



HSAPQ

High School Academic Pyramid Questions

2008-2009
NSC-Format Set #1

Round 6

Related Tossups &
Bonuses

1. This function's hyperbolic version is given by "e to the x plus e to the negative x, all over 2," which can be used to describe catenaries. The first two terms of its Taylor series are "1 minus x squared over 2," and the natural log of this function is found in the integral of the tangent. Its namesake law states "c squared equals a squared plus b squared minus 2ab" times this function applied to gamma. The dot product is defined in terms of, for 10 points, what trigonometric function that is the reciprocal of the secant, and is given by adjacent over hypotenuse.

ANSWER: cosine

Answer the following about the science of fatigue, for 10 points each.

[10] Muscular fatigue occurs due to a lack of this molecule, which is necessary for the formation of cross-bridges and other energy-requiring tasks.

ANSWER: ATP [or adenosine triphosphate]

[10] Synaptic fatigue occurs when the production rate of this neurotransmitter lags behind the rate at which it is released at the neuromuscular junction.

ANSWER: acetylcholine

2. One of this man's operas is about the stepdaughter of Don Magnifico, who serves as his maid, and another is about Ninetta, who is on trial for stealing a spoon. In addition to *La Cerentola* and *The Thieving Magpie*, he composed the aria "Largo al factotum," which appears in his opera that includes Dr. Bartolo's ward, Rosina, and Count Almaviva. Also noted for an opera about a Swiss patriot who shoots an apple off his son's head, for 10 points, name this composer of *The Barber of Seville* and *William Tell*.

ANSWER: Gioachino Antonio Rossini

A water spout appears in the upper right of this painting and a ship with a broken mast appears in the foreground. For 10 points each:

[10] Name this painting that depicts a shirtless African American on a ship surrounded by sharks.

ANSWER: *The Gulf Stream*

[10] *The Gulf Stream* is a work by this illustrator for *Harper's Weekly* and artist of *Breezing Up* and *Snapp-the-Whip*.

ANSWER: Winslow Homer

3. One type of this process utilizes ligand binding specificity of proteins and is known as the affinity type, while another type uses porous beads to differentiate volumes of polymers, and is the size exclusion type. Another type which relies on the calculation of Rf values is the "thin layer" type that uses a polar solvent as the mobile phase. Also commonly performed using a silica gel matrix as a stationary phase, for 10 points, identify this process which sometimes separates components of a mixture based on their color.

ANSWER: chromatography

Named for their characteristic rock fragments, they are dominated by glassy organic rocks because lava cools quickly in the air. For 10 points each:

[10] Name these types of volcano, which frequently have eruptions leak through cracks in their sides due to a loose construction.

ANSWER: **cinder cone** volcanoes [or **scoria cone** volcanoes]

[10] Cinder cone volcanoes are usually composed of this dark igneous rock that has a columnar structure, and is composed of labradorite and pyroxene.

ANSWER: **basalt**

4. He sent Edmund de la Pole to the Tower, and this man employed Lambert Simnel in the royal kitchens after putting down his treason. He negotiated the Intercursus Magnus with Maximilian of the Netherlands following Maximilian's decision to abandon Perkin Warbeck, and his greatest victory was preceded by his landing at Milford Haven. He arranged his son's marriage to Catherine of Aragon, and defeated Richard III at Bosworth Field. For 10 points name this founder of the Tudor Dynasty of English rulers, the victor of the Wars of the Roses.

ANSWER: **Henry VII**

Present at the Battle of St. Jakob an der Birs against the Swiss, this man's rival, Charles the Bold of Burgundy, perished at the Battle of Nancy. For 10 points each:

[10] Name this son of Charles VII who signed the Treaty of Picquigny with Edward IV of England, and was known as the Spider King.

ANSWER: **Louis XI** [prompt on "Louis"]

[10] Louis XI, in addition to Philip VI and Henry III, were members of this royal dynasty of France that preceded the Bourbon.

ANSWER: **Valois**

5. Two wolves named "Greedy" and "Ravenous" devour the food that this deity doesn't eat. This deity can see far from his throne of Hlidskjalf, and has information brought to him by the ravens Huginn and Muninn. This deity hung on his spear Gungnir from the World Tree Yggdrasil in order to master the runes, and he gave up one of his eyes to drink from Mimir's well. He rides the eight-legged steed Sleipnir and will be swallowed whole by Fenrir at Ragnarok. For 10 points, name this owner of Valhalla, the chief god of the Norse pantheon.

