



HSAPQ

High School Academic Pyramid Questions

Fall 2008
ACF-Format Set #2
Round 13
Tossups

1. The apex of certain cone-shaped tissues in them is surrounded by the major and minor calyces, and two vessels contained in them are the efferent artery and the afferent vein. In addition to the Malpighian pyramid cells, they include a pack of specialized macula densa cells, which line the walls of the DCT. Podocytes compose the visceral layer of another structure in them which bars entry to platelets, the Bowman's capsule. Containing the glomerulus and the ascending and descending limbs of the loop of Henle, for 10 points, name these organs composed of many nephrons.

ANSWER: kidneys

2. In one of this author's novels, Françoise gets jealous when Pierre starts paying attention to Xaviere. Although she won critical acclaim for *She Came to Stay* and the Prix Goncourt for *The Mandarins*, she is best known for her non-fiction, including one book where she argued against historical bias by stating that "one is not born but becomes a woman." For 10 points, name this French existentialist author of *The Second Sex*.

ANSWER: Simone de Beauvoir

3. An indigenous religion from this place believes that repeated use of incantations turns the speaker's tongue black and was headquartered at the "edifice of nine swastikas." In addition to Bon, this region is the center of a denomination that uses the "yab-yum," an image of coitus, for worship, and practices the Diamond Vehicle or Vajrayana. The Yellow Hat sect, once centered at Potala palace, formerly ruled this territory. For 10 points, name this place, from which current religious authority Tenzin Gyatso is exiled; a Buddhist, Asian land formerly ruled by the Dalai Lama.

ANSWER: Tibet [prompt on China or the Himalayas or Asia or any other "place" that Tibet might reasonably be considered a part of]

4. A group of these people led by La Renaudie failed to capture the king in the Conspiracy of Amboise, and they were the target of the Massacre at Vassy. Their leaders included Louis I, prince de Condé; and Gaspard de Coligny, both of whom fought against the House of Guise. On August 24, 1572, they were targeted in the St. Bartholomew's Day Massacre, and the Edict of Fontainebleau revoked the freedoms that they had been granted by Henry IV in the Edict of Nantes. For 10 points, name this group of French Calvinists.

ANSWER: Huguenots [prompt on French Protestants or French Calvinists]

5. IPA symbols for these include the Greek letters gamma and phi, the former of which represents a close-mid, back, unrounded one. These sounds can be "full" or "reduced" in some languages, and the English sound represented by "w" is an example of their "semi" kind. During Early Modern English, they were raised and fronted via the "pull chain" in their namesake "great" "shift." A sound that consists of a glide from one of these to another is known as a diphthong. For 10 points, name these sounds which include "ah" and "oh," contrasted with consonants.

ANSWER: vowels

6. Its maximum usable frequency is calculated by dividing by its angle of attack. The open system space tether, once produced, will use energy from this region. Studied by the Alouette series of satellites, this region contains many unreachable propagation paths which can open up during Sporadic-E events. Very Low Frequency signals that hit prior to SIDs affect its D layer. It also contains the Kennelly-Heaviside layer and interacts with solar flares. For 10 points, name this uppermost part of the atmosphere, which contains many charged particles.

ANSWER: ionosphere

7. The orchestra was conducted by Matthew Dubourg in the premiere performance of this work, and it features a libretto by Charles Jennens. Composed in between *Israel in Egypt* and *Judas Maccabaeus*, it includes the recitative "Comfort ye, my people" and the aria "Ev'ry valley shall be exalted." Composed in three weeks, this work contains one section that prompted King George II to stand up. For 10 points, name this oratorio that contains the "Hallelujah" chorus and was composed by George Frederic Handel.

ANSWER: Messiah

8. After being snubbed by Utsusemi, the title character of this novel meet that woman's friend; later, he meets the beautiful Yugao. The title character's mother Kiritsubo dies after being neglected by her husband, who paid more attention to the concubine Lady Kokiden. The author of this novel is present in it as a child that the title character meets in the mountains. The title character marries Princess Aoi, who dies in childbirth. For 10 points, identify this long novel about the titular son of the Japanese emperor, written around 1000 CE by Murasaki Shikibu.

