



HSAPQ

High School Academic Pyramid Questions

Fall 2008
ACF-Format Set #1

Round 2

Tossups

1. This painting hangs across from a fresco of the crucifixion by Giovanni Donato. Painted on the back wall of the dining hall of Santa Maria delle Grazie, its left foreground depicts Bartholomew, James, and Andrew all standing. Another figure clutches a sack of gold in his right hand, and looks at the central figure, whose arms are spread open on the table in front of him. This painting depicts the emotional reaction of the disciples to the words "One of you will betray me." For 10 points, name this painting of the final meal of Christ by Leonardo da Vinci.

ANSWER: *The Last Supper*

2. His service as archon of Athens was memorialized in an inscription in the Theater of Dionysus, and he was given the title Olympius after the temple of Zeus was dedicated. During his reign, cults for his late companion Antinous were established, and towards the end of his reign his rival Julius Servianus was executed. He initially picked Lucius Aelius Caesar to be his successor, and he faced the Jewish revolt of Bar Kokhba. For 10 points, name this Roman emperor, the successor to Trajan known for his eponymous wall at the border between England and Scotland.

ANSWER: Hadrian

3. At the beginning of this play, the servant Tranio convinces his master that he should seek pleasure in life. Three characters in this play disguise themselves as music tutors, and later, Vincentio is able to diffuse a situation with his words. In this drama set in Padua, Gremio, Hortensio, and Lucentio are thwarted by Baptista, who denies them permission to marry his younger daughter, Bianca, until her older sister is married. For 10 points, identify this Shakespearean drama about Petruchio and Katharina.

ANSWER: *The Taming of the Shrew*

4. A chondroitin salt of this anion is used along with glucosamine to treat arthritis. Ferrous and ammonium cations are found along with this anion in Mohr's salt, and its barium salt is coated with quinoline poisoned palladium in Lindlar's catalyst. Hydrated magnesium salts of it are called Epsom salts. This anion's calcium salt is frequently used as a desiccant, and a hydrated form of that salt is found in minerals like gypsum. For 10 points, identify this anion whose copper salt is called "blue vitriol" and has formula SO_4^{2-} (S O four 2 minus).

ANSWER: sulfate [accept SO₄²⁻ before it is read; do not accept "sulfite"]

5. This psychologist published his work on the process of learning the consequences of an action in *On Reflecting Abstraction*. This psychologist noted the ability of some subjects to remember that an object was present after it was no longer visible, called "object permanence." He posited that people arrange knowledge in schemas, and created a theory of development which begins at the sensorimotor stage and ends with the formal operational stage. For 10 points, identify this Swiss psychologist who theorized a four-stage model of cognitive development in children.

ANSWER: Jean Piaget

6. One of this author's works consists of fictional letters written by women like Oenone and Briseis to their lovers. In addition to *Heroides*, this author wrote a poem based on a calendar of festivals, *Fasti*. He wrote *Tristia*, a poem lamenting his sorrows, after being exiled to Tomis by Augustus, possibly for writing *Ars Amatoria*, or *The Art of Love*. Another of his poems begins by describing Apollo's pursuit of Daphne, who turns into a laurel tree, and recounts numerous mythological transformations. For 10 points, name this Roman poet of *Metamorphoses*.

ANSWER: Publius Ovidius Naso

7. Jean-Paul Laurens depicted the excommunication of the second ruler of this dynasty, which occurred when that ruler attempted to marry his distant cousin Berthe of Burgundy. Another member of this dynasty clashed with Pope Boniface VIII and moved the papacy to Avignon. In addition to Robert the Pious and Philip the Fair, this dynasty included Louis IX, commonly known as St. Louis. For 10 points, name this French dynasty that succeeded the Carolingians and was succeeded by the Valois, which was founded by Hugh in 987.

ANSWER: Capetian Dynasty

8. Serge Lifar and Leonid Lavrovsky were among the choreographers who revised this one-act ballet, originally staged by Bronislava Nijinska in a version starring Ida Rubenstein. Said by its composer to be made for performance in factories, its score occasionally departs from the main key of C major. However, its tempo and content remain unchanged throughout. The only other dynamic aspects of the music for this piece are the rotation of the melody among different instruments and a steady crescendo. For 10 points, name this 1928 ballet, adapted from a Spanish folk dance by Maurice Ravel.

