



HSAPQ

High School Academic Pyramid Questions

Fall 2008
ACF-Format Set #1

Round 5

Tossups

1. Subtracting the magnetic pressure from this quantity gives the Lorentz force, and Laplace's Law states that pressure is equal to twice this quantity over the radius. In free-body diagrams, it must be represented as a vector pointing away from the object of interest because it can never push, only pull. A two-dimensional form allows small animals to walk on water and is known as the "surface" variety. For 10 points, identify this type of force exerted by taut strings, cables, and cords.

ANSWER: **tension** [accept **magnetic tension** before "Laplace" is read; prompt on **force**]

2. In this conflict, one general the siege of Turin, and its main peace was supplemented by the treaties of Rastatt and Baden following victories by Eugene of Savoy. Queen Anne's War was its American analogue, and John Churchill gained renown with his victory at Blenheim in this conflict, and this war was preceded by a will granting Philip V the throne following the death of Charles II. For 10 points, name this war that lasted from 1701 to 1714 that was ended by the Peace of Utrecht which dealt with who would rule the namesake Iberian country.

ANSWER: **War** of the **Spanish Succession**

3. In one of his plays, a magnifying glass reveals that the text on a toothbrush reads, "Fully guaranteed...hog's setae." That play ends with Winnie buried up to her neck in a mound of earth. In addition to *Happy Days*, he wrote a trilogy of novels including *Molloy*, *Malone Dies*, and *The Unnamable*. In another of his plays, Nagg and Nell live in trash cans while Clov serves Hamm. For 10 points, name this author of *Endgame*, who wrote about Vladimir and Estragon in *Waiting for Godot*.

ANSWER: Samuel **Beckett**

4. This thinker portrayed himself as "Theophilus" and his interlocutor as "Philalethe" in a chapter-by-chapter rebuttal of a work by John Locke. In addition to his *Discourse on Metaphysics* and the posthumously printed "New Essays on Human Understanding," he inspired Schopenhauer's discourse on the "Fourfold Root" of an idea that he devised, the "principle of Sufficient Reason." For 10 points, name this author of the *Monadologie*, a philosopher parodied as Pangloss in *Candide* and co-inventor of calculus.

ANSWER: Gottfried Wilhelm **Leibniz**

5. This civilization's government was ruled by a leader called the halach uinic and a head priest called the Ah Kin Mai. Its kings included Chan-Balum and Pacal, and it used the milpa system of agriculture. This civilization built cities at Uxqal and Palenque, and adopted a base-twenty system of mathematics. They used the tzolkin, a 260-day calendar, and suddenly abandoned their cities in the 9th century. For 10 points, name this Pre-Columbian civilization that built Chichen Itza and was based in the Yucatan Peninsula.

ANSWER: **Maya** civilization/empire

6. A “prisoner’s dilemma” situation can determine their level under an oligopoly, and companies which cannot affect their general level are “takers” of these. Thorstein Veblen advocated technocracy in a book about “The Engineers and” the “system” of these. Market segmentation is one reason for their namesake “discrimination.” In basic economic graphs, demand increases, and supply decreases, as these rise. For 10 points, what are these values, which are often plotted against quantity on supply-demand graphs, and which rise in periods of inflation?

ANSWER: **prices** [or the **price level**; do not accept “costs”]

7. The suicide of this artist's friend Casagemas inspired him to paint *La Vie*. He designed the sets and costumes for the ballet *Parade*, and depicted a man wearing a bright red costume next to a harlequin in his 1905 painting *The Family of Saltimbanques*. This artist of *The Old Guitarist* painted a screaming horse, an arm holding a candle, and a bull in a work commemorating the bombing of a Basque village. Along with Georges Braque, he developed Analytic Cubism. For 10 points, name this Spanish painter of *Les Femmes d'Alger* and *Guernica*.

ANSWER: Pablo **Picasso**

8. In one poem by the author, the speaker asserts that when “seraphs swing their snowy hats,” he will drink from “tankards scooped in pearl.” This poet wrote “Diadems drop and Doges surrender / Soundless as dots on a disk of snow” after describing people “safe in their alabaster chambers.” In another of this author's poems, the speaker says the title creature came “between the light and me” so “I could not see to see.” For 10 points, name this American poet of “I Heard a Fly Buzz When I Died” and “Because I Could Not Stop For Death.”