ANSWER: The Tale of Genji [or Genji monogatari]

9. A pure form of this substance is called "glacial" because of its ability to solidify into ice-like crystals at seventeen degrees Celsius. Its production undergoes a methyl iodide intermediate which is followed by the addition of carbon monoxide, and is called the Monsanto process. It is also produced by the oxidation of ethanol. For 10 points, identify this organic compound, which is the second most complex carboxylic acid, has formula CH_3COOH , and is commonly found in vinegar.

ANSWER: acetic acid [accept ethanoic acid until "ethanol"; accept CH_3COOH until mentioned]

10. Ronald Ridenhour conducted an investigation into it, and it was codenamed Pinkville. Hugh Thompson, Lawrence Colburn, and Glenn Andreotta used a helicopter to help end it, and were subsequently awarded Soldier's Medals. Journalist Seymour Hersh broke the story on it, and Lieutenant William Calley was sent to prison for four years for his role in it. For 10 points, name this massacre of hundreds of South Vietnamese civilians by United States servicemen in March of 1968.

ANSWER: My Lai Massacre

11. Ghostface Killah's cameo as an oil sheik was cut from this movie, in which one character utters the prophetic line "Next time, baby." A key element of the final confrontation is the formation of frost at high levels of the atmosphere, which helps the protagonist save Pepper Potts. Including an uncredited post-credits appearance by Samuel L. Jackson as Nick Fury, for 10 points, name this 2008 Jon Favreau-directed film in which Robert Downey, Jr. plays inventor Tony Stark, who builds a powerful suit.

ANSWER: Iron Man

12. One opera by this man concerns the slave Djamileh, who seeks the love of her master, Haroun. In another of his operas, the Duke of Rothsay mistakenly woos Mab, instead of Catherine. In addition to *The Fair Maid of Perth*, he wrote an opera that includes the duet "Au fond du temple saint," and is entitled *The Pearl Fishers*. The title character of another of his operas works at a cigarette factory, sings the Habanera, and falls in love with the bullfighter Escamillo. For 10 points, name this French composer of an opera about a gypsy named Carmen.

ANSWER: Georges **Bizet**

13. One work in this form is named for the figures from Greek myth on the pedestal at the bottom and was painted by Andrea del Sarto, while a tondo-form work in this genre, painted by Botticelli, depicts several members of the Medici family on the sides. The ominous title bird is being given to another figure by John the Baptist in another of these, painted by Raphael. For 10 points, name these works known as "of the harpies," "Magnificat," and "of the goldfinch," and also painted "of the rocks" by Leonardo, which are paintings of Mary and the infant Jesus.

ANSWER: **Madonnas**

14. In one of this author's plays, the son of Albert Allmers is killed by the Rat Wife. In another of this author's plays, Judge Kroll accuses Rebecca West of attempting to manipulate the clergyman Johannes. In addition to *Little Eyolf* and *Rosmersholm*, this playwright created characters like the daughter of Hjalmar Ekdal, who shoots herself after talking to Gregers Werle, and Nora Helmer, who leaves her husband Torvald. For 10 points, name this Norwegian playwright of *The Wild Duck*, *Ghosts*, and *A Doll's House*.

ANSWER: Henrik **Ibsen**

15. The Hastings and Clarence Rivers empty into the Pacific, forming a delta, in this state. It is also home to cities like Shoalhaven. Though it is not Oregon, this state is home to the Blue Mountains and the "Three Sisters" rock formation. This state is also home to Mount Kosciusko in the Great Dividing Range, and the Murray River forms most of its border with Victoria. Also bordered by South Australia and Queensland and having its capital at Sydney, for 10 points, identify this Australian state that shares part of its name with a region of the United Kingdom.

ANSWER: **New South Wales** [or **NSW**]

16. One of its creators suffered an eyelid bite, interrupting the flow of air to it but enabling its creators to sew Loki's mouth shut. Jarngreipr and Meginjorth are accessories required to use it, and Utgard-Loki disguised some mountains to create the illusion that it failed. The lustful king Thrym hoped to ransom it for Freyja's hand in marriage, but that failed when its owner killed Thrym with it. Hrungrnir dies in a fight where it was used that includes the participation of Magni and Modi, who will inherit this weapon. For 10 points, name this hammer belonging to Thor.