ANSWER: Boléro

9. It does not permit a form of temporary marriage called mutah, and it does not believe that the coming of the Mahdi necessarily betokens the end of the world. The highest religious official in nations with many adherents to this belief is the Grand Mufti. Believers more readily accept the hadith of Aisha, despite her opposition to Ali. Its ulema adhere to one of four major traditions, or madhhab, in its religious law, called sharia. Belief in the Rashidun, or rightly-guided caliphs is an essential part of, for 10 points, what sect of Islam often contrasted with Shia?

ANSWER: Sunni Islam [or Sunnism, or Ahl as-Sunnah wa'l-Jamā'h]

10. Molecular orbital theory can explain the relationship between it and absolute hardness in Lewis acid-base complexes. One equation for measuring it relies on Slater's rules and is named for Allred and Rochow. Germanium has an anomalously high value for this property compared to silicon due to effective nuclear charge. Increasing from left to right and from the bottom to the top of the periodic table, this property is highest in fluorine, which has a value of 4.0 on the Pauling scale. For 10 points, name this property that measures an atom's ability to attract electrons.

ANSWER: electronegativity

11. This kingdom was created after its first king won a battle known as "the leaping of the mullet fish." The leader of the Committee of Safety, Lorrin Thurston, forced its leader to sign the Bayonet Constitution. It was officially annexed by the Newlands Resolution, and was first ruled by King Kamehameha I. Its only president, Sanford Dole, took power after Queen Lil'uokalani was deposed. Its current senators include Daniel Inouye and Daniel Akaka, and in 1959, it became the 50th state. For 10 points, name this state whose capital is Honolulu.

ANSWER: Hawai'i

12. This nation's Great Manmade River project pumps fossil water from the Tazerbo and Sarir in the Kufra Basin and notable rock art can be found at Tadrart Acacus near Ghat. This country's highest point, Bikku Bitti, lies adjacent to an area this country was pushed out of in 1987, the Aozou Strip. It saw a battle of the Desert War during World War II at the seaport of Tobruk. Also containing Al 'Aziziyah, which recorded the highest temperature on Earth, for 10 points, name this nation led by Colonel Muammar Al-Qadafi with its capitol at Tripoli.

ANSWER: Great Socialist People's Libya Arab Jamahiriya

13. The net fluid movement across them is measured by the Starling equation, and superfused ATP causes constriction of these near regions where pericytes are located about these structures. Discontinuous endothelial cells allow for higher permeability of one variant of these, which are usually just one cell thick. They form the vasa recta, which is critical in the production of urine in the kidney. Occurring in formations known as "beds," for 10 points, name this smallest of the three major animal blood vessels.

ANSWER: capillaries [or capillary]

14. One new character in this game met his most famous associate at the brig in Camp McIntyre, while another who has "borne witness to the entropy of entire realities" will be returning. A yellow variant of a substance featured in this game's predecessors provides more resources, and a canceled feature is a black hole affecting aerial units. One race's new Corruptor and Roach units brought balance complaints, while the Phase Prism will change the mechanism of transportation for the Protoss. For 10 points, name this upcoming successor of Brood War.

ANSWER: Starcraft II [do not prompt on partial answer]

15. One of this author's novels includes a Soviet U-boat captain named Alexander Marisenko, and is narrated by the father of Konrad, Paul Pokriefke. The narrator is married to Ilsebill in another of his novels, which is named for a mythical fish. In addition to *Crabwalk* and *The Flounder*, this author wrote a novel about Pilenz's persecution of Joachim Mahlke, which followed a novel about a man who decides to stop growing after receiving an instrument for his third birthday, Oskar Matzerath. For 10 points, name this author of *Dog Years*, *Cat and Mouse*, and *The Tin Drum*.

ANSWER: Gunter Grass

16. A cuboid with integer sides and diagonals are special cases of this man's namesake bricks, and he lends his name to a set of polynomials which are related to the Bernoulli numbers. His namesake line connects the circumcenter, orthocenter, and the centroid, and he names a constant whose irrationality is yet to be confirmed, along with Mascheroni. For 10 points, identify this mathematician whose namesake formula relates complex exponents to the sine and cosine functions, and whose namesake number is the base of the natural log.

