HSAPQ
High School Academic Pyramid Questions

1. The Brewer-Dobson circulation explains its distribution away from the tropics, and the Rowland-Molina hypothesis extends another advanced by Paul Crutzen about nitric acid. Its principle function is carried out by fixing light energy as kinetic energy and, according to that hypothesis, it is damaged by the free radicals released in large quantities by chlorofluorocarbons. For 10 points, identify this essential component of the lower stratosphere, which absorbs a large part of incoming ultraviolet light, and whose efficacy is at risk due to the development of a hole.
ANSWER: **ozone** layer

It can be seen in the interaction between baldness and widow's peaks, as well as in the major histocompatability genes. For 10 points each:
[10] Name this gene interaction in which one gene suppresses or alters the phenotype of another in the process of its own expression.
ANSWER: **epistasis**
[10] Epistasis is instrumental in preventing this process from occurring. Generally defined as any change to the nucleotide sequence of an organism, it comes in point and frameshift varieties.
ANSWER: **mutation**

2. One king by this name was killed at Corfe Castle while inebriated on mead, while another presided over the Battle of Tettenhall, a resounding Northumbrian Dane defeat. In addition to "the Martyr" and "the Elder" kings of this name, another, who was the step-uncle of William I, was canonized as "the Confessor". The Black Prince had this name, which was also the first name of a king known as Longshanks. For 10 points, give this name shared by many English kings, including one who named Lady Jane Grey as his heir.
ANSWER: **Edward**

It ended with the failed assaults on Scimitar Hill and Hill 60. For 10 points each:
[10] Name this unsuccessful British offensive of World War I against the Ottomans which caused the disgrace of First Lord of the Admiralty Winston Churchill.
ANSWER: **Gallipoli** Campaign [or **Dardanelles** Campaign; or Battle of **Gallipoli**]
[10] The Ottoman victory at Gallipoli was largely due to this military leader who would later lead Turkey's fight for independence and serve as its first president.
ANSWER: Mustafa Kemal **Ataturk** [accept Mustafa **Kemal** Pasha]

3. Sheridan and King repeated it with a puppy, and it was also repeated using women, since the initial test group was all men, and again repeated with direct physical contact. Its namesake explained its results through the agentic state theory, though other explanations have included learned helplessness. The experimenter occasionally needed to say "you have no other choice, you must go on" despite the learner's heart condition. For 10 points, identify this Yale experiment which hired an actor to scream as participants administered higher and higher electrical shocks.
ANSWER: **Milgram** experiment

Identify the following curves from economics, for 10 points each.
[10] Often focusing on the decision between guns or butter, this curve shows the different rates of production of two goods that an economy can produce given limited resources.
ANSWER: **P**roduction **P**ossibilities **C**urve [or **P**roduction **P**ossibilities **F**rontier]
[10] This curve, which is vital to to supply-side economics, shows the possibility of higher taxes leading to lower revenues. It was famously sketched on a napkin for Dick Cheney.
ANSWER: **Laffer** Curve

4. One of this author's title characters sells the Caribbean Sea to the United States, sires five thousand children despite having an enormous, painfully swollen testicle, and calls himself the General of the Universe. Another of his novels begins with the murder of Santiago Nasar by Pablo and Pedro Vicario. In addition to *The Autumn of the Patriarch* and *Chronicle of a Death Foretold*, this author wrote about the gypsy Melquiades and the family of Aureliano Buendia in a novel set in Macondo. For 10 points, name this Colombian author of *One Hundred Years of Solitude*.
ANSWER: Gabriel **Garcia Marquez**

It takes place after a flood of the Neva River has killed Evgeny's beloved Parasha. For 10 points each:
[10] Name this dramatic poem in which Evgeny curses the title statue of Peter the Great, only to have it come to life and chase Evgeny around St. Petersburg.
ANSWER: The *Bronze Horseman* [or *Medniy vsadnik*]
[10] This author of *Yevgeny Onegin* and *Mozart and Salieri* wrote *The Bronze Horseman*, and was considered the foremost poet of Russia's literary Golden Age.
ANSWER: Alexander Sergeyevich **Pushkin**

5. A follow-up to this work depicts a series of rectangular objects stretching into the distance and a very large fish below where the horizon appears to be curling up; that work is the "Disintegration" of this work. This work depicts some yellow cliffs in the upper right, and a tree grows out of the top of a brown rectangle with an object draped over its branch. Also featuring a salmon colored object covered by ants, for 10 points, name this painting that depicts melting clocks, a work of Salvador Dali.
ANSWER: The *Persistence of Memory*