ANSWER: Emily **Dickinson**

9. In 1448, residents of this city rebelled against Frederick II Irontooth. One meeting here was convoked by Count Gyula Andrassy and revised the Treaty of San Stefano. Another meeting here established free navigation on the Niger, created the Congo Free State, and sparked the scramble for Africa. In addition to that 1885 conference, this capital of the kingdom of Prussia was divided into four quadrants among the Allies after World War II. For 10 points, name this German city, the location of a wall torn down in 1989.

ANSWER: **Berlin**

10. The Zundel cation displays a symmetric example of these structures that have been studied in the bifluoride ion, and those structures possess significantly higher energies than asymmetric ones.. The existence of these between every nth carbonyl group and n+4 th amino group imparts the alpha-helical structure to amino acid chains, and they are also responsible for causing the crystalline arrangement of water molecules in ice. For 10 points, identify these structures which impart greater stability to compounds containing the lightest element.

ANSWER: **Hydrogen bonds**

11. The protagonist of this work imagines an ugly Socrates lecturing Phaedrus. The protagonist is inspired to go on a journey when he encounters a red haired man in a Byzantine graveyard, and is later disgusted by an old fop he meets on a boat, who pretends to be young with painted cheeks and a dyed wig. Despite being warned that the sirocco was aggravating the cholera epidemic on Lido, the title event happens while the protagonist observes Tadzio on an Italian beach. For 10 points, name this novella about the demise of Gustav von Aschenbach, written by Thomas Mann.

ANSWER: **Death in Venice** [or **Der Tod in Venedig**]

12. Members of this phylum contain a network of birefringent calcium carbonate crystals along its skeleton, and the structure of the ossicles in it is called the stereom. The madreporite is a perforated plate which is connected to the stone canal in the water vascular system of these organisms, which usually move using five rows of tubed feet. This phylum includes classes like Asteroidia and Holothuroidea, and all members exhibit radial symmetry. For 10 points, identify this phylum, whose name means “spiny skinned” and is exemplified by sea urchins and starfish.

ANSWER: echinodermata

13. One of the two mainstream theories about this work notes that sketches for a scherzo part of it exist, and the ending of its slow second movement in E major clashes with the first movement in B minor. The other theory states that this work was purposely broken up in order to create the entr'acte for the *Rosamunde* incidental music. Whether this 1828 work was ever intended to have more than two movements is still the subject of debate. For 10 points, name this work which was followed by the *Great Symphony*, a piece by Franz Schubert named for its incomplete status.

ANSWER: Schubert's Unfinished Symphony [or Schubert's Eighth Symphony; accept equivalents such as Schubert's Symphony Number Eight; prompt on partial answer]

14. Her son Max was wrapped in a flag in an advertisement wherein she sang “America the Beautiful” for the Rock the Vote campaign. Along with Missy Elliot, she sang “Car Wash” for *Shark Tale*. Her self titled album contains a song which asks “Who is that girl I see staring straight back at me?” which also appeared on the *Mulan* soundtrack, and another of her songs describes a character who is “sweet talking” and “sugar coated.” For 10 points, identify this singer best known for songs like “What a Girl Wants,” “Genie in a Bottle,” and “Candyman.”

ANSWER: Christina Aguilera

15. This country's west portion includes a river formed from salt lakes near Peak Hill in the south edge of its Robinson Ranges, and which flows to the sea at Kalbarri. Northwest of its town of Meekatharra is Mount Augustus, one of the claimants to the title of “world's largest monolith.” Jervis Bay Territory is often considered a state on its east seaboard, which also features the Great Dividing Range. Also featuring the Yarra River, Ayers Rock, Darwin, and Alice Springs, for 10 points, name this country next to the Great Barrier Reef, whose capital is Canberra.