ANSWER: **Mjollnir**

17. Williams and Klish have developed a method of creating this substance artificially that uses "cellular scaffolding." Tietze syndrome occurs when the "costal" type of this material in the chest is inflamed. The most common type of this material in humans is characterized by high concentration of Type I collagen. Elastic, Fibro-, and hyaline are the three forms of, for 10 points, what connective tissue that makes up human ears and the skeletons of sharks?

ANSWER: **cartilage**

18. This city became a capital under the rule of Countess Matilda after serving as a Roman garrison near the town of Faesulae. It adopted the constitution named "Ordinances of Justice," and the cloth workers here led the Revolt of the Ciompi. Its pro-Papal Guelph party split into White and Black factions, and the Bonfire of the Vanities held here was instigated by Savonarola. Ruled by a family that included Cosimo and Lorenzo the Magnificent, for 10 points, name this Tuscan city in Italy, home to the Medicis.

ANSWER: **Florence** [or **Firenze**; or **Florentia**]

19. A gradient in this quantity causes inhomogeneous liquids to separate according to the Marangoni effect. When caused by solvent-solute interactions, it is described by an equation named for Gibbs. It is related to radius of curvature and pressure by the Laplace equation, and it can be empirically determined by the drop weight method. This property is decreased by applying surfactants, and it is characterized by stronger cohesive forces. For 10 points, identify this phenomenon which allows insects to walk on water.

ANSWER: **surface tension**

20. In one work, this author describes the brutality of Mr. Severe and Mr. Gore, who work on the plantation of Colonel Lloyd. This author attacked the hypocrisy of Americans who celebrate the Declaration of Independence while ignoring slavery in "What to the Slave is the Fourth of July?" He described how a fight with Edward Covey inspired him to escape from William Freeland in the first of his three autobiographies, which include *My Bondage and My Freedom*. For 10 points, name this abolitionist who wrote a "narrative" of his life and founded *The North Star*.

ANSWER: Frederick **Douglass**

21. In this novel, Captain Dobbin convinces George Osborne to marry the protagonist's friend, although he loves her himself. That protagonist ends her days living off of a suspicious life insurance policy taken out by her friend's brother Jos, who had been living with her after her husband Rawdon Crawley left her. The climax of this novel takes place in Brussels when Amelia Sedley's husband dies in The Battle of Waterloo. For 10 points, name this novel about the devious Becky Sharp, by William Thackeray.

ANSWER: **Vanity Fair**

22. During his reign, this man received homage from Malcolm III. With the aid of Ranulf de Glanvill, this man established the superiority of royal courts over private jurisdiction. One of the most notable events of his reign was sparked by the Constitutions of Clarendon, and his sons Richard and John both rebelled against him. The founder of the Plantagenet line, for 10 points, name this English king who feuded with both Thomas à Becket and his own wife Eleanor of Aquitaine.

ANSWER: **Henry II**



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Bonuses

1. Among the objects on the shelves at back of this painting are two globes and a lute, and the bottom includes an anamorphic skull. For 10 points each:

[10] Name this painting of two figures dressed in ornate robes standing in front of a green curtain.

ANSWER: *The French* **Ambassadors**

[10] *The Ambassadors* was painted by this German-born court painter of Henry VIII, also responsible for a notable portrait of Thomas More.

ANSWER: Hans **Holbein** the Younger

[10] Early in his career, Holbein drew some illustrations for this book by Erasmus.

ANSWER: *The* **Praise of Folly**

2. It was visible in the sky as the constellation Puppis, immediately from when it was launched. For 10 points each:

[10] Name this fifty-oared ship which was built from the speaking wood of Dodona, and carried such figures as Meleager, Theseus, and Orpheus on a quest.

ANSWER: the **Argo** [do not accept "Argonauts"]

[10] This leader of the Argonauts was crushed by the stern of his own ship after having his wife and children killed by Medea.

