**2016 VHSL Conferences - Round 03 - First Period, Fifteen Tossups**

1. Lewis Goldberg modeled this thing using the Big Five theory, and Raymond Cattell believed it was made of sixteen primary factors and five secondary factors. Theodor Adorno was the lead writer on a book titled for the "authoritarian" one of these things. This thing is measured across ten scales by the MMPI test. Sixteen types of this thing, including ENTP and ISFJ **(read the individual letters)**, are described by the Myers-Briggs type. For 10 points, name this sum of an individual's character traits.
ANSWER: **personality**

2. The protagonist of a play by this author is put on trial after insulting a sonnet written by Oronte **(oh-RAHNT)** and falls in love with the gossipy Celimene **(seh-LEE-men)**. This author collapsed on stage and died while appearing as Argan, the title character of his play *The Imaginary Invalid*. In a play by this author, Orgon hides under a table in an attempt to catch the title impostor attempting to seduce his wife Elmire **(EL-meer)**. For 10 points, name this French playwright of *The Misanthrope* and *Tartuffe*.
ANSWER: **Moliere** [or Jean-Baptiste **Poquelin**]

3. Laborers excluded from this city's seven major guilds, particularly woolcarders, began the Ciompi **(CHOMP-ee)** revolt. The corpse of archbishop Salviati was dug up after his execution for conspiring here with the Pazzi **(POT-see)** family. A friar from this city who led the Bonfire of the Vanities was named Savonarola. Its leaders included Cosimo and Lorenzo the Magnificent. For 10 points, name this Italian city led during the Renaissance by the Medici **(meh-DEE-chee)** family.
ANSWER: **Florence** [or **Firenze**]

4. This is the color of Lorna Dane's costume and hair as the mutant Polaris. Another character of this color was given an oversized brain while working as a janitor and is named Samuel Stearns. Lawyer Jennifer Walters became this color after receiving a blood transfusion from her cousin. This color of Skrulls is characteristic of the skin of characters exposed to gamma radiation in the Marvel universe. For 10 points, name this color of the Leader and Bruce Banner's alter-ego, the Incredible Hulk.
ANSWER: **green**

5. This man published a book describing cigarettes as the "little white slaver." His security guards clashed with strikers at the Battle of the Overpass. His tract *The International Jew* republished anti-Semitic propaganda from his newspaper, *The Dearborn Independent*. He raised his employees' wages to five dollars a day and made a product which could come in "any color, as long as it's black." For 10 points, name this Detroit automaker who used the assembly line to manufacture his Model T.
ANSWER: Henry **Ford**

6. In 2016, this company will begin selling an "augmented reality" called the HoloLens. This company released several new Lumia phones in October 2015, in the aftermath of its 2013 purchase of Nokia. This company's largest stockholder said it should allow Android apps to run on its phones during a meeting between CEO Satya Nadella and ex-CEO Steve Ballmer. For 10 points, name this company which spent much of 2015 aggressively pushing free updates to Windows 10.
ANSWER: **Microsoft** [or **Microsoft** Corporation]

7. A ruler from this dynasty visited Zhifu **(ZEE-foo)** Island multiple times to find the elixir of life. Li Si was a Legalist chancellor under this dynasty, which collapsed after the revolt of Liu Bang. This dynasty's first emperor burned books, created a Terracotta Army for his mausoleum, and ordered the construction of the Great Wall of China. For 10 points, name this Chinese dynasty that created an imperial state by overthrowing the Zhou **(joe)** dynasty and was succeeded by the Han.
ANSWER: **Qin** **(chin)** dynasty [do not accept "Qing **(ching)** dynasty"]

8. To resolve a burial dispute between former Hindus and Muslims, the body of Guru Nanak turned into a pile of these objects after his death. The ineffability of tathata is communicated by holding up one of these items and smiling in a "sermon" of Buddha important to Zen. Brahma was born from the "padma," one of these objects. Placing these items on gravesites is specifically prohibited in Judaism. For 10 points, name these objects whose use includes the lotus in Hinduism and lily in Christianity.
ANSWER: **flower**s [prompt on **lotus** until it is read]

9. Translocons in this organelle are called TIC and TOC. It is particularly concentrated in mesophyll **(ME-zo-fill)** cells. Protons are transported by plastoquinol **(plass-tuh-KWIH-nohl)** to stacks of membranes in this organelle called grana. Like mitochondria, this organelle likely arose through endosymbiosis **(en-doe-sim-by-OH-sis)**. Photons excite a pigment in this organelle called chlorophyll. For 10 points, name this organelle found in plants where photosynthesis occurs.
ANSWER: **chloroplast**s [do not accept "chlorophyll"]