ANSWER: **Odin** [accept **Wodin**; **Woten**; **Wodinaz**; or **Wodanaz**]

This god was born from the union of Coatlicue and a ball of feathers. For 10 points each:

[10] Name this god known as the "left-handed Hummingbird."

ANSWER: **Huitzilopochtli**

[10] Huitzilopochtli is commonly associated with war and this object, which was also the most common aspect of Ra in Egyptian myth.

ANSWER: the **sun** [accept **solar deity** or equivalents]

6. One work by this author sees a strait-laced architect put on the mask of his dead friend Dion Anthony, and in another work by this author, Dr. Ned Darrell impregnates Nina Leeds. This author of *The Great God Brown* and *Strange Interlude* wrote expressionistic plays about Yank Smith and Brutus Jones, as well as a play about the arrival of Theodore Hickman to Harry Hope's Bar. For 10 points, name this playwright of *The Hairy Ape* and *The Iceman Cometh*, the first American playwright to win the Nobel Prize.

ANSWER: Eugene **O'Neill**

The title figure of this novel fights a bulldog while being kicked by Beauty Smith. For 10 points each:
[10] Name this novel about a creature who is saved by Weedon Scott.

ANSWER: **White Fang**

[10] This author of *The Call of the Wild* also wrote such socioeconomic thrillers as *The Iron Heel* and *The People of the Abyss* in addition to *White Fang*.

ANSWER: Jack **London**

7. The final chapter of this work discusses revenue and expenses of the “Sovereign or Commonwealth” and production and transportation of “rude produce” are among the four uses of capital outlined in part two of this work. The author of this work discusses pin manufacturing as an example of “division of labor” which has improved economic productivity. For 10 points, identify this work which introduced the concept of public good through the pursuit of self interest called the “invisible hand,” and was written by Adam Smith.

ANSWER: *An Inquiry into the Nature and Causes of the **Wealth of Nations***

This economic system gave rise to corporations. For 10 points each:

[10] Name this economic system based on the private ownership of resources and property.

ANSWER: **capitalism**

[10] This economist predicted that intellectuals would end up destroying capitalism in his book *Capitalism, Socialism, and Democracy*.

ANSWER: Joseph **Schumpeter**

8. He wrote the polemic *Anticato* to challenge Cicero’s own letter praising Cato the Younger and he was accused of conspiring with the participants in the Catiline Conspiracy. As a general he was defeated at Gergovia but won important victories at Alesia and Pharsalus, the former against Vercengetorix and the latter against his rival Pompey the Great, who made up the first triumvirate along with Crassus and this man. For 10 points, name this Roman general and leader who was appointed dictator in 49 BC and assassinated on the Ides of March in 44 BC.

ANSWER: Gaius Julius **Caesar**

For 10 points each, name these Prime Ministers of Canada.

[10] This first Prime Minister and Liberal Conservative was forced to resign after the Pacific Scandal but was reelected in 1878.

ANSWER: Sir John Alexander **Macdonald**

[10] This Prime Minister from 1968 to 1979 and 1980 to 1984 dealt with the October Crisis and implemented the policy of bilingualism.

ANSWER: Joseph Philippe Pierre Yves Elliott **Trudeau**



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Category Quiz
Bonus Choices

Arts
Current Events
Geography
History
Literature
Math Calculation
Religion
Social Science

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Category Quiz Tossups

9. This author wrote a novel in which Goryanchikov is deported to Siberia, and another in which plans to murder Shatov are ruined when Nikolai Stavrogin commits suicide. This author of *The House of the Dead* and *The Possessed* wrote a novel in which the unnamed narrator meets the prostitute Liza. In one of this author's novels, Ivan writes a poem called "The Grand Inquisitor," while in another, the pawnbroker Alyona is killed by Raskolnikov. For 10 points, name this author of *Notes from Underground*, *The Brothers Karamazov* and *Crime and Punishment*.

ANSWER: Fyodor Dostoyevsky

10. Called the Fresh River by the first European to discover it, Adriaen Block, this body of water has four namesake lakes in Coos County. Before meeting the ocean at Old Saybrook, this river receives tributaries such as Blow-Me-Down Brook, in addition to the Ashuelot, Deerfield and Chicopee Rivers. A remnant of the glacial Lake Hitchcock, this river has its source in New Hampshire and flows into Long Island Sound. For 10 points, name this largest river of New England, which flows through Springfield, Massachusetts and Hartford in its namesake state.