ANSWER: **Jason**

[10] This Argonaut went on to participate in the Trojan war as king of "sandy Pylos." Telemachus visits him, looking for answers, at the beginning of the Odyssey.

ANSWER: **Nestor**

3. For 10 points each, name these psychological experiments.

[10] B.F. Skinner used levers that dispensed food to train these creatures to play ping pong and guide bombs.

ANSWER: **Pigeons**

[10] This Philip Zimbardo experiment, that was cancelled after six days, studied the psychological effects of becoming an inmate or a guard.

ANSWER: **Stanford Prison** Experiment [prompt on partial answer]

[10] This man led a series of experiments on conformity that included convincing people that a short line was longer than a long one.

ANSWER: Solomon **Asch**

4. This remnant of Lake Cahuilla is found in the lower Colorado Desert. For 10 points each:

[10] Name this inland sea, a lake in California that helps irrigate the Imperial and Coachella Valleys.

ANSWER: **Salton** Sea

[10] The Salton Sea is not too far from this city that includes neighborhoods like Van Nuys and North Hollywood in the San Fernando Valley. It is the largest city in California.

ANSWER: **Los Angeles**

[10] This seat of Alameda County includes the Jack London Square, which is home to the *USS Potomac*, or “floating white house.” It borders the eastern San Francisco Bay.

ANSWER: **Oakland**

5. The ones in the hydrogen atom are the solutions to Schrodinger’s equation for that atom. For 10 points each:

[10] Identify these regions where electrons can be found with high probability. S, p, d, and f are types of these.

ANSWER: **orbitals**

[10] This type of orbital is formed by the linear combination of atomic orbitals. Their introduction was an improvement over the valence bond theory.

ANSWER: **molecular** orbitals

[10] One rule in this set of rules states that all orbitals of a quantum number must be occupied before a second electron can be filled in any of those orbitals. They are named for a German.

ANSWER: **Hund**’s Rules

6. This material with high birefringence is heavily in demand for purposes of fireproofing and insulation. For 10 points each:

[10] Name this mineral composed of aluminum and potassium, with a 2 to 2.25 hardness, which is named for a material commonly used for windows in a Russian city.

ANSWER: **Muscovite** [or **Isinglass**; or **common mica**; or **potash mica**; prompt on **mica**]

[10] Muscovite is the most common of these low-hardness minerals which also include biotite and lepidolite. Known for being very chemically stable, they are frequently used as capacitors.

ANSWER: **micas**

[10] The frequent use of mica in capacitors results from it being a great example of this type of substance, which is placed as an insulator between two charged capacitor plates.

ANSWER: **dielectric**

7. 8. Under his administration, the number of days a terror suspect can be held without charge has increased from twenty-eight to forty-two. For 10 points each:

[10] Identify this current Prime Minister of the United Kingdom.

ANSWER: James Gordon **Brown**

[10] Brown’s ten-year role as Chancellor of the Exchequer surpassed this man’s seven-year stint. He also represented Britain in the Paris Peace conference after World War I.

ANSWER: David **Lloyd George**

[10] This Member of Parliament for Witney is currently the Leader of the Opposition and of the Conservative Party.

ANSWER: David William Duncan **Cameron**

8. 2,3-BPG regulates the binding of oxygen to hemoglobin by this method. For 10 points each:

[10] Identify this type of inhibition, in which binding at the namesake site induces a conformational change at the active site.

ANSWER: **allosteric** inhibition [or **allosteric**]

[10] These are proteins which increase the speed of a biochemical reaction by reducing the activation energy.

ANSWER: **enzymes**

[10] Kinases help in the regulation of proteins by the addition of this ionic group. Three of these groups are found on an ATP molecule.

ANSWER: **phosphate**

9. It describes an “ecstasy of fumbling” after a gas attack. For 10 points each:

[10] Name this antiwar poem which warns against “the old lie” of the title taken from a Horace poem.

ANSWER: “**Dulce et Decorum Est**”

[10] “Dulce et Decorum Est” was written by this author of “Anthem for Doomed Youth.”

ANSWER: Wilfred Edward Salter **Owen**

[10] This friend of Owen and novelist of *Memoirs of a Fox-Hunting Man* was instrumental in introducing Owen to the public. His own poetry includes “Suicide in the Trenches” and “They.”