ANSWER: Commonwealth of Australia

16. At one point in this work, a woman is concerned that people might hear her having sex with the title character, who replies “I can go anywhere and do anything.” It opens with an excerpt from the “Song of Everlasting Sorrow” before transitioning to the “Paulownia Court,” and at one point, the title character is exiled to the town of Suma. His descendants, Niou and Kaoru, both love Ukifune, while the title character has an affair with his mother-in-law, Fujitsubo. For 10 points, name this Heian Era novel by Murasaki Shikibu about an amorous prince.

ANSWER: *The* Tale of Genji

17. In base 2, these objects are designated primitive if they generate maximum period linear feedback shift registers. The Chebyshev ones are a special case of the Jacobi ones, as are the Legendre ones. A Taylor series of order n corresponds to one of these with degree n , and irreducible ones cannot be factored, though the fundamental theorem of algebra guarantees they have at least one complex root. For 10 points, identify these mathematical objects whose terms are all proportional to a power of a variable, examples of which include $3y$ and x squared plus 1.

ANSWER: polynomials

18. One character in this opera asserts in the aria "Non mi dir" that she cannot yet marry Ottavio, and the title character sings about hosting a wedding party in "Fin ch'han dal vino," the champagne aria. One character switches cloaks to mislead a murderous mob led by Massetto, who is infuriated by the treatment of his new wife Zerlina, and earlier Elvira learns about the title figure's history in Leporello's "catalogue" aria. The statue of the Commendatore drags the title character down to Hell at the end of, for 10 points, what opera about a womanizer, by Mozart?

ANSWER: **Don Giovanni**

19. According to Apollodorus, the first king of this city and his goddess-wife turned into dragons after conquering Illyria. One myth holds that the first king of this city had a daughter named Agave who gored her son Pentheus to death during a Dionysiac festival. This city was punished after the young boy Chrysippus was raped by its king, Laius. Argive commanders join Polynices in battle against this city's leader Eteocles, the son of Oedipus, in an Aeschylus play about "Seven Against" this city. For 10 points, name this Greek city founded by Cadmus.

ANSWER: **Thebes**

20. Samuel Curtis introduced the bill proposing this idea, which was planned by Theodore Judah. It was financed by the "Big Four," who included Mark Hopkins, Charles Crocker, and Collis Huntington. It led to the creation of "Hell on Wheels" towns, and was constructed by companies owned by Thomas Durant and Leland Stanford. It was finally completed at Promontory Point, Utah with a golden spike. Built by the Union Pacific and the Central Pacific, for 10 points, name this route which connected Omaha and Sacramento.

ANSWER: **Transcontinental Railroad**

21. A spiral associated with it is named for Eugene Parker who noted the similarity between Biermann and Chapman's theories for this phenomenon. First observed by the Lunik II satellite, comprehensive information about it was gathered by Mariner 2, which noted the direction of the flux of positive ions. The discontinuity formed by its interaction with a planetary magnetic field is called the bow shock, and its radiation pressure causes comets to have tails. For 10 points, identify this two word term which describes the stream of particles ejected by the sun's corona.

ANSWER: **solar wind**

22. Works by this man include *The Story of the Malakand Field Force*, which was derived from his service in India, and *The River War*. He lost his admiralty post due to his championing of the disastrous Dardanelles expedition during World War I, and as Colonial Secretary, he negotiated the treaty that created the Irish Free State. For 10 points, name this man whose 1946 speech in Fulton, Missouri warned against the Soviet Iron Curtain and who, as Prime Minister, rallied the British against Nazi Germany during World War II.

ANSWER: Winston **Churchill**



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Bonuses

1. They are collected in works such as *The Gateless Gate*. For 10 points each:

[10] Identify these irrational statements which are used in a certain sect of Buddhism to help demonstrate the limit of analysis and attain satori or enlightenment.

ANSWER: koan

[10] Name that Buddhist sect, which was brought to America by Dr. T. Suzuki. It is immensely popular in Japan, and is split into the Soto and Rinzai schools.

ANSWER: Zen Buddhism.

[10] This sect of Buddhism is more common in Southeast Asia, and the Tipitaka is an important set of scriptures in it. It focuses on the ideal of arhat.

ANSWER: Theravada [or sthaviravada]

2. They mediate interactions between the nervous system and the rest of the body, and GABA is the chief inhibitory one. For 10 points each:

[10] Identify these signaling chemicals, other examples of which include acetylcholine.