10. A church in this city is suspended over the Roman-era Babylon Fortress. This city's affluent Zamalek district is found on Gezira **(geh-ZEE-ruh)** Island, which is connected to downtown by the 6th of October Bridge. Liberation, or Tahrir, Square is at the center of this city, and is where protests against Hosni Mubarak took place in 2011. This city lies east of the Great Pyramids of Giza. For 10 points, name this city on the Nile, the capital of Egypt.
ANSWER: **Cairo**

11. The speaker of a poem about this event claims he is "one massive, soundless scream" over a location where "no monument stands." This event inspired Primo Levi's *If This Is a Man*. A novel about this event opens in the town of Sighet, where the protagonist studies Kabbalah with Moshe the Beadle and later survives a march with his father Chlomo. For 10 points, name this event which inspired Elie Wiesel's **(ELL-ee vee-ZELL's)** *Night*, which vividly portrays life in Auschwitz.
ANSWER: the **Holocaust** [or **Shoah**; or the **Babi Yar** massacre before "Primo Levi" is read; prompt on **World War II**]

12. The number of modes is proportional to frequency squared in a cavity-with-a-hole model of these objects. A simple relation that applies to these objects is Wien's **(veen's)** displacement law. The Rayleigh-Jeans law was inadequate to describe these objects because it predicts an ultraviolet catastrophe, so Planck's law is used instead. For 10 points, name these objects that absorb all incoming radiation, which could give them their namesake color.
ANSWER: **black bodies**

13. This character witnesses several people participate in a rope dancing competition and is opposed by the admiral Skyresh Bolgolam. At one point, this husband of Mary Burton sets sail aboard the *Adventure* and encounters a race of intelligent horses called Houyhnhnms **(WIN-imz)**. This character is seized by an eagle on Brobdingnag and fights against Blefuscu for the diminutive Lilliputians. For 10 points, name this character, whose "Travels" are the subject of a satire by Jonathan Swift.
ANSWER: Lemuel **Gulliver** [or **Lemuel**]

14. Just west of this city, a cube-shaped arch designed by Johann von Spreckelsen extended its "historical axis" to the business district of La Defense. Hector Guimard designed Art Nouveau station entrances for this city's subway system. A new entrance to this city's main art museum was designed by I. M. Pei in the shape of a pyramid. Its tallest structure was made in wrought iron for the 1889 World's Fair, and is a radio tower. For 10 points, name this home of the Louvre and the Eiffel Tower.
ANSWER: **Paris**, France

15. This quantity, multiplied by angular velocity and the cosine of latitude, gives the east-west velocity of an object on the surface of the Earth. To calculate the moment of inertia of a rod, this quantity squared is integrated with respect to mass. This quantity crossed with force equals torque. The centripetal acceleration of an object is given by speed squared over this quantity. For 10 points, name this quantity used in circular and rotational motion, which is equal to half of the diameter.
ANSWER: **r**adius

 **2016 VHSL Conferences - Round 03 - Directed Period**

1A. A physical device used by divine characters in Greek plays inspired the name of what literary device, in which the plot is resolved by a previously unknown character or fact?
ANSWER: **deus ex machina**

1B. What naturalist American novelist wrote *Sister Carrie* and created Clyde Griffiths in *An American Tragedy*?
ANSWER: Theodore **Dreiser**

2A. Name the two rivers that form the Shatt-al-Arab **(SHOT ahl-ah-ROB)** and were the central waterways of Mesopotamia.
ANSWER: **Tigris** River and **Euphrates** River [either order is acceptable, but do not accept or prompt if only one answer is given]

2B. Isabella and Ferdinand expelled all Jews from Spain with a decree named for what Moorish palace in Granada?
ANSWER: **Alhambra**

3A. This is a 20-second calculation question. What is the distance between the points (5, -2) **(five comma negative two)** and (-2, 22) **(negative two comma twenty-two)**?
ANSWER: **25** units

3B. This is a 20-second calculation question. The point (-8,15) **(negative eight comma fifteen)** is on the terminal side of an angle in standard position. What is the secant of that angle?
ANSWER: **-17/8** [or **-2.125**]

4A. In what state was former State Assembly speaker Sheldon Silver found guilty of seven corruption charges in November 2015?
ANSWER: **New York**

