre** [or **Massacre de la Saint-Barthélemy**]

This first President of Serbia carried out ethnic cleansing of Muslims. For 10 points each:

[10] Name this man who lost an election in the year 2000 to Vojislav Koštunica, who eventually turned this man over to the War Crimes Tribunal in The Hague.

ANSWER: Slobodan **Milošević**

[10] This city in Ohio is the namesake of the 1995 accords that ended the Bosnian War.

ANSWER: **Dayton**

8. The Bloch-Floquet theorem is applicable to certain types of crystals which can control the flow of these particles. Gamma is used to represent one of these on a Feynman diagram. The term Einstein is used to refer to a mole of them, and the absorption of this gauge boson of electromagnetism must be accompanied by a change of plus or minus 1 in the L quantum number and no change in the spin quantum number. Possessing zero rest mass, for 10 points, identify these particles which can be described as quantized units of light.

ANSWER: **photon** [accept: **electron** before "Einstein"]

Answer the following about population ecology, for 10 points each.

[10] This term refers to the supportable population of an organism in the environment given all of the needs and restraints of that organism, such as food, water, and habitat.

ANSWER: **carrying capacity**

[10] This model, which resembles an S, often represents population growth, and accounts for the population's leveling off due to attaining carrying capacity.

ANSWER: **logistic** function [or **logistic** curve; or **logistic** growth; or **logistic** model]



HSAPQ

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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. In one episode of this show, Cousin Ray claimed that shrimp were turning pink because they were happy to see the main character, while another featured a pair of dueling puppets named Tender and Flaky. In the episode "Circle of Life," this show's main character is tricked into buying dozens of donuts by his sister Marsha. Other recurring figures on this show include a kitchen equipment store manager named "W" and nutritional anthropologist Deb Duchon. For 10 points, identify this Food Network show starring the host of *Feasting on Asphalt*, Alton Brown.

ANSWER: **Good Eats**

10. The drying of the prehistoric Lake Minchin created the Uru Uru Lake, as well as the Coipasa and Uyuni salt flats in this country, and its highest points include Illimani and Sajama. The source of the Beni and Mamore rivers, the largest cities of this country include Oruro, El Alto, Cochabamba and Santa Cruz, while its Desaguadero River drains into Lake Poopo. The location of the silver mines of Potosi, for 10 points, name this country which shares Lake Titicaca with Peru, a land-locked South American nation with capitals at La Paz and Sucre.

ANSWER: **Bolivia**

11. Terumasa Hino transcribed this man's solos, and Wayne Shorter composed tracks like "Pinocchio" on this man's *Nefertiti*. His collaboration with guitarist John McLaughlin can be found on *In a Silent Way*, and his second quintet included Herbie Hancock. His fusion style was preceded by works like "Cookin'" and "Birth of the Cool," and his bestselling album used modal jazz in the opening track "So What?." For 10 points, name this Jazz trumpeter who worked with Paul Chambers and John Coltrane in his first quintet and recorded the live album *My Funny Valentine* as well as *Kind of Blue*.

ANSWER: Miles **Davis**

12. The Zhegalkin polynomials form a basis for this system, as does the Sheffer stroke. The De Morgan identities can apply to expressions in this system, with which there is associated a namesake satisfiability problem, which the Cooke-Levin theorem holds is NP complete. Most programming languages have comparison operators that return a data type named for it. Including derived operations such as an exclusive version of one operator, for 10 points, identify this system of operations on a set, whose basic binary operators are "or" along with "and."

ANSWER: **Boolean** logic

13. This nation's war with Britain saw the victory of Charles Grant and Archibald Campbell, which resulted in the Treaty of Yandabo, and during World War II, the Chindits of Orde Wingate fought here. The location of the early kingdoms of Taungoo and Konbaung, this country was ruled by U Nu after its independence until an overthrow by Ne Win. Ruled since 1992 by Than Shwe, for 10 points, name this Asian nation from which both the Nobel Peace Prize recipient Aung San Su Kyi and former Secretary General of the United Nations, U Thant, are from.