ANSWER: neurotransmitters

[10] The gap between a neuron and another cell across which neurotransmitters travel to open ion channels is called this.

ANSWER: synapse

[10] This neurotransmitter modulates anger, body temperature, metabolism, and the sleep cycle. Some antidepressant medications seek to inhibit its reuptake.

ANSWER: serotonin

3. The signing of this document followed the disastrous Battle of Bouvines. For 10 points each:

[10] Name this 1215 document signed at Runnymede by King John.

ANSWER: Magna Carta Libertatum [or Great Charter of Freedoms, or Great Paper of Freedoms]

[10] This Francophone King of England was John's older brother. He spent only six months of his reign in England and he fought in the Third Crusade.

ANSWER: Richard I or Richard the Lion-Hearted [accept Richard Coeur de Leon]

[10] This Ayubid ruler gained respect for Richard I's skill in battle and successfully fought the Crusaders, forcing the 1192 Peace of Ramla.

ANSWER: Saladin

4. This set of fossils was discovered in 1974 in the Afar Depression. For 10 points each:

[10] Name this skeleton of a female Australopithecus afarensis who lived 3.2 million years ago, the earliest known hominid skeleton.

ANSWER: **Lucy** [or **AL 288-1**]

[10] This other species of hominid evolved into Homo ergaster, and lived from approximately 2.2 to 1.6 million years ago.

ANSWER: **Homo habilis**

[10] The first Homo habilis fossils were discovered by the husband and wife archaeologists Mary and Louis, who share this surname with their son Richard.

ANSWER: **Leakey**

5. Answer these questions about a playwright and his plays, for 10 points each.

[10] In this play, Krogstad blackmails Nora by reminding her of a note that she forged after her father's death. Nora later becomes upset at the misogyny of her husband Torvald, causing her to leave him.

ANSWER: A **Doll's House** [or *Et dukkehjem*]

[10] This Norwegian playwright wrote *John Gabriel Borkman*, *The Wild Duck*, and *A Doll's House*

ANSWER: Henrik **Ibsen**

[10] Ibsen also wrote this play about Mrs. Alving, who helps build an orphanage after her husband's death, but can't prevent her son Oswald from contracting hereditary syphilis.

ANSWER: **Ghosts** [or **Gengangere**]

6. This symphony's first movement quotes "Swing Low, Sweet Chariot." For 10 points each:

[10] Name this symphony in E minor intended to be a manual for American composers, whose second movement includes a famous largo.

ANSWER: **Symphony** number **9** "From the **New World**" [accept any combination of underlined parts]

[10] Name this composer of the Symphony "From the New World," a Czech composer who wrote the *Slavonic Dances*.

ANSWER: Antonin Leopold **Dvorak**

[10] Dvorak's opus 90 is this piano trio in E minor that abandoned sonata form to use 6 movements. It takes its name from a Ukrainian folk style.

ANSWER: **Dumky** trio [or **Piano Trio** no. **4** in E minor]

7. Identify the following ways of expressing concentration, for 10 points each.

[10] Denoted with a lowercase m, this quantity is the number of moles of solute per kilogram of solvent.

ANSWER: **molality** [do not accept molarity]

[10] Unlike molality, this quantity is denoted with an uppercase M, and is the number of moles of solute per liter of solution.

ANSWER: **molarity** [obviously do not accept molality]

[10] Expressed in mole equivalents per liter, this quantity used to measure concentrations of acids is found by multiplying the molarity by the number of "reactive units" in the compound.

ANSWER: **normality**

8. Answer the following questions about prohibition, for 10 points each.

[10] In 1919, this amendment to the Constitution made prohibition the law of the land.

ANSWER: **Eighteenth** Amendment

[10] Also known as the National Prohibition Act and named for its sponsor, this 1919 act established enforcement guidelines for prohibition.

ANSWER: **Volstead** Act

[10] The publisher of newsletters such as the *Smasher's Mail* and *The Hatchet*, this woman was known for, you guessed it, traveling the country and using a hatchet to smash up saloons.