At the top-left, a green-shoed trapeze artist can be seen and both a container of crème de menthe and a bottle of Bass Beer are depicted. For 10 points each:
[10] Name this painting that depicts Mery Laurent, Jeanne Demarsy and the central figure, Suzon, in a Paris nightclub.
ANSWER: A **_Bar at the Folies-Bergere_**
[10] A Bar at the Folies-Bergere is a work by this French Impressionist of The Execution of Emperor Maximilian, Olympia and The Luncheon on the Grass.
ANSWER: Edouard **Manet**

6. The action of Stu2 opposes that of Kip3 and carries out important stabilization during this phase, and another kinesin called MCAK plays a similar role. It begins with the production of a ubiquitin ligase, and the cleavage of securin, which ceases to inhibit separation. In this phase, depolymerization shortens the kinetochore microtubules, and spindle fibers pull sister chromatids apart into individual chromosomes. For 10 points, name this phase of mitosis that precedes telophase.
ANSWER: **anaphase**

Identify some things useful in the analysis of complex numbers, for 10 points each:
[10] According to a formula name for this Swiss mathematician, "e to the i x equals cis of x." He is the namesake of the base of the natural logarithm, e.
ANSWER: Leonard **Euler**
[10] This formula named for a French mathematician relates "cis of x to the n" with "cis of nx," making it extremely useful for finding complex solutions to "x to the n equals 1."
ANSWER: **De Moivre**'s formula

7. While working in the Fillmore administration, this man attempted to form a "Union Party" that would enable him to run for President in 1852, but was unsuccessful, since he alienated many of his abolitionist supporters with his advocacy of the Compromise of 1850. Earlier, he thundered "liberty and union, now and forever, one and inseparable" in his debate with Representative Robert Hayne, and this man successfully argued the Dartmouth College v. Woodward case. For 10 points, name this leading advocate of protectionist tariffs, a Massachusetts Senator.
ANSWER: Daniel **Webster**

This case resulted from the actions of mayor George Brown and governor Thomas Hicks, after General Wynkoop was expelled from Maryland. For 10 points each:
[10] Name this 1861 Supreme Court case that denied Abraham Lincoln the right to suspend habeas corpus.
ANSWER: Ex parte **Merryman**
[10] Appointed Chief Justice by Andrew Jackson, this man oversaw the case of Ex parte Merryman as well as Prigg v. Pennsylvania and Dred Scott v. Sanford.
ANSWER: Roger Brooke **Taney**

8. Non-traditional ones include Erlanga, a Balinese prince depicted as riding the golden sun bird Garuda. Two of them have saved mankind from a flood, while another tricked the demon Bali into giving up control of all three worlds. In addition to Matsya, Varaha, and Vamana, they also include Kalki, who is yet to appear, and both Parasu Rama and Rama Chandra. The most famous of them acted as Arjuna's charioteer, Krishna, in the *Mahabharata*. For 10 points, name these incarnations of the preserver god in Hindu mythology.
ANSWER: **avatar**s of **Vishnu**

This goddess drives a chariot of cats. For 10 points each:
[10] Name this Norse goddess of love, who takes half of the slain to live at her hall.
ANSWER: **Freya** [or **Freyja**; do not accept "Frey"]
[10] In order to stop Freya from being given along with the sun and the moon to a giant, this Norse god turns into a mare and mates with the giant's horse Svaldifari.
ANSWER: **Loki**

Arts
Current Events
Geography
History
Literature
Math Calculation
Philosophy
Social Science

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9. This country's highest point is Mount Catedral, and the Haedo Ridge lies in its north, and the Grande Ridge is in its southeast. This country shares the Merin Lagoon with a northern neighbor, and Piriapolis is a major fishing port. The slang language of Portuñol is spoken in the town of Rivera in this country, and it is transverse by the Negro River from the northeast to southwest. Sometimes known as the Oriental Republic, it is bounded by Brazil to its north and east. For 10 points, name this country, with its capital on the Rio de la Plata at Montevideo.
ANSWER: **Uruguay**

10. Miss Pratt convinces one of the characters in this work to take up acting. After one character dies when struck by Frederick Beale's car, the protagonist retrieves another character from Camp Q and takes her to the Enchanted Hunters hotel. This novel is presented as a manuscript edited by John Ray, Jr., and ends with the protagonist hunting down and shooting Clare Quilty. For 10 points, name this novel about Humbert Humbert's attraction to Dolores Haze, the titular nymphette in a work by Vladimir Nabokov.
ANSWER: ***Lolita***