ANSWER: **Burma** [or **Myanmar**]

14. This character sails aboard the *Adventure* being taken in by a farmer's nine-year-old daughter. This character inspects the Grand Academy of Balnibari, where he discovers impractical solutions to agricultural problems. He serves as a physician aboard the *Antelope* before he is taken to Mildendo, and this character argues in favor of the Blefuscu prisoners of war during his time in Lilliput. For 10 points, name this character whose "Travels" title a novel by Jonathan Swift.

ANSWER: Lemuel **Gulliver**



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Category Quiz
Bonuses

Arts

He discusses modern architecture in the collection *Toward an Architecture*, and he designed several buildings in Chandigarh, India. For 15 points, name this Swiss-born French architect who also designed the Villa Savoye and Notre Dame du Haut.

ANSWER: Le Corbusier [or Charles-Édouard Jeanneret-Gris]

Current Events

He threatened to suspend state dealings with Bank of America until it restored credit to Republic Windows & Doors. For 15 points, name this governor of Illinois who was arrested by the FBI on federal corruption charges.

ANSWER: Rod Blagojevich

Geography

This island is home to Lake Biwa, its country's largest, as well as the Shinano River, and it lies south of the Tsugaru Strait. For 15 points, name this Japanese island home to the cities of Yokohama and Osaka.

ANSWER: Honshu

History

It was founded after the Xinhai Revolution by Song Jiaoren and Sun Yat-sen. For 15 points, name this political party that retreated to Taiwan under Chang Kai-shek after losing to Mao and the CPC.

ANSWER: Kuomintang [or KMT; or Chinese Nationalist Party]

Literature

Regina watches her husband Horace die attempting to climb the stairs in this play, refusing to get him his bottle of medicine. For 15 points, name this drama about the conniving Hubbard family, a work by Lillian Hellman.

ANSWER: *The Little Foxes*

Math Calculation

Take a square with side length of 3 and create an octagon by lopping off from each corner the triangle formed by connecting the trisection points of each side. For 15 points, what is the area of the resulting octagon?

ANSWER: 7 [$3 \cdot 3 - 4(1/2)(1 \cdot 1)$]

Mythology

This daughter of Ea represented the saltwater ocean. For 15 points, name this dragon goddess who, along with her consort Kingu, tried to destroy her progeny before being defeated by her great-grandson Marduk.

ANSWER: Tiamat

Social Science

This man published a work about the origin of nonviolence, but he is better known for his eight life virtues. For 15 points, name this psychologist, coiner of the term “identity crisis”.

ANSWER: Erik Erikson



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Stretch Phase

15. This quantum mechanical operator arises out of a solution to the spherical harmonics, and its eigenvalues are equal to \hbar^2 times its namesake quantum number times that number plus one. For a rotating body, kinetic energy is equal to its square over twice the moment of inertia. For 10 points, identify this vector quantity that is given by the radius from the axis of rotation times mass times velocity.

ANSWER: angular momentum [do not accept or prompt on "momentum"]

Name these Japanese novels, for 10 points each.

[10] The titular prince adopts and later marries a niece of the Lady Fujitsubo in this work by Murasaki Shikibu that is arguably the world's first novel.

ANSWER: *The Tale of Genji* [or *Genji monogatari*]

[10] The stuttering Mizoguchi burns down the titular Zen Buddhist structure in this novel by Yukio Mishima.

ANSWER: *The Temple of the Golden Pavilion* [or *Kinkakuji*]

[10] The brothers Mitsu and Taka Nedokoro return to their home village, where murder, incest, and two developmentally disabled relatives follow them, in this Kenzaburo Oe novel.

ANSWER: *The Silent Cry* [or *Man'en san'nen no futtoboru*]

16. In this opera, several characters sing "Adieu, warm sunshine" as they usher a group of people indoors, destroying the spurious pretense of celebrating the "King's naming day". One character sings an aria as a plea to the minister Don Fernando, and earlier fails to scare away a man with a murder plot, Pizarro. Jaquino is smitten with Marzeline, daughter of Rocco, and all three admire the courage shown by the gender-bending Leonore. Featuring the incarcerated Florestan, for 10 points, name this opera, the only one by Ludwig van Beethoven.