ANSWER: Carry Amelia Moore **Nation**

9. This author's books include *The Unvanquished* and *Intruders in the Dust*. For 10 points each:

[10] Identify this author, who wrote about the Snopes family in a trilogy which includes *The Hamlet*, *The Town*, and *The Mansion*.

ANSWER: William **Faulkner**

[10] This William Faulkner novel follows the Compson family, whose members include Quentin and the mentally handicapped Benjy. It takes its title from a line in *Macbeth*.

ANSWER: *The **Sound and the Fury***

[10] William Faulkner also wrote this novel about a journey to Jefferson in order to bury Addie Bundren. Its characters include Cash, who breaks his leg, and Darl, who goes insane.

ANSWER: **As I Lay Dying**

10. It depicts Zephyrus blowing towards the title character. For 10 points each:

[10] Name this 15th century painting of a Roman goddess standing on a seashell.

ANSWER: *The **Birth of Venus***

[10] This Italian artist of *Primavera* painted *The Birth of Venus*.

ANSWER: Sandro **Botticelli**

[10] This Italian artist wrote biographies of painters like Botticelli and Fra Angelico in his *Lives of the Artists*.

ANSWER: Giorgio **Vasari**

11. Identify the following types of forces, for 10 points each:

[10] This force occurs when a particle undergoes uniform circular motion. It always points inward.

Answer: **centripetal** force

[10] This force is exerted perpendicular to a surface. It is often used to represent the force exerted by the ground that counteracts gravitational forces.

Answer: **normal** force

[10] This force, which acts between surfaces in motion relative to each other, is proportional to the normal force. This force causes a block sliding across a table to slow down.

Answer: **kinetic friction** [prompt on **friction**]

12. Answer the following about mountains in Africa, for 10 points each.

[10] Mount Stanley is the highest point in both this country and Uganda. It was formerly known as Zaire.

ANSWER: **Democratic Republic of the Congo** [prompt on **Congo**; do not accept **Republic of the Congo**]

[10] The area surrounding this large extinct shield volcano is the traditional homeland of the Kikuyu people. It is also the namesake of its country, and is located in the city of Mombasa.

ANSWER: Mt. **Kenya**

[10] This term refers to a region of North Africa in Morocco, Tunisia, and Algeria, but more specifically refers to the area between the Atlas Mountains and the Mediterranean Sea.

ANSWER: **Maghreb**

13. Name these ancient Greek authors, for 10 points each.

[10] After a lawsuit with his brother Perses over some sheep, this poet wrote the farming instruction *Works and Days*. He also summarized existing myths in his *Theogony*.

ANSWER: **Hesiod**

[10] Also credited with writing some namesake hymns and the *Battle of the Frogs and Mice*, this legendary blind epicist is called the author of the *Iliad* and the *Odyssey*.

ANSWER: **Homer**

[10] This Athenian dramatist of *The Suppliant Women* and *Prometheus Bound* wrote a trilogy, the Oresteia, which includes *Agamemnon*, *The Libation Bearers*, and *The Eumenides*.

ANSWER: **Aeschylus**

14. Answer the following about some guys with the same surname, for 10 points each.

[10] Passages in this thirteenth-century English scholar's *Opus maius*, *Perspectiva* and *De scientia experimentalis* support the idea that this man originated the scientific method.

Answer: **Roger Bacon** [prompt on **Bacon**]

[10] In a utopian work by Francis Bacon, Bensalem is the "New" version of this lost continent, which according to Plato sank into the sea. It gives its name to an ocean.

Answer: **Atlantis**

[10] The twentieth-century British artist Francis Bacon was known for his *Screaming Popes* paintings, inspired by this Spanish artist's earlier paintings of Innocent X.

Answer: Diego **Velazquez**

15. The Egyptian pharaoh was considered the son of this god. For 10 points each:

[10] Name this god, who was later combined with Amun.

ANSWER: **Ra**

[10] Ra was primarily a deity of this entity. In Chinese myth, there were initially ten of these, but Shen Yi shot nine of them with arrows.

ANSWER: the **sun**

[10] This later Egyptian sun-disk god was worshiped monotheistically under the reign of Amenhotep IV, who later took a name that included this god's name.