11. These are produced in bulk from syngas through the Fischer-Tropsch process, and in another reaction, a nickel catalyst helps them react with steam to produce hydrogen. Typically viewed using the sawhorse and Newman projections, they undergo free radical halogenation in three steps. When long forms of these molecules are cracked, double bonds are introduced. For 10 points, name this type of hydrocarbon consisting only of single bonds.
ANSWER: **alkane**s

12. An Edward of this name was the second husband of Elizabeth Blount, while a Henry was succeeded in his highest position by Guy Carleton. Another person of this last name served as V.P. under Thomas Jefferson and James Madison. That man's nephew was responsible for the construction of the Erie Canal. In addition to George and DeWitt, this last name is shared by a U.S. President who second term included the Whitewater controversy. For 10 points, identify this surname which identifies former president Bill and former New York senator Hillary.
ANSWER: **Clinton**

13. The first marriage proposal made to this woman involved hiding a diamond ring in a box of Cracker Jack. Shortly thereafter, she was cast on the soap opera *Secret Hospital*. In a 2007 story she used a sprinkler system to defeat Swarm, a super-villain made of Nazi-sympathizing bees, who attacked her after her husband revealed his identity during the "Civil War." Later, the "Brand New Day" story saw her marriage erased from history. For 10 points, name this redhead, played by Kirsten Dunst in film, who in comics was the wife of Spider-Man.
ANSWER: **Mary Jane** Watson Parker

14. He used an innovative technique known as textile-block slab construction for the Millard House in Pasadena. He promoted the use of the term Usonian to describe a style of architecture exemplified by the Rosenbaum house. In addition to the Imperial Hotel in Tokyo, this man is known for buildings done in the Prairie Style, such as the Robie House in Chicago. He designed a house for Edgar Kaufmann in Pennsylvania, and dubbed his own studio Taliesin. For 10 points, name this American architect of the Guggenheim Museum in New York City, in addition to Fallingwater.
ANSWER: Frank Lloyd **Wright**

Arts
This painter of *Italian Comedians* produced many works featuring figures from *commedia dell'arte*. For 15 points, name this artist of the French Rococo style who also painted many *fête galantes*, including *The Pilgrimage to Cythera*.
ANSWER: Jean Antoine **Watteau**

Current Events
This man is currently the Chairman of the Committee on Health, Education, Labor, and Pensions despite having had surgery for a brain tumor in June 2008. For 15 points, name this Senator from Massachusetts known as the "Lion of the Senate."
ANSWER: Ted **Kennedy** [or Edward Moore **Kennedy**]

Geography
Containing the islands of Bugala and Ukerewe in its Ssese chain, this body of water is dammed by the Nalubaale, or Owen Falls Dam. The cities of Bukoba and Kisumu lie on the shores of, for 15 points, what large lake in Africa, the source of the White Nile.
ANSWER: Lake **Victoria**

History
Proclaimed by a 1921 decree, this plan led to the Scissors Crisis and the Kronstadt Rebellion. For 15 points, name this fiscal plan proposed by Vladimir Lenin that attempted to boost the Soviet Union's economy.
ANSWER: **New Economic Policy** [or **NEP**]

Literature
He wrote "But O, as to embrace me she inclin'd, / I wak'd; she fled; and day brought back my night" in a sonnet about his deceased wife. For 15 points, name this British poet of "Il Penseroso" and a sonnet "on his blindness."
ANSWER: John **Milton**

Math Calculation
For 15 points, express the following as a single logarithm: log base 7 of 25 + log base 7 of 12 - log base 7 of 2.
ANSWER: **log base 7 of 150**

Philosophy

Avicenna first proposed it, but it saw a better known formulation in the *Proslogion* of Anselm. For 15 points, name this argument stating that no greater being than God can be conceived.

ANSWER: **ontological** argument

Social Science

This economist originated the concept of comparative advantage, and argued that income would tend toward subsistence level. For 15 points, name this man who thus stated his "iron law of wages."