ANSWER: Fidelio

Name these groups involved in the decline of Ottoman Empire, for 10 points each.

[10] This nationalist group seized power from Sultan Abdul Hamid II and, under the leadership of Talat Pasha, Kemal Pasha, and Enver Pasha, led the Ottoman Empire from 1908 to 1918.

ANSWER: Young Turks

[10] The *devshirme* system drafted children from the Balkans into this exclusive class of troops, which was massacred in the Auspicious Incident of 1826.

ANSWER: Janissaries

[10] One of the lowest points in Ottoman history came with the 1915 to 1916 genocide of this ethnic group, the namesake of a present-day country to the east of Turkey.

ANSWER: Armenians

17. One empirical function for this is named after Morse, and that function is closely approximated by another one which contains a one over r to the 6th term. In addition to that one named for Lennard and Jones, they can be mathematically expressed as negative gradients of conservative force fields. The product of two charges divided by separation distance is proportional to the one named for Coulomb, and it is usually held to be zero at infinite separation. For 10 points, identify this type of energy possessed by an object by virtue of its position.

ANSWER: **potential** energy

Buddha discusses three forms of it: the pain of pain, which is straightforward and includes illness; pain of alteration, and pain of formation. For 10 points each:

[10] Give the term for the suffering essential to Buddhism.

ANSWER: **dukkha**

[10] Found throughout the Pali Canon, the first of these teachings states that dukkha exists, and the second explains where dukkha comes from.

ANSWER: **Four Noble Truths** [or **Four Truths of the Noble Ones**]

[10] The fourth Noble Truth states that the end of dukkha is possible by following this technique, which is symbolized by a dharma wheel featuring a namesake number of spokes.

ANSWER: Noble **Eightfold Path**

18. He divided society into Barbarians, Philistines, and the Populace in a work that includes the chapter "Hebraism and Hellenism." In addition to *Culture and Anarchy*, this man wrote an elegy for his friend Arthur Hugh Clough entitled "Thyrsis", but may be better known for a poem in which a philosopher throws himself into a volcano, entitled "Empedocles on Etna." For 10 points, name this British poet who notes that the world has "really neither joy, nor love, nor light," and describes a "darkling plain...where ignorant armies clash by night" in the poem "Dover Beach".

ANSWER: Matthew **Arnold**

Name things about the heart, for 10 points each.

[10] This largest artery in the human body is weakened in Marfan's syndrome patients and "overriding" in the tetralogy of Fallot.

ANSWER: the **aorta**

[10] These fibers named for a Czech scientist conduct an electrical stimulus in conjunction with the sinoatrial node and atrioventricular node to act as the heart's pacemaker.

ANSWER: **Purkinje** fibers

[10] This eponymous "bundle" is sometimes known as the AV bundle. It transmits the impulse from the AV node to the Purkinje fibers via its fascicular branches.

ANSWER: the Bundle of **His**

19. This law was orchestrated by former RNC chairman Harry Colmery, and passed due to the last-minute vote of John Gibson. In addition to providing twenty-dollar-per-week unemployment benefits and subsidizing mortgages, it led to a campus construction boom and a social leveling in access to higher education, in an attempt to avoid the post-World War I blunders that led to the Bonus Army incident. For 10 points, name this 1944 act of Congress which provided subsidized tuition and living expenses for veterans attending college.

ANSWER: the first **G.I. Bill** of Rights [or the **Serviceman's Readjustment Act** of 1944; do not accept "Montgomery G.I. Bill," which was a later act]

This poem claims that “old age should burn and rave at close of day.” For 10 points each:

[10] Name this poem that urges the listener to “Rage, rage against the dying of the light.”

ANSWER: “**Do Not Go Gentle into that Good Night**”

[10] This Welsh poet who wrote *Under Milk Wood* and *Fern Hill* also penned “Do Not Go Gentle into that Good Night.”