ANSWER: **Aten** [do not accept **Akhenaten**]

16. Identify the following about some minerals, for 10 points each.

[10] This group of aluminosilicate minerals is important to the glass industry. Orthoclase and microcline are examples of it.

ANSWER: **feldspar**

[10] This magnesium silicate is one of the softest minerals known and has a hardness of 1 on the Mohs scale.

ANSWER: **talc**

[10] Often used to distinguish minerals is this property, which is the ratio of a density of a substance at a given temperature to the density of water at that temperature.

ANSWER: **specific gravity**

17. This poem imagines "a vast image out of Spiritus Mundi" and asks "what rough beast" "slouches toward Bethlehem to be born." For 10 points each:

[10] Name this poem in which "Things fall apart; the center cannot hold."

ANSWER: "The **Second Coming**"

[10] This poet of "The Circus Animal's Desertion" and "Sailing to Byzantium" wrote "The Second Coming"

ANSWER: William Butler **Yeats**

[10] This author of "The Unknown Citizen" and "Musee des Beaux Arts" described the day of Yeats's death as "a cold, cold day."

ANSWER: Wystan Hugh **Auden**

18. Name the following about anti-Semitism in European history, for 10 points each.

[10] This episode in French history occurred when a Jewish military officer was accused of giving secrets to the Germans. Its namesake was exonerated thanks to Georges Picquart.

ANSWER: **Dreyfus** Affair

[10] These 1935 laws passed by the Nazi Party Congress deprived Jews of civil rights and forbade marriage between Jews and non-Jews.

ANSWER: **Nuremberg** Laws

[10] Many of these mass attacks on Jews occurred following the assassination of Alexander II in 1881. The 1903 one at Chisinau resulted in the death of 45 Jews.

ANSWER: **Pogroms**

19. His plan for the League of Nations center in Geneva was disqualified because it wasn't drawn in India Ink. For 10 points each:

[10] Name this Swiss-born "International Style" architect who created a "unite d'habitation" in Marseille and who wrote *Towards a New Architecture*, which proclaimed that "a house is a machine for living in."

ANSWER: **Le Corbusier** [or Charles-Eduard **Jenneret**-Gris]

[10] Le Corbusier designed this house in Poissy, which is supported by thin concrete pillars and contains a roof garden.

ANSWER: **Villa Savoye**

[10] Le Corbusier designed a church named this "du Haut" in Ronchamp. A more famous church with this name has flying buttresses and is located on an island in Paris.

ANSWER: **Notre Dame**

20. It was first synthetically produced by Friedrich Wohler. For 10 points each:

[10] Name this compound, sometimes called carbamide, which is used in fertilizers, and is excreted from the human body through urine.

ANSWER: **urea**

[10] Urea has two of these functional groups, symbolized NH_2 , attached to a central carbonyl group.

ANSWER: **amine**

[10] This class of polymers can be synthesized from the reaction of a di-isocyanate and an alcohol, and is used in foams, and spandex fiber.

ANSWER: **polyurethanes**

21. The title character ruins his relationship with his wife Elizabeth. For 10 points each:

[10] Name this short story, in which the title character, Reverend Hooper, puts on the title vestment one day and never takes it off.

ANSWER: "The **Minister's Black Veil**"

[10] This author of "The Minister's Black Veil" also wrote *The Scarlet Letter*.

ANSWER: Nathaniel **Hawthorne**

[10] "The Minister's Black Veil" appears in this Hawthorne collection of stories that had already been published elsewhere.

ANSWER: **Twice-Told Tales**

22. Their initial division was based on support of the pope or the Holy Roman Empire, though eventually their rivalry centered more on ties to families or cities. For 10 points each:

[10] Identify either of these two factions, which divided Genoa from Pisa, among a number of other states.

ANSWER: **Ghibellines** or **Guelphs**

[10] In this city, home to the Uffizi, the Guelphs won out but eventually separated into warring Black and White factions, which respectively supported and rejected Pope Boniface VIII.

ANSWER: **Florence**

[10] While the Golden Ambrosian Republic ruled Milan, Guelph aristocrats dominated the Ghibellines, until this man captured it.

ANSWER: Francesco **Sforza**