ANSWER: Leonhard Euler

17. This structure is usually constructed of a series of voussoirs. A skyscraper in Hong Kong that uses one of these for support is named for it. Arabic architects used a pointed version of this for mosques, while the Romans used them for support in aqueducts and also as triumphal monuments. A tapered pointed version of this is called a "Gothic" one. For 10 points, identify this structure, one of which was built in Paris by Napoleon and named "de Triomphe."

ANSWER: arches [prompt on arc]

18. One ruler by this name oversaw a war against the Turks that ended in the Treaty of Adrianople, and another ruler by this name was advised by Pyotr Stolypin after dismissing Sergey Witte. The former espoused the doctrine of Official Nationality and was the brother of Constantine, and the latter was forced to issue the October Manifesto. The first's claim to the throne was opposed by the Decembrists, and the second was advised by the monk Rasputin. For 10 points, give the shared name of these tsars of Russia, the latter of whom was executed in 1918.

ANSWER: **Nicholas**

19. The Etruscan equivalent of this god appears on the Chimera of Arezza and was the consort of Thalna and Uni; his name was Tinia. This god's oracle claimed that he was a consort of Dione and was interpreted through the rustling of oak leaves at Dodona. In some myths, he is said to have turned into an eagle to abduct his cupbearer, Ganymede, who replaced his offspring Hebe in that role. The father of Ares and Hephaestus, for 10 points, name this husband of Hera and chief Greek god.

ANSWER: **Zeus** [accept **Jupiter** before "Dione" is read; do not accept after]

20. This character visits an old teacher of his, Mr. Antolini, but is scared away by what he perceives to be homosexual advances. Earlier, he is beaten by a hotel bellhop named Maurice after he refuses to pay a woman for her services. This character watches his sister ride a merry-go-round, but considers his older brother Philip to be a phony. The novel in which he appears begins when he gets kicked out of Pencey Prep. For 10 points, identify this older brother of Phoebe, the narrator of J.D. Salinger's *Catcher in the Rye*.

ANSWER: Holden Caulfield [accept either or both names]

21. One American author of this last name told of Carolyn Simpson's rejection of Molly Bolt in *Rubyfruit Jungle*. An early American author of this last name wrote novels subtitled "memoirs of a sleep-walker" and "the transformation," *Edgar Huntly* and *Wieland*. Countee Cullen wrote a "ballad of" this type of "girl," while a character with this surname sees Goody Cloyse in the woods, heading to a witches' sabbath alongside his own wife, Faith. For 10 points, a Nathaniel Hawthorne story describes a "Young Goodman" named for what color?

ANSWER: **brown**

22. Its strength is proportional to the sine squared of a mixing angle, and it violates CPT symmetry. Carlo Rubbia and Simon van der Meer won the 1984 Nobel Prize in Physics for helping discover the particles that carry this force, the W and Z bosons. It is responsible for beta decay, and Glashow, Salam, and Weinberg unified it with the electromagnetic force. For 10 points, name this fundamental force, which is not as strong as the strong force.

ANSWER: **weak** nuclear force



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Bonuses

1. His victories included Marston Moor, with the help of Scottish forces, but he suffered defeats at battles like Powick Bridge and Adwalton Moor. For 10 points each:

[10] Identify this Lord Protector of the Commonwealth of England, succeeded by his son Richard.

ANSWER: Oliver **Cromwell**

[10] Cromwell purged this parliament, named for its duration, to form the Rump Parliament. It had formed after the Bishops' Wars when Charles I needed money.

ANSWER: **Long** Parliament

[10] In this battle, Cromwell's forces destroyed Charles I's. They also captured evidence that Charles sought help from European Catholic nations, increasing support for Parliamentary forces.

ANSWER: Battle of **Naseby**

2. Snakes with thermoreceptive organs typically contain sensors of this form of radiation, which is subdivided into near, mid, and long spectrums. For 10 points each:

[10] Name this form of radiation, which is longer than that of visible light but shorter than that of microwave and tetrahertz radiation.