ANSWER: Connecticut River

11. One reagent containing this element along with hydrogen peroxide generates radical hydroxide groups and is used in the treatment of waste-water. In addition to Fenton's reagent, this was the central element complexing with two dienyl rings in the first observed metallocene. It can be isolated from its carbonate ore which is called siderite, and Bosch modified the Haber process by using the oxide of this element as a catalyst. For 10 points, identify this element which can alternatively be called ferrum.

ANSWER: iron [or Fe; accept ferrum until mentioned]

12. Henry Cowell is credited with one innovation to this instrument, and that innovation was used in a work entitled *Bacchanale*. In *Les Noces*, Stravinsky scored four of them to be used as percussion instruments, while a concerto for it was written for Nicolai Rubinstein to perform. Other performers of it include Emmanuel Ax, and John Cage made use of the "prepared" kind of this instrument. Coming with a sustain pedal, it can be upright or grand, and Beethoven wrote 32 sonatas for it, including the "Moonlight." For 10 points, name this keyboard instrument.

ANSWER: piano

13. The highest non-royal government officials of this period were known as the Three Excellencies and Nine Ministers. It fought the battles of Julu and Gaixia against the Chu, and the historian Sima Qian lived during this period. Paper was invented and the Silk Road was opened during it, while its end came after the Yellow Turban Rebellion. Falling between the Three Kingdoms period and the Qin Dynasty, for 10 points, name this dynasty which saw the interregnum of Wang Mang and was founded by Liu Bang.

ANSWER: Han Dynasty

14. Use of this product was initially encouraged by the Ford Foundation's Educational Facilities Laboratory. It was first used at the Moses Brown School, and Indiana State was the first university to use it. A July 2007 study concluded that this product, originally produced by Monsanto Industries, contains toxic substances, and schools such as Northwestern and Central Michigan have replaced it with other synthetic surfaces or natural grass. For 10 points, name this first synthetic playing surface, most famously used in a domed Houston stadium.

ANSWER: **AstroTurf** (prompt on "artificial turf"; prompt on "synthetic turf"; prompt on "Chemgrass"; prompt on "ersatz grass")



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Category Quiz
Bonuses

Arts

Many of his works illustrate scenes from the Old Testament, including *The Adoration of the Golden Calf*, and its companion piece, *The Crossing of the Red Sea*. For 15 points, name this 17th century French painter of *Et in Arcadia Ego*.

ANSWER: Nicolas Poussin

Current Events

This organization has been led by AIDS-denying polygamist Jacob Zuma since 2007, and in 2008, Mosiuoa Lekota seceded from it to form the COPE, or Congress of the People. For 15 points, name this largest political party in South Africa.

ANSWER: African National Congress [or ANC]

Geography

Containing the Gallatin, Absaroka, Bridger, Beartooth and Bitterroot ranges, this state's highest point, Granite Peak, was the last in the US to be ascended. For 15 points, name this state, the home to Glacier National Park.

ANSWER: Montana

History

During it, the slogan "fukoku Kyohei" was used to carry out programs, and the Charter Oath was promulgated. For 15 points, name this series of reforms begun in 1868 by a namesake Japanese emperor.

ANSWER: Meiji Restoration [or Meiji Ishin; or Meiji Renewal; or other equivalents]

Literature

This author attacked Southern racism in *The Respectful Prostitute*, and considered the problem of radicalism in his play *Dirty Hands*. For 10 points, name this French playwright who updated the *Oresteia* in *The Flies*.

ANSWER: Jean-Paul Sartre

Math Calculation

For 15 points, using any method desired, find the area of the trapezoid given by the points (3,1), (5,4), (7,4), (9,1).

ANSWER: 12

Religion

A notable “floating” variety of one of these graces the Itsukushima Shrine. For 15 points, name these traditional gateways consisting of two upright supports and two crossbars, which mark the transition between sacred space and the profane world in Shintoism.

ANSWER: torii

Social Science

His best known book contains parts like “Speaking Personally” and “How Can I Be of Help?”. For 15 points, identify this author of *On Becoming a Person*, the pioneer of client-centered therapy.

ANSWER: Carl Ransom Rogers



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Stretch Phase

15. One of his paintings shows a white robed man kneeling behind a knight. In addition to *Madonna of the Canon Van der Paele*, this man often inscribed his motto “Als ich Chan” in his works. Peacocks can be found in the background of his *Virgin of Chancellor Rolin*, and he collaborated on a work that features Adam and Eve flanking angels above a panel showing *The Adoration of the Lamb*. He also painted a work that uses a dog to show fidelity and has a woman in a green dress holding a merchant’s hand. For 10 points, name this painter of *The Ghent Altarpiece* and *The Arnolfini Wedding*.