ANSWER: Siegfried Loraine **Sassoon**

10. He gives his name to element 99. For 10 points each:

[10] Name this scientist, whose namesake field equations include the Ricci tensor, and who published a 1905 paper on Brownian motion.

ANSWER: Albert **Einstein**

[10] Einstein, along with this Indian physicist, names the so-called fifth phase of matter, first discovered in a gas of rubidium atoms.

ANSWER: Satyendra Nath **Bose**

[10] Bose’s namesake bosons include these two particles which mediate the weak force. One of them is its own antiparticle and each of them is one hundred times more massive than even iron atoms.

ANSWER: **W** and **Z** bosons [both answers required; either order acceptable]

11. She was executed, along with her husband Guilford Dudley, after Thomas Wyatt’s attempt to overthrow Mary I. For 10 points each:

[10] Name this woman who was proclaimed Queen of England at age fifteen after the death of Edward VI but only reigned for nine days.

ANSWER: Lady **Jane** Grey

[10] Jane’s claim to the throne came from her grandmother Mary, who was the younger sister of this king who had six wives.

ANSWER: **Henry VIII**

[10] Jane’s rise was largely orchestrated by this father of Dudley, who had effectively ruled the kingdom during Edward’s reign and didn’t want to relinquish control to Mary.

ANSWER: John Dudley, first Duke of **Northumberland** [prompt on John **Dudley**]

12. The title character works in the Liberty Paint factory for the paranoid Lucius Brockway. For 10 points each:

[10] Name this novel about an unnamed black man who lives in a basement lit by 1,369 lights.

ANSWER: **Invisible Man**

[10] This American author of *Shadow and Act* wrote *Invisible Man*.

ANSWER: Ralph Waldo **Ellison**

[10] In 2008, part of Ellison's unpublished manuscripts will be published as *Three Days Before the Shooting*. Part of those works had already been released as this novel, named after a Texas holiday.

ANSWER: **Juneteenth**

13. A number of women caused problems for Rome. For 10 points each:

[10] This queen of Palmyra conquered several eastern provinces of the Roman Empire before being subdued by Emperor Aurelian in 274. She later married a Roman senator.

ANSWER: **Zenobia**

[10] This queen of the Iceni and wife of Prasutagus revolted after Rome seized her kingdom, sacking St. Albans and London. She poisoned herself after defeat by Gaius Suetonius Paulinus.

ANSWER: **Boadicea**

[10] The wife of her brother Ptolemy XIII, she killed herself in the aftermath of the battle of Actium after her lover Antony did the same.

ANSWER: **Cleopatra**

14. Identify some architects who designed monumental works that they didn't live to see finished, for 10 points each.

[10] The Sagrada Familia, a Barcelona cathedral designed by this Catalan architect, began construction in 1882, but it is not slated to be completed until 2026.

ANSWER: Antoni **Gaudí**

[10] This American aborted his plans to build The Illinois, a mile-high skyscraper in Chicago. More notably, he designed Taliesin and Fallingwater.

ANSWER: Frank Lloyd **Wright**

[10] This founder of constructivism designed the Monument to the Third International, which was intended to feature rotating cores inside a double helix frame but proved too expensive.

ANSWER: Vladimir **Tatlin**

15. His use of bribery and spying allowed him to conquer the enemy state Qi (CHI). For 10 points each:

[10] Name this first emperor of a unified China, who ordered the burning of the books after Confucian scholars opposed his use of magicians.

ANSWER: Qin **Shi Huang Di** [or **Zhao Zheng**; or **Ying Zheng**]

[10] Shi Huang Di's Qin (CHIN) dynasty was replaced by this dynasty begun by the Gaozu emperor. Its Wudi emperor made Confucianism the state belief.

ANSWER: **Han** dynasty

[10] This man used his daughter's marriage to Pingdi in his machinations, which led to his usurpation of the Han dynasty. He was overthrown in the Red Eyebrows revolt.