ANSWER: **infrared** radiation

[10] This series, named for a Swiss mathematician, was the first discovered spectral series associated with hydrogen. It is located in the visible portion of the electromagnetic spectrum.

ANSWER: **Balmer** series

[10] The Balmer series describes the n to 2 transition of electrons in this model of the hydrogen atom which describes electrons whose orbits around the nucleus have a definite radius.

ANSWER: **Bohr** model

3. He died in 1992, ten years before his *Organ Squared: As Slow as Possible*, a piece which takes six hundred years to perform, was begun in Germany. For 10 points each:

[10] Name this avant-garde American composer of the *Imaginary Landscape* series, the *Roaratorio*, and the landmark "Four Minutes and Thirty-Three Seconds."

ANSWER: John Milton **Cage**, Jr.

[10] A 1961 book by Cage was titled after this phenomenon, which makes up the entirety of Cage's "Four Minutes and Thirty-Three Seconds."

ANSWER: **silence**

[10] Cage used this adjective to describe pianos which had various weird items placed between the strings in order to distort their sound, and composed several pieces for such pianos.

ANSWER: **prepared**

4. Answer the following about the poetry of different countries, for 10 points each.

[10] This man made a significant contribution to mathematics by devising a method for solving cubic equations, but is better known for his Rubaiyat, which was translated into English by Edward Fitzgerald.

ANSWER: Ghiyās od-Dīn Abol-Fath Omār ibn Ebrāhīm **Khayyām** Neyshābūri

[10] Matsuo Basho was a prolific creator of this type of poem, which derived from the *haikai no renga*. He collected them in *Records of a Travel-Worn Satchel*.

ANSWER: **haiku**

[10] This Tang dynasty Chinese poet and alcoholic wrote *Drinking Alone by Moonlight*. Gustav Mahler combined four of his works into *The Song of the Earth*.

ANSWER: **Li Bai** [or **Li Po**]

5. Identify the following about Martin Luther and the Reformation, for 10 points each.

[10] The reformation began in this north German city, where in 1517 Luther nailed the Ninety-Five Theses to this city's Castle Church.

ANSWER: **Wittenberg**

[10] Luther appeared before this assembly in 1521 to answer for charges of heresy. There he stated, "Here I stand; I can do no other." This assembly's namesake edict declared Luther an outlaw.

ANSWER: Diet of **Worms**

[10] Luther's decision to nail the Ninety Five Theses was sparked in part by this Dominican friar's salesmanship of indulgences.

ANSWER: Johann **Tetzel**

6. Answer the following about two-body collisions, for 10 points each.

[10] In a two-body collision, this property must be conserved. It is also equal to mass times velocity.

Answer: linear **momentum** [do not accept or prompt on "angular momentum"]

[10] This property is defined as the change in momentum in a given time interval. Like momentum, it is equal to the integral of force with respect to time.

Answer: **impulse**

[10] This type of two-body collision conserves not only linear momentum but kinetic energy as well, since the mass of each body does not change and the velocity merely changes direction.

Answer: **elastic**

7. Answer the following about mythical beings in poetry, for 10 points each.

[10] This author of "The Hunting of the Snark" wrote a poem about a creature hunted with a "vorpal" sword which goes "snicker-snack," "Jabberwocky." He also created the Mad Hatter.

ANSWER: Lewis **Carroll** [or Charles Lutwidge **Dodgson**]

[10] This symbolist author of "A Throw of the Dice Will Never Abolish Chance" wrote about dreamlike nymphs in his poem "Afternoon of a Faun."

ANSWER: Stéphane **Mallarmé**

[10] This mythological hag, who lives in a house on chicken legs, appears prominently in Pushkin's poetry, especially in "Ruslan and Ludmila."

ANSWER: **Baba Yaga**

8. Identify these plays by Moliere, for 10 points each.

[10] In this play, the title religious hypocrite tricks Orgon into deeding him his house, but ends up being arrested by the king.

ANSWER: **Tartuffe**

[10] In this Moliere comedy, Argan wants his daughter to marry Diafoirus, a physically repellent physician, in order to treat his nonexistent diseases. Moliere died while playing the title role.