ANSWER: Jan van Eyck

Name these Chief Justices of the Supreme Court, for 10 points each.

[10] After resigning as Secretary of the Treasury, this man was appointed Chief Justice by Abraham Lincoln, and gave a dissenting opinion in the Slaughterhouse Cases.

ANSWER: Salmon Portland Chase

[10] This Federalist helped define the purpose of the court and federal power with cases such as *Marbury v. Madison* and *Gibbons v. Ogden*.

ANSWER: John Marshall

[10] This man narrowly lost the 1916 election to Wilson, and served as Secretary of State under Harding and Coolidge before becoming Chief Justice in 1930.

ANSWER: Charles Evans Hughes

16. In the opening section of his major work, this poet says that men nourish their sins as beggars nourish lice, and proposes *ennui* the greatest of all vices. In addition to his prefatory poem “To the Reader,” he wrote “that crown will be made of nothing but pure light” in “Benediction,” the first poem in the “Spleen and Ideal” section of a volume that also contains “Wine, Death, and Revolt.” For 10 points, name this French Romantic poet who ran into censorship trouble with his decadent volume *Les Fleurs du Mal*, which is often translated as *The Flowers of Evil*.

ANSWER: Charles Pierre Baudelaire

One of the most salient of its seven main propositions states that “Whereof one cannot speak, one must remain silent.” For 10 points each:

[10] Name this influential work among logical positivists, a work by Ludwig Wittgenstein.

ANSWER: Tractatus Logico-Philosophicus [or Logisch-Philosophische Abhandlung]

[10] Members of this European city's namesake circle, including Moritz Schlick and Rudolf Carnap, regarded the *Tractatus* with great reverence.

ANSWER: Vienna [or Vienna Circle]

[10] Earlier in life at Cambridge, Wittgenstein studied under this man, who co-wrote *Principia Mathematica* with Alfred Whitehead.

ANSWER: Bertrand Russell

17. Julian Smallwood noted a hysteresis-like departure from this law, which Voigt modified by adding higher order terms. The yield point represents the point at which this law no longer applies, and integration of this equation gives the dependence of potential energy on displacement. Young's modulus is the coefficient in this first-order approximation of the relationship between stress and strain. For 10 points, name this law usually written as F equals negative kx , which governs the motion of a mass on a spring.

ANSWER: **Hooke's Law**

His *Madonna* is nude and arches her body forward while stretching her arms behind her back, and a woman in black kneels bows her head next to a bed in his *The Sick Child*. For 10 points each:

[10] Name this Norwegian painter also known for *Death in the Sick Room* who depicted a red-haired woman embracing a man in a piece labeled *Vampire*.

ANSWER: Edvard **Munch**

[10] Munch is best known for this painting, in which a formless man puts his hands to his cheeks and performs the title action while standing on a bridge under a red sky.

ANSWER: *The **Scream*** [or ***Skrik***; or *The **Shriek*** or *The **Cry*** or other translations]

[10] Women in white, red, and black dresses frame the action in this Munch painting, in which white-clad women perform the titular action with black-clad men.

ANSWER: *The **Dance of Life***

18. Denouncing someone behind his or her back offsets the benefit gained from observing it, and one of the practices it prohibits can be done until a white thread is easily distinguishable from a black one. One of its days marks the time that a certain object was revealed to Samaa Adunya; that "Night of Measures" is known as the Laylat al-Qadr. Six nonconsecutive days of Shawwal follow it, and the main activity during it is known as sawm. It ends with the iftar, but it is ceremoniously broken by the Eid ul-Fitr. For 10 points, name this month of fasting in Islam.

ANSWER: **Ramadan** [or **Ramazan**

One character in this work sings of a dog being beaten to death with a ladle. For 10 points each:

[10] Name this play in which Vladimir and Estragon engage in the title activity.

ANSWER: ***Waiting for Godot*** [or ***En Attendant Godot***]

[10] This author wrote *Waiting for Godot* in addition to some works like *Krapp's Last Tape* and the *Molloy* trilogy.

ANSWER: Samuel **Beckett**

[10] This character in *Waiting for Godot* has a servant named Lucky who has a nonsensical monologue. When he is encountered the second time, he is blind and helpless.