4B. What Socialist president of Chile allegedly committed suicide inside the La Moneda Palace while Augusto Pinochet led a 1973 coup against him?
ANSWER: Salvador **Allende** [Salvador **Allende** Gossens]

5A. The Brooks and the Fosters clash in what CBS drama set in Genoa City, which has been the highest-rated soap opera every year since 1989?
ANSWER: *The* ***Young and the Restless***

5B. The world's largest lakes, including Lake Baikal and Lake Tanganyika, are found in what types of geologic structures?
ANSWER: **rift valley**s

6A. To what royal house did the victor at the Battle of Pavia, the Holy Roman Emperor Charles V, belong?
ANSWER: House of **Habsburg** [or House of **Hapsburg**]

6B. What Bishop of Hippo used an extended analogy about the "city of God" to explain the fall of Rome and wrote about his own religious history in the *Confessions*?
ANSWER: St. **Augustine**

7A. What unibrowed Mexican artist was known for her various self portraits and relationship with Diego Rivera?
ANSWER: Frida **Kahlo**

7B. What concept is often abbreviated as "PEMDAS" and commonly remembered with the mnemonic "Please Excuse My Dear Aunt Sally?"
ANSWER: **order of operations**

8A. This is a 30-second calculation question. Suppose that I take a random sample of size 100 from a population that is normally distributed with known mean 50 and known variance 25. If my sample mean has a z-score of -1.6, what is my sample mean?
ANSWER: **46.8**

8B. This is a 30-second calculation question. Find all real solutions to the equation 4y squared minus 28y plus 45 equals 0.
ANSWER: **{5/2, 9/2}** [or **{2.5, 4.5}**; or y equals **5/2** or y equals **9/2**; or y equals **2.5** or y equals **4.5**]

9A. Catalysts accelerate chemical reactions by lowering what quantity symbolized E sub a, the necessary energy to initiate a chemical reaction?
ANSWER: **activation** energy

9B. What dramatic monologue by Robert Browning ends with a description of a statue of Neptune by Claus of Innsbruck and describes a portrait of the speaker's royal lover painted by Fra Pandolf?
ANSWER: "**My Last Duchess**"

10A. What prolific Scottish author of *Kenilworth* wrote about a lover of Lady Rowena in a novel set during the 12th century, his *Ivanhoe*?
ANSWER: Sir Walter **Scott**

10B. What English verb is "reinigen" **(RAI-neh-gen)** in German and "nettoyer" **(NET-oy-ey)** in French?
ANSWER: to **clean**

 **2016 VHSL Conferences - Round 03 - Third Period, Fifteen Tossups**

1. A faction of this religion known for public knifing attacks was called the Sicarii **(sik-AH-ree-ee)**. Josephus was a historian of this religion, and the Arch of Titus commemorates a campaign against people of this religion. A group of this religion committed mass suicide after an earthen ramp was built to reach Masada. The anti-Roman Zealots practiced this religion. For 10 points, name this religion of the Maccabees which was practiced in a Roman province whose capital was Jerusalem.
ANSWER: **Judaism** [or **Jew**s]

2. The first player to ever get a hit for this team was Brad Wilkerson, and the first manager in its history was Hall of Famer Frank Robinson. In 2015, a pitcher for this team became the first since 1973 to throw two regular season no-hitters. It was created when the Montreal Expos moved to the United States. In the 2015 season, this team's closer, Jonathan Papelbon, got into a fight with MVP outfielder Bryce Harper. For 10 points, name this Major League Baseball team that plays in the nation's capital.
ANSWER: **Washington** Nationals [or Washington **Nationals**; do not accept "Washington Senators"; do not accept or prompt on "Montreal Expos"]

3. This man has cut his hand on a nail in his father's carpentry workshop in a painting by John Everett Millais **(mill-AZE)**. This person looms large in a painting in which three Breton women pray at the bottom left; its artist completed that painting before moving to Tahiti. This man is the subject of "Yellow" and "Green" paintings by Paul Gauguin **(go-GAN).** For 10 points, name this religious figure who appears in crucifixion scenes.
ANSWER: **Jesus** Christ [or Jesus **Christ**]

4. During their maturation, these cells undergo capacitation and are provided nutrients by Sertoli **(ser-TOLE-ee)** cells. These cells undergo the acrosome **(AK-ruh-sohm)** reaction to permeabilize the zona pellucida **(peh-LOO-sid-uh)**. They use chemotaxis to migrate to the fallopian tube. A diploid cell is produced after these cells transfer their genetic material to an oocyte **(OH-oh-site)**. They are formed in the testes **(TES-tees)**. For 10 points, name these sex cells that fuse with eggs during fertilization.
ANSWER: **sperm** [or **sperm**atogonia; or **sperm**atids; or **sperm**atocyte; or **sperm**atozoa]