ANSWER: **The Imaginary Invalid** [or **The Hypochondriac** or **La Malade Imaginaire**]

[10] The title character, Alceste, eventually marries Célimène, but not before criticizing all of the folly he sees around him.

ANSWER: **The Misanthrope** [or **Le Misanthrope**]

9. He is the "preserver" god in the Hindu Trimurti, and his devotees repeat his one thousand names. For 10 points each:

[10] Name this major figure of Hindu worship, who rides the bird Garuda and is the companion of Lakshmi, the goddess of wealth.

ANSWER: **Vishnu**

[10] The tortoise Kurma, the boar Varaha, and the fish Mastya are some of these ten earthly incarnations of Vishnu. Buddha, Krishna, and Rama are also among their number.

ANSWER: **avatars**

[10] The avatar just prior to the kingly form of Rama is Parasurama, or Rama "wielding" this weapon. The weapon is used to reclaim Jamadagni's kidnapped cow, setting off a world war.

ANSWER: an **axe**

10. It was led by Hong Xiquan (shee-KWAN), who believed that he was the younger brother of Jesus. For 10 points each:

[10] Name this 19th century rebellion that sought to establish the Heavenly Kingdom of Great Peace in China.

ANSWER: **Taiping** Rebellion

[10] The Taiping Rebellion took place during this final Chinese dynasty, which lasted from 1644 to 1911.

ANSWER: **Qing** Dynasty [or **Ch'ing** Dynasty]

[10] In the 19th century, the Qing Dynasty also fought two wars with Britain over the importation of this addictive drug.

ANSWER: **opium** [accept clear equivalents]

11. Identify these topics from game theory, for 10 points each.

[10] In this game, two criminals are each offered freedom if they confess. However, if both confess, they are worse off than if neither confesses.

ANSWER: **prisoner's dilemma**

[10] In this situation, each player in a game knows the strategies of other players and has no reason to change his own strategy. It is named for a mathematician who suffered from paranoid schizophrenia.

ANSWER: **Nash equilibrium**

[10] In this game, two participants race towards each other. If both swerve, they suffer small consequences, like loss of face, but if neither swerve, they suffer large consequences, like dying.

ANSWER: **chicken**

12. Name these styles of twentieth-century American music, for 10 points each.

[10] Adding substituted chords, variable drum beats, and chromatic tones to jazz, this movement of the late 1940s had such adherents as Thelonious Monk, Charlie Parker, and Dizzy Gillespie.

ANSWER: bebop

[10] Presaged by the playing of Lennie Tristano, this anarchic style was named for an Ornette Coleman album and was used by Cecil Taylor and John Coltrane.

ANSWER: free jazz

[10] Thomas Turpin invented the "St. Louis" form of this style, which was popularized in such compositions as "The Cascades" and "The Entertainer" by Scott Joplin.

ANSWER: ragtime

13. Answer the following about things you might see while taking a leisurely trip down the Beautiful Blue Danube, for 10 points each.

[10] The Danube rises in this wooded mountainous region in southwest Germany. Other rivers in this colorfully named region include the Enz, the Kinzig, and the Neckar.

ANSWER: Black Forest [or Schwarzwald]

[10] Further downstream, the Danube goes through this capital of Slovakia, which is situated on the border between Slovakia, Austria, and Hungary, and was formerly known as Pressburg.

ANSWER: Bratislava

[10] The majority of the Danube delta lies in this nation, which features the regions of Moldavia and Wallachia, the Transylvanian Alps, and the capital of Bucharest on the Dâmbovița River.

ANSWER: Romania

14. Identify the following pertaining to circuits, for 10 points each.

[10] Voltage is a product of current and this quantity, which decreases with the increasing area of cross section of a wire.

ANSWER: resistance [do not accept "resistivity"]

[10] These are the units used to measure resistance. Their namesake also names the law stated as $V = IR$.

ANSWER: Ohms

[10] This is a generalized form of resistance which accounts for time variance of the current, and includes real and imaginary parts.