ANSWER: David **Ricardo**

15. The agreement ending one of these conflicts was amended in the Supplementary Treaty of the Bogue, while the treaties of Wanghia and Whampoa were concluded shortly after the first one. The man whose arson sparked the first of these wars was transferred to Turkestan, and the second one began with the removal of the British flag from the ship *Arrow*. The Treaties of Nanjin and Tianjin ended, for 10 points, what wars pitting Britain against China, fought over the importation of a namesake drug.
ANSWER: the **Opium War**s

One work by this composer includes a set of 48 preludes and fugues. For 10 points each:
[10] Name this German of the Baroque period who composed *The Well-Tempered Clavier*, in addition to the *St. Matthew Passion* and a *Mass in B Minor*.
ANSWER: Johann Sebastian **Bach**
[10] J.S. Bach wrote many of these works that were intended for performance in the Lutheran church service. Examples include *A Mighty Fortress* and *Sleepers, Wake*.
ANSWER: **cantata**s
[10] This composer discovered a copy of Bach's *St Matthew Passion* and conducted its first performance in 100 years. His own works include the *Scottish* and *Italian* symphonies.
ANSWER: Felix **Mendelssohn**

16. He wrote a series of variations on the aria *Non Piu Andrai* from Mozart's *The Marriage of Figaro* in his lost *Sonata Militaire*, and one of his works entitled *Cantabile e Valtz* is a duet with guitar. He wrote a series of variations on one of his solo works entitled *Variazioni di bravura*, and another composer's reworking of that same theme is a rhapsody that quotes the *Dies Irae*. For 10 points, name this Italian who composed a series of 24 solo violin works known as the *Caprices*, who is alleged to have been the greatest violinist ever.
ANSWER: Niccolo **Paganini**

Name these leaders of Athens, for 10 points each.
[10] This Golden Age statesman was famed for his oratory, constructed the Parthenon, and started the Peloponnesian Wars.
ANSWER: **Pericles**
[10] This 7th century lawgiver instituted the Council of 400 as well as a series of laws known for their harshness.
ANSWER: **Draco**
[10] This sixth century statesman lessened all of Draco's laws except those involving homicide and instituted a series of legal and moral reforms.
ANSWER: **Solon**

17. This conflict opened with the Black Buck Raids and the Raid on Pebble Island followed the abortive "Mikado" campaign. The tabloid Newspaper *The Sun* ran the headline of "Gotcha" after one action, which many observers claimed was outside the 200 mile Total Exclusion Zone. It saw the sinking of the *Belgrano*, and Leopoldo Galtieri was removed from power after losing Stanley in this conflict. For 10 points, name this war in which Margaret Thatcher and Britain brought down the hammer after Argentina annexed the namesake islands.
ANSWER: **Falklands** War

Name these female American authors, for 10 points each.
[10] "Desiree's Baby" and "The Story of an Hour" are among the short works of this writer, whose two novels are *At Fault* and *The Awakening*.
ANSWER: Kate **Chopin**
[10] This author, who described a utopian society in *Herland,* wrote the treatise *Woman and Economics*, and described Jane's treatment for depression in "The Yellow Wallpaper."
ANSWER: Charlotte Perkins **Gillman**
[10] This author wrote of Delia Ralston's adoption of Tina in *The Old Maid*, and also wrote *Ethan Frome*, *The House of Mirth*, and *The Age of Innocence*.
ANSWER: Edith **Wharton**

18. In one work by this man the protagonist's attempt to pick up the titular object lead him to be accused of theft, and in another work, the titular Madame and her employees attend her niece's confirmation. In addition to "A Piece of String" and" Madame Tellier's Establishment" he wrote about a Brazilian vampire spirit in "La Horla." A woman is snubbed after sleeping with a Prussian officer in this man's story "The Ball of Fat." For 10 points, name the prolific French short story writer who wrote about Madame Loisel losing a replica of the title piece of jewelry in "The Necklace."
ANSWER: Guy de **Maupassant**

They relate things like temperature, pressure, internal energy, and volume together mathematically. For 10 points each:
[10] Name these mathematical relations which include the Peng-Robinson, Redlich-Kwong, and van der Waals varieties.
ANSWER: **equations of state** [or **equation of state**]
[10] This equation of state combined Boyle's, Charles', and Gay-Lussac's law into a smorgasbord of awesome, and is usually written as PV=nRT.
ANSWER: **ideal gas** law
[10] One of the dudes responsible for stating the ideal gas law also developed this doubly-eponymous equation that gives the relationship between vapor pressure and temperature.
ANSWER: **Clausius-Clapeyron** equation or relation