5. During this event, an innkeeper named Richard Palmes swung his cudgel at Hugh Montgomery and Thomas Preston. This event resulted in the death of Crispus Attucks. John Adams successfully defended some of the participants in a trial after this event. A Paul Revere engraving of this event was used as propaganda and showed gleeful Redcoats attacking a crowd. For 10 points, name this March 1770 incident in which British soldiers killed five civilians in a New England city.
ANSWER: **Boston Massacre** [or Incident on **King Street**]

6. A character in this play responds to a request for a carrot by emptying all the turnips out of his pockets first. As it opens, a character struggles to remove his boot and concludes that "nothing can be done." It is set at "A country road. A tree. Evening." The servant Lucky kicks a character in the shins after his master Pozzo reveals that he will sell him in this play. Vladimir and Estragon resolve to kill themselves if its title character does not arrive. For 10 points, name this play by Samuel Beckett.
ANSWER: ***Waiting for Godot*** [or ***En attendant Godot***]

7. This composer included the movement "The Evil God and the Dance of the Pagan Monsters" in his *Scythian Suite*. He wrote a ballet adaptation of a fairy tale about a girl living with a villainous mother and stepsisters. This composer of *Cinderella* wrote a ballet whose "Dance of the Knights" excerpt is also known as "Montagues and Capulets." For 10 points, name this Soviet composer of *Romeo and Juliet* who also wrote a piece where a boy is represented by the strings, titled *Peter and the Wolf*.
ANSWER: Sergei **Prokofiev** [Sergei Sergeyevich **Prokofiev**]

8. A king from this dynasty issued the *Ordinatio imperii* after nearly dying when a walkway collapsed beneath him. Another king from this dynasty had his rearguard destroyed at the Battle of Roncevaux **(RON-seh-voh)** Pass. Einhard wrote a biography of a king from this dynasty, who fathered Louis the Pious and was crowned Holy Roman Emperor by Leo III. For 10 points, name this Frankish dynasty that succeeded the Merovingian and whose rulers included Pepin the Short and Charlemagne.
ANSWER: **Carolingian** Dynasty [prompt on **Frank**ish dynasty]

9. Cholecystokinin **(COAL-uh-CYST-uh-KY-nin)** stimulates this organ to produce trypsinogen **(trip-SIN-uh-jen)**. The endocrine **(EN-doe-crin)** component of this organ includes alpha cells, which secrete glucagon **(GLU-kuh-gon)**. This organ's beta cells are also found in its islets of Langerhans and secrete a substance that counters excess glucose. That substance produced in this organ is deficient in people with type one diabetes. For 10 points, name this organ that secretes insulin.
ANSWER: **pancreas**

10. This event can occur without public recognition in an "urfi" form that is generally opposed by governments. Twelver Shia allow for a "zawaj al-mutah," a legalistic "temporary" form of this event. The "mahr" is given at the time of this event, which creates a status that can be ended by a "khula." Muslim men can engage in this event up to four times consecutively. For 10 points, name this event in Islam which creates the only permissible arrangement for sexual relations.
ANSWER: **marriage** [or **wedding**]

11. A poem in this collection includes a repeated refrain instructing Satan to "take pity on my long misery!" This collection also includes a poem about sailors capturing a bird with wings so large that it is prevented from walking, entitled "The Albatross." Its sections include "Revolt," "Wine," and "Spleen and Ideal," and it opens with a poem addressing the "hypocrite reader, my likeness, my brother!" For 10 points, name this 1857 collection of poems by Charles Baudelaire **(boe-duh-LAIR)**.
ANSWER: *Les* ***Fleurs du Mal***[or *The* ***Flowers of Evil***]

12. The quantum-relativistic version of this property is described by the Pauli-Lubanski pseudovector. The Clebsch-Gordon coefficients expand the eigenstates of this property, which has six defining operators. This quantity is conserved unless an external torque is applied, and it is used to the advantage of figure skaters and falling cats. For 10 points, name this property defined as the product of rotational inertia and rotational velocity, often denoted as capital L.
ANSWER: **angular momentum** [prompt on **L** until it is read; do not accept or prompt on "momentum" or "linear momentum"]