ANSWER: impedance

15. Vowel pronunciation was still not modernized by 1794, so contemporary readers of this poem would have found a rhyme between the words "eye" and "symmetry." For 10 points each:

[10] Name this poem, which speculates about how God "could twist the sinews of" the heart belonging to an animal that is "burning bright / in the forest of the night."

ANSWER: "The Tiger"

[10] This author of *America: A Prophecy*, who created his own neo-Christian religion centered on such figures as Urizen, included "The Tiger" in his *Songs of Innocence and Experience*.

ANSWER: William Blake

[10] Often paired with "The Tiger," this other Blake poem addressed to an animal asks "dost thou know who made thee? / Gave thee life, and bid thee fead."

ANSWER: "The Lamb"

16. Name these Jewish philosophers, for 10 points each.

[10] This philosopher and economist wrote works like *The Eighteenth Brumaire of Louis Napoleon* and a *Critique of the Gotha Program* in addition to his *Das Kapital*.

ANSWER: Karl Heinrich **Marx**

[10] This lens grinder churned out works like *Tractatus Theologico-Politicus* and his major work, the *Ethics*.

ANSWER: Baruch **Spinoza** [or Benedict **Spinoza**; or Bento de **Espinosa**]

[10] This Algerian-born Frenchman founded deconstructionism and wrote works like *Glas*, *The Post-Card*, and his widely read *Of Grammatology*.

ANSWER: Jacques **Derrida**

17. Answer the following questions about the Election of 1884, for 10 points each.

[10] The election was won by this Democrat from New York, the only president to serve two non-consecutive terms.

ANSWER: Grover **Cleveland**

[10] Cleveland defeated this Republican from Maine nicknamed the "Plumed Knight." The leader of the Half-Breeds, he later served as Benjamin Harrison's Secretary of State.

ANSWER: James Gillespie **Blaine**

[10] Because of Blaine's association with corruption scandals, Cleveland was supported by these Republicans led by Carl Schurz, named after an Algonquin Indian word for "war leader."

ANSWER: **Mugwumps**

18. It plays a major role in synthesizing proteoglycans, which then form the extracellular matrix in animal cells. For 10 points each:

[10] Name this organelle, which modifies and stores the products of the endoplasmic reticulum, and is named for an Italian scientist.

ANSWER: **Golgi body** [or **Golgi apparatus**; or **Golgi complex**; or **dictyosome**]

[10] The Golgi apparatus consists of these stacks of flattened sacs, which are oriented in a cis-trans manner corresponding to "receiving" and "shipping" ends.

ANSWER: **cisternae**

[10] Many of the vesicles containing proteins and phospholipids arriving at the Golgi apparatus come from the rough endoplasmic reticulum, which contains these small organelles.

ANSWER: **ribosomes**

19. This novel is narrated by Jack Burden. For 10 points each:

[10] Name this novel about the political rise and fall of Willie Stark.

ANSWER: **All the King's Men**

[10] This author, who succeeded Allen Tate as poet laureate of the United States, wrote *All the King's Men*.

ANSWER: Robert Penn **Warren**

[10] This other United States poet laureate wrote confessional poems like "Skunk Hour," as well as "For the Union Dead."

ANSWER: Robert **Lowell**

20. Name these early 20th century artistic movements, for 10 points each.

[10] Named for the French word for "hobbyhorse," this movement included Hannah Hoch, Hans Arp, and Marcel Duchamp.

ANSWER: **Dada**

[10] Centered in Munich, this movement included Paul Klee, Franz Marc, and Wassily Kandinsky. It was named after a Kandinsky painting of a man on horseback.

ANSWER: Der **Blaue Reiter** [or the **Blue Rider**]

[10] Fritz Bleyel and Ernst Kirchner were members of this other group of German expressionists, which shares its name with the object that the main figure stands on in Munch's *The Scream*.

ANSWER: Die **Brücke** [or The **Bridge**]

21. During it, chromosomes line up along its namesake plate. For 10 points each:

[10] Name this second phase of mitosis.

ANSWER: **metaphase**

[10] During metaphase, this structure appears and draws chromosomes to opposite poles of the cell.

ANSWER: mitotic **spindle** apparatus

[10] Also during metaphase, this structure in the centromere is attached to a spindle fiber.

ANSWER: **kinetochore**