19. Leisegang rings form as a product of this process, and the Cohn process uses it to recover albumin. It is exploited in the isolation of francium via cesium salts, though an associated phenomenon can plague gravimetric analysis. It can be induced by anti-solvents, and oxalic acid typically causes it in the presence of metals, leading to kidney stones. Leaving behind the supernatant, and often occurring after the contamination of a supersaturated solution, for 10 points, identify this process, in which the product of a chemical reaction carried out in solution forms a solid deposit.
ANSWER: **precipitation**

In one story, he captures Ares, with whom his wife Aphrodite is having an affair, in a giant net. For 10 points each:
[10] Identify this Greek god of blacksmiths.
ANSWER: **Hephaestus**
[10] Hephaestus made this shield for Zeus, with golden tassels around its edges and the face of Medusa in its center.
ANSWER: the **Aegis**
[10] Some sources state the Aegis was fashioned from the skin of this divine goat, who had one of his horns turned into the cornucopia by Zeus.
ANSWER: **Amaltheia**

20. In some stories he disappeared while offering a sacrifice at the Goat's Marsh, and his wife Hersilia was deified as Hora. In one story of his birth a serving woman was sent to sleep with an apparition that appeared in the hearth of Tarchetius, and in another he was raised by Acca Larentia and Faustulus before overthrowing Amulius in favor of his grandfather Numitor. He became identified with the god Quirinus, and after he saw twelve vultures to his brother's six, he killed that brother. For 10 points, name this son of Rhea Silvia, the brother of Remus.
ANSWER: **Romulus**

Acoustics is the study of these waves. For 10 points each:
[10] Name this type of longitudinal wave, which is emitted by a vibrating object such as a guitar string.
ANSWER: **sound** waves
[10] This dimensionless number named after an Austrian physicist gives the ratio of the speed of an object to the speed of sound in a medium.
ANSWER: **Mach** number
[10] This is the term for the shock wave produced by an object moving faster than Mach 1.
ANSWER: **sonic boom**

21. At one point in this poem the narrator "wheeled a cushioned seat" and "sat engaged in guessing" until "the air grew denser, perfumed from an unseen censer." It opens in a room where "each separate dying ember wrought its ghost upon the floor" as the narrator seeks "surcease of sorrow" from "many a quaint and curious volume of forgotten lore." For 10 points, name this poem which opens "once upon a midnight dreary" and in which the title "bird of yore" reminds the narrator of his "lost Lenore," a work of Edgar Allen Poe.
ANSWER: "The **Raven**"

Wojciech Jaruzelski's declared martial law in December of 1981 in a failed attempt to quell it. For 10 points each:
[10] Name this first independent labor union to arise behind the Soviet bloc that ultimately overthrew the communist regime in Poland.
ANSWER: **Solidarity**
[10] This unemployed electrician led Solidarity from its founding in 1980 until its ultimate victory in the free Polish elections of 1989. He served as Poland's president from 1990 to 1995.
ANSWER: Lech **Walesa**
[10] Walesa worked at the Lenin Shipyard in this city, which lies on the Motlawa River.
ANSWER: **Gdansk** [or **Danzig**]

22. Bdelloid rotifers are notable for losing the ability to carry out this process, and the eukaryote super-group excavate contains species such as euglenoids, which do not undergo it. The synaptonemal complex degrades during its diplotene phase, and one step of it results in a "bouquet" formation due to telomere orientation. Polyploidy, which in plants results in fertile organisms, is a mistake in it, as are all forms of nondisjunction. Involving kinetochores, chiasmata, and resulting in four haploid cells, for 10 points, name this type of cell division.
ANSWER: **meiosis** [do not accept "mitosis"]

This author's son wrote *The Lady of the Camellias* and *The Clemenceau Affair*. For 10 points each:
[10] Name this author of *The Vicomte of Bragelonne* and *Twenty Years After*.
ANSWER: Alexander **Dumas**, pere [accept Dumas Davy de la **Pailleterie**]
[10] The aforementioned *The Vicomte of Bragelonne* and *Twenty Years After* are sequels to this Dumas novel, whose title characters are named Aramis, Athos, and Porthos.
ANSWER: The ***Three Musketeers*** [or *Les **Trois Mousquestaires***]
[10] This female character from *The Three Musketeers* is an evil Cardinalist agent and has her left shoulder branded with the Fleur-de-Lis.
ANSWER: **Milady** de Winter [or **Lady de Winter**; prompt on "Winter"]