ANSWER: Dylan **Thomas**

[10] Dylan Thomas wrote an autobiography that parodied the title of this James Joyce work in which Stephen Dedalus comes of age.

ANSWER: A **Portrait of the Artist as a Young Man**

20. Its school in Edessa was closed by imperial edict, and this sect was condemned by one council for denying the title of Theotokos, or God-Bearer, for the Virgin Mary. The Indian portion of this sect was known as the Christians of St. Thomas, and its namesake was an early bishop of Constantinople. Sometimes called the Assyrian Church and the Church of the East, those who reunited with the Roman church in 1551 were called Chaldeans. Condemned at the councils of Ephesus and Chalcedon, for 10 points, name this Christian set that stressed the independence of the human and divine natures of Jesus Christ.

ANSWER: **Nestorianism**

The first emperor to unify most of India under a single government, he spent the final days of his life with the sage Bhadrabahu, and he fasted himself to death. For 10 points each:

[10] Name this founder of the Mauryan Dynasty.

ANSWER: **Chandragupta** Maurya [or **Candra Gupta**]

[10] Chandragupta was the grandfather of this ruler, who was known for his renunciation of war after the Kalinga War. He also went about placing his namesake Pillar Edicts throughout India.

ANSWER: **Ashoka** the Great [or **Asoka**; or **Dhamma**; or **Devanampriya Priyadarsi**]

[10] Chandragupta was able to gain control of the Punjab following the 323 BCE death of this ruler, who had earlier won notable victories at the battles of Issus and Gaugamela.

ANSWER: **Alexander the Great** [or **Alexander III** of Macedon; prompt on "Alexander"]

21. Troubadours from this city included Bonifacio Calvo and Lanfranc Cigala, and ruling families of it included the Obertenghi and Fieschi. The controller of the cities of Cembalo, Soldaia and Caffa in the Crimea, this city provided aid to France in the Siege of Mahdia. Benedetto Zaccaria was victorious over Ugolino della Gherardesca while fighting for this city against Pisa at the Battle of Meloria, although the War of Chioggia saw it lose to its greatest rival. For 10 points, name this city from which Andrea Doria and Christopher Columbus hailed, the rival of Venice.

ANSWER: **Genoa**

The subject of this work is a student named Marie van Goethem. For 10 points each:

[10] Name this sculpture of a wax figure wearing a tutu and standing on a wood base.

ANSWER: **Little Dancer of Fourteen Years** [or **Petite Danseuse de Quatorze Ans**]

[10] *Little Dancer of Fourteen Years* was sculpted by this French impressionist. His paintings include *Portrait of the Bellelli Family* and *Ballet Rehearsal*.

ANSWER: Edgar **Degas**

[10] Degas is also noted for paintings featuring these animals, which can be seen in *At the Races*. The head of one of these creatures emerges from a curtain in Fuseli's *The Nightmare*.

ANSWER: **horses**

22. A man with this surname is jailed for robbing Mitchell in Rebecca Harding Davis' *Life in the Iron-Mills*. A character with this first name captains the sealing ship *Ghost* in a novel narrated by Humphrey van Weyden. A novel of this name was the planned sequel to *The Pit* in the *Epic of the Wheat* trilogy by Frank Norris. An author with this surname wrote two books about Eugene Gant, *Of Time and the River* and *Look Homeward, Angel*. For 10 points, identify this surname shared by the author of *The Right Stuff* and *The Bonfire of the Vanities*.

ANSWER: **Wolfe** [or **Wolf**]

They are undirected connected graphs without loops or double edges. For 10 points each:

[10] Identify this fundamental structure of graph theory, a disjoint set of which is called a forest.

ANSWER: **trees**

[10] This tree ideally allows for searching in log n time, though in its worst case scenario, it's no better than an array. A subtype is the red-black tree.

ANSWER: **binary** search tree

[10] This is another term for "prefix trees." Each node in the tree is associated with a unique string; the tree structure is defined by the letters in that string, so that "cat" and "can" are both children of the node "ca."

ANSWER: **tries**