ANSWER: **Wang Mang** [or **Jiahuangdi**]

16. The tone poem *The Pleasure Dome of Kubla Khan* by Charles Griffes is considered an American example of this style of music. For 10 points each:

[10] Name this movement, most popular in France in the late 19th century, that was characterized by unusual harmonies, the whole-tone scale, and exotic timbres.

ANSWER: **Impressionism** [accept word forms]

[10] This French Impressionist composer was greatly influenced by the gamelan music of Indonesia. His piano work *Suite Bergamasque* includes *Clair de Lune*.

ANSWER: Claude **Debussy**

[10] Based on a poem by Stéphane Mallarmé, this Claude Debussy work opens with a chromatic flute solo and centers on a sleepy half-man, half-goat figure.

ANSWER: **Prelude to the Afternoon of a Faun** [or **Prélude à l'après-midi d'un faune**]

17. Many poems in *La Vita Nuova* are dedicated to this girl. For the stated number of points:

[10] For 10, name this character who guides the narrator of *The Divine Comedy* through Paradise.

ANSWER: **Beatrice** Portinari

[10] For 10, *The Divine Comedy* was written by this Italian author, who promoted the use of vernacular Italian instead of Latin.

ANSWER: **Dante** Alighieri

[5,5] For 5 points each, Dante places these two lovers, who had committed adultery, in the second circle of hell. Rodin depicted them in his sculpture *The Kiss*.

ANSWER: **Paolo** Malatesta and **Francesca** di Rimini [both answers required; either order acceptable]

18. Vice Admiral Nagumo Chiuchi commended the fleet that attackers at this event left from. For 10 points each:

[10] Name this event, planned by Yamamoto, which involved the ships *Arizona*, *Oklahoma*, and *California* being attacked in Oahu, and led to U. S. involvement in World War II.

ANSWER: **Pearl Harbor**

[10] In this World War II battle, Frank Fletcher attacked a group landing at Tulagi, and the *Shokaku* was forced into retirement. It was prompted by a planned Japanese invasion of Port Moresby.

ANSWER: **Coral Sea**

[10] This man created the wartime volunteer group that became the China Air Task Force, which protected Chungking and gave air cover for the Burma Road, the "Flying Tigers."

ANSWER: Claire Lee **Chennault**

19. Name these plays of Aristophanes, for 10 points each.

[10] In this play, the women of Athens withhold sex from their husbands to protest the Peloponnesian War.

ANSWER: **Lysistrata**

[10] In this play, Strepsiades burns down the Thinkery and beats up Socrates.

ANSWER: *The* **Clouds** [or **Nephelai**]

[10] While searching for Tereus, two Athenians get the title creatures of this play to help construct Cloudcuckooland.

ANSWER: *The* **Birds** [or **Ornithes**]

20. He has an ulcer on his ankle and an overwhelming fear of rats, a fact O'Brien uses to torture him in Room 101. For 10 points each:

[10] Name this protagonist of a 1949 dystopian novel, who goes on to betray his girlfriend, the fellow thought criminal Julia.

ANSWER: Winston Smith [either or both names acceptable]

[10] Winston Smith and Julia appear in this George Orwell novel, where the Junior Anti-Sex League, memory holes, and Newspeak are facts of life in a version of Britain called Airstrip One.

ANSWER: **1984**

[10] Julia is a zealous participant in the Two Minutes Hate, which is directed at this supposed leader of the Brotherhood and author of *The Theory and Practice Of Oligarchical Collectivism*.

ANSWER: Emmanuel Goldstein [either or both names acceptable]

21. Stephen Smale updated this list with his own list of eighteen problems for twenty-first century mathematicians to solve. For 10 points each:

[10] Name this set of twenty-three problems that were still unresolved when its namesake presented them in 1900.

ANSWER: **Hilbert** problems

[10] Hilbert's eighth problem, and Smale's first, is solving this man's hypothesis that the zeroes of a certain zeta function lie on the critical line. He also worked with his namesake "sums."

ANSWER: Bernhard **Riemann**

[10] Smale's third problem asks this question, which debates if, given that a specific solution to a problem can be verified in polynomial time, the problem itself is solvable in polynomial time.

ANSWER: Does **P = NP**?