13. This book's tenth chapter praises the free cities of Germany for being well-prepared for sieges. It advises against disarming the population, as that will cause the need to hire mercenaries instead of raising a native army. Its final chapter condemns Ludovico Sforza for inviting Charles VIII to invade Italy. This book discusses the role of "virtú" and "fortuna" and advocates fear over love. For 10 points, name this manual on statecraft, written for the Medicis **(meh-DEE-cheez)** by Niccoló Machiavelli.
ANSWER: *The* ***Prince*** [or *Il* ***Principe***]

14. A field is defined as a division ring where multiplication has this property and every element has a multiplicative inverse. Multiplication of diagonal matrices does have this property, despite matrix multiplication in general not having it. Division and subtraction don't have it, but addition and multiplication do. For 10 points, name this property that exists when changing the order of the operands does not change the result, and which is often paired with associativity.
ANSWER: **commutative** property [or **commutativity**]

15. Like the Deccan Plateau in India, much of this region is covered by basaltic "traps." The northern part of this region is home to the world's longest estuary, which flows into the Kara Sea. Large amounts of nickel and palladium are mined in this region along the Yenisei River. The Tunguska event was an explosion in this region, which lends its name to the world's longest railway line and lies east of the Ural Mountains. For 10 points, name this large, inhospitable region of eastern Russia.

ANSWER: **Siberia** [prompt on Asian **Russia** until "Russia" is read]

 **2016 VHSL Conferences - Round 03 - Tiebreaker Questions**

1. This god tries to hide a secret by turning Battus into stone. This god lulls the hundred-eyed watchman Argus Panoptes to sleep and then kills him with a stone. An androgynous youth is the child of both Aphrodite and this god. As an infant, he uses a tortoise shell to create the first lyre, and gives it to Apollo after stealing a herd of cattle. Two snakes are wrapped around this god's staff, the caduceus **(cah-DOO-sus)**. For 10 points, name this Greek messenger god who wears winged sandals.
ANSWER: **Hermes**

2. The only legal labor union under this leader was the corporatist Vertical Syndicate. This person rose through the ranks while fighting in the Rif wars in Morocco. He fused the Carlist movement and a party founded by Juan Primo de Rivera, the Falange **(fah-LONJ)**. On the orders of this self-proclaimed "generalissimo," the Nazi Condor Legion bombed Guernica during his country's civil war. He was succeeded by Juan Carlos I in 1975. For 10 points, name this long-time dictator of Spain.
ANSWER: Francisco **Franco** [Francisco Paulino Hermenegildo Teódulo **Franco** Bahamonde]

3. Rigor mortis occurs when this molecule is unavailable to separate actomyosin cross-linking. This molecule is cleaved by adenylate cyclase **(uh-DEN-uh-late SY-clayze)** to yield the second messenger cyclic AMP. Sodium-potassium pumps hydrolyze this molecule during active transport. A net total of thirty-six units of this molecule is produced after the electron transport chain in the mitochondria. For 10 points, name this molecule with three phosphates that is the energy currency of the cell.
ANSWER: **ATP** [or **adenosine tri-phosphate**]

4. This author created a poem that describes "Phlebas the Phoenician, a fortnight dead." He described playing a game of chess in a section continually interrupted with the line "HURRY UP PLEASE IT'S TIME." This man wrote a poem that ends with the lines "this is the way the world ends, not with a bang but a whimper." Another of his poems begins with the line "April is the cruelest month." For 10 points, name this poet of *The Hollow Men* and *The Waste Land*.
ANSWER: T.S. **Eliot** [Thomas Stearns **Eliot**]

5. This lake was prehistorically connected to the Atlantic Ocean through an outflow to the Mayo Kébbi. This lake receives the small Yobe **(YOH-bay)** River but is mainly supplied by a distributary of the Logone **(loh-GOH-nay)** River, the Chari **(SHA-ree)**. According to the U.N. Environment Program, this lake is one twentieth the size it was in 1963 and is "almost gone." For 10 points, name this lake which once covered parts of Niger, Nigeria, Cameroon, and its namesake African country.
ANSWER: Lake **Chad**

What seventeenth-century Japanese master of the haiku authored the travel diary *Narrow Road to the Deep North*?
ANSWER: Matsuo **Basho**

This is a calculation question. What is the vertex of the graph of the parabola given by the equation y equals negative x squared plus 40 x plus 32?
ANSWER: **(20, 432)** [or **x equals 20**, **y equals 432**]