ANSWER: **Pozzo**

19. In one of this author's short stories, Judge Menefee tells a lady to award an apple to the man who tells the best story about the hermit Redruth, only to discover that she has eaten it herself. Besides "The Sphinx Apple," this author wrote many stories about the con men Andy Tucker and Jeff Peters, as well as stories set in the West like "The Caballero's Way." His collections include *Cabbages and Kings* and *The Four Million*. For 10 points, name this author who used plot twists in short stories like "The Last Leaf," "The Ransom of Red Chief," and "The Gift of the Magi."

ANSWER: O. **Henry** [or William Sydney **Porter**]

Name the glacial feature, for 10 points each.

[10] These can come in “lateral,” and “ground” varieties. They are ridges of till that build up along the edges of the glacier.

ANSWER: **moraines**

[10] These tapering hills point in the opposite direction as Roche moutonnées.

ANSWER: **drumlins**

[10] These knife-like ridges occur when two alpine glaciers go in opposite directions, scraping out a sharp ridge.

ANSWER: **aretes**

20. Along with Lucius III, he convened the synod of Verona, which condemned Waldensianism and Albigensianism. He convened the synod of Pavia in an attempt to get Victor IV elected pope over Alexander III, and after Victor’s death, he successfully placed Paschal III as antipope. Supported by the Ghibellines, this man named his son Henry VI as his successor before departing on the Third Crusade. For 10 points, name this Holy Roman Emperor who drowned on that Crusade and notably had a red beard.

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

This collection was translated into English by Richard Burton. For 10 points each:

[10] Name this collection of tales narrated by Scheherazade that includes the stories of Sinbad the Sailor along with Ali Baba and the Forty Thieves.

ANSWER: **The Arabian Nights' Entertainments** [or **The One Thousand and One Arabian Nights** or **The Book of One Thousand Nights and a Night**]

[10] In the *Arabian Nights*, this son of Mustapha the Tailor marries the daughter of a Sultan after defeating an evil African magician, who is jealous of this character's magic lamp.

ANSWER: **Aladdin**

[10] Scheherazade tells the Arabian Nights to this king, who resolves to kill every virgin in his kingdom after Shah Zaman tells him of his wife's infidelity.

ANSWER: King **Shahryar**

21. Miktoarm star ones may provide efficient drug delivery systems, and the glass transition temperature denotes when they become brittle. Flory-Huggins theory models the volume they are likely to occupy. One kind of reaction to create these is governed by a redox reaction between copper (I) bromide and copper (II) bromide and is called controlled/living because it lacks a termination step. For 10 points, identify these macromolecules formed from a number of repeating subunits, natural examples of which include starch and cellulose.

ANSWER: **polymers**

In this 490 BCE battle, the Athenians repelled a Persian invasion force. For 10 points each:

[10] Name this battle that saw the death of Callimachus as well as defeat for Datis and Artaphernes.

ANSWER: Battle of **Marathon**

[10] According to popular legend, this man ran approximately 26 miles to Athens to announce the Persian defeat before dying of exhaustion.

ANSWER: **Phidippides**

[10] This Athenian general was the victor at Marathon. Following Marathon, he led a failed expedition to conquer islands that sided with Persia and ultimately died of gangrene.

ANSWER: **Miltiades** the Younger

22. These people were the subject of Don Brash's Orewa Speech, and Percy Smith has postulated that they arrived in a "Great Fleet". These people were the losers in the Flagstaff War in which Hone Heke led the Nga Puhī tribe. Earlier, the acquisition of guns from the British led to a series of intertribal wars known as the "Musket Wars." Territorial acquisitions during these wars would be set in stone by the Treaty of Waitangi. For 10 points, name these indigenous people who inhabit the North and South Islands of New Zealand.

ANSWER: **Maori**

The hormone hCG signals this temporary structure to begin secretion. For 10 points each:

[10] Name this structure which develops from the ovarian follicle and degrades after the introduction of prostaglandins, taken over by the placenta.

ANSWER: **corpus luteum** [or **corpus lutea**]

[10] The corpus luteum is a main location for the secretion of this hormone, which renders the vaginal wall impermeable to sperm. It also thickens the uterine wall lining and stops lactation.

ANSWER: **progesterone**

[10] The Theca cells of the corpus luteum also secrete this hormone, which works with progesterone. As the primary female sex hormone, it mediates everything from secondary sex characteristics to menopause.

ANSWER: **estrogen**