**VHSL Conferences 2016-2017 - Round 02 - First Period, Fifteen Tossups**

1. This man's younger brother became an opponent of his known as Radu the Handsome. He defeated Mehmed II's forces in the 1462 "Night Attack," but was imprisoned that same year by Hungarian king Matthias Corvinus. While pursued by the Ottoman army, this man responded by creating a gruesome forest of dead or dying bodies placed on stakes. For 10 points, name this Romanian prince, an inspiration for Bram Stoker's *Dracula*.
ANSWER: **Vlad the Impaler** [or **Vlad III**; or **Vlad Dracula**; or **Vlad Tepes**; prompt on Dracula; prompt on Tepes]

2. One of the first tests of this quality was designed by Robert Woodworth for the U.S. Army during World War One. The University of Minnesota's MMPI is a widely used test to measure this quality. Another test of it was based on the ideas of Carl Jung (YOONG) and labels people as "ISTJ" by sorting people's differences into four opposite pairs. For 10 points, what quality is measured by the Myers Briggs Type Indicator, which labels people as introverts or extroverts?
ANSWER: **personality**

3. Houses that appear in this novel include Cosings Park and Longbourn. In this novel, the virtues of practicing a musical instrument are extolled by Lady Catherine de Bourgh. In this novel, George Wickham is forced to marry Lydia after eloping with her. After realizing that another man approves of her sister's marriage to Mr. Bingley, this novel's protagonist warms up to Mr. Darcy. For 10 points, name this novel about Elizabeth Bennet by Jane Austen.
ANSWER: ***Pride and Prejudice***

4. A game for this console was the only game to get a score of 40 from *Famitsu* magazine and to not be released in English; that game was a visual novel named *428*. Jennifer Strange died of water poisoning after she refused to urinate as part of a contest to win this console, which was originally known as the "Revolution." Games that launched with this console include *Elebits* and *WarioWare: Smooth Moves*. For 10 points, what Nintendo console succeeded the GameCube?
ANSWER: **Wii** (WEE) [or Hold Your Wee for a **Wii**]

5. In some communities, these events are preceded by a parade-like occasion called a "baraat" (BAH-rot). These events can be broken down into "Nikah" and "Walima" portions. At some of these events, people walk seven times around the Holy Fire, which symbolizes Agni, a Hindu fire god. In another religion, these events typically feature a canopy and a ketubah, or contract. For 10 points, what events within Judaism end with a glass being crushed by the groom?
ANSWER: **wedding**s [or **marriage**s; or Islamic **wedding**s; or Muslim **wedding**s; or Hindu **wedding**s; or Jewish **wedding**s]

6. A poem by this author claims that "beauty is momentary in the mind" after the title musician recalls the story of Susanna and the elders. This author of "Peter Quince at the Clavier" described an object "gray and bare" that "took dominion everywhere" in a poem about a jar in Tennessee. Another of his poems calls for the "roller of big cigars" to make the title food. For 10 points, name this poet of "Anecdote of the Jar" and "The Emperor of Ice-Cream."
ANSWER: Wallace **Stevens**

7. This country sent troops to support the leftist MPLA during the Angolan Civil War. After the fall of the Soviet Union, this country's "Special Period" featured a major loss in gasoline imports. Exiles from here were sent to the U.S. in the 1980 Mariel boatlift. A dictator of this country, Fulgencio Batista, was ousted in a revolution partially led by Che (SHAY) Guevara in the 1950's. For 10 points, what Caribbean island was led for many years by Fidel Castro?
ANSWER: Republic of **Cuba**

8. This artist's *Oxidation* series, which was made with copper paint and soaked with urine, includes a portrait of his friend Jean-Michel Basquiat. This man included a hidden face inside a banana in an album cover he designed for The Velvet Underground. This painter used a silkscreen technique to create his brightly-colored portraits of Mao Zedong and Marilyn Monroe. For 10 points, name this Pop Artist who made thirty-two paintings of *Campbell's Soup Cans*.
ANSWER: Andy **Warhol** [or Andrew **Warhola**]

9. Signal-recognition particle tells a complex performing this process in the cytosol (SY-tuh-zawl) to finish it in the E-R. Molecules move through A, P, and E sites of a 60-S structure in this process. It ends when a release factor binds to a particular triplet. During this process, a tRNA charged with an amino (uh-MEEN-o) acid enters the large ribosomal (rye-bo-SO-mul) subunit. For 10 points, name this process in which a peptide chain is built using an mRNA transcript.
ANSWER: **translation** [or **protein synthesis**; or poly**peptide synthesis** until "peptide" is read]

10. The Kariba Dam on this river forms the world's largest man-made reservoir by volume. A landmark on this river is sometimes named "The Smoke That Thunders" and was discovered by David Livingstone. The Shire (SHEE-ray) River drains water from Lake Malawi into this river, whose most popular tourist attraction is Victoria Falls. For 10 points, name this river that flows between Zambia and Zimbabwe in southern Africa.
ANSWER: **Zambezi** River

11. The dot product of force with this quantity gives power, and it appears squared in the numerator for the magnitude of the centripetal force. This quantity is the integral of acceleration and the time derivative of position. When the drag force balances the gravitational force, the terminal variety of it is reached. For 10 points, name this vector quantity that indicates both direction and speed.
ANSWER: **velocity**

12. This composer included the aria "Sheep May Safely Graze" in his *Hunting Cantata*. In a notebook for his wife Anna Magdelana, he included Petzold's *Minuet in G*. Mendelssohn revived interest in this man's music with a performance of his *St Matthew Passion*. His other vocal pieces include a long Mass in B minor and the chorale "Jesu, Joy of Man's Desiring." For 10 points, name this German Baroque composer of the *Toccata and Fugue in D minor*.
ANSWER: J.S. **Bach** [or Johann Sebastian **Bach**]

13. A member of this party selected Cabinet members like Edward Bates and other former opponents, as documented in the book *Team of Rivals*. This party's first presidential nominee used the slogan "Free soil, free silver, free men, and Fremont," referring to John C. Fremont. Another member of this party debated Stephen Douglas about slavery in 1858. For 10 points, name this party whose first President was Abraham Lincoln, the rival of the Democrats.
ANSWER: the **Republican** Party [or **Grand Old Party**; or **GOP**]

14. One author from this country created the fictional author Elizabeth Costello and wrote about an affair with Melanie Isaacs causing the downfall of the literature professor David Lurie. Another author from this country created the Smales family who flee home with their servant in a bakkie in *July's People*. For 10 points, name this home of J. M. Coetzee and Nadine Gordimer, where authors commonly wrote about the experience of apartheid.
ANSWER: **South Africa**

15. This quantity multiplies the cross product of velocity and magnetic field plus electric field in Lorentz's force law. The energy of a capacitor equals the square of this quantity over twice the capacitance. The time derivative of this quantity is equal to current. The electric force between two objects is proportional to the product of their respective values for this quantity by Coulomb's Law. For 10 points, name this quantity symbolized Q and measured in Coulombs.
ANSWER: electric **charge**

 **VHSL Conferences 2016-2017 - Round 02 - Directed Period**

1A. The Spanish word "iglesia" refers to what kind of common location?
ANSWER: **church**

1B. What author wrote about the execution of Clyde Griffiths in his novel *An American Tragedy*?
ANSWER: Theodore **Dreiser**

2A. Those guilty of treachery, including Judas Iscariot, reside in what lowest circle of hell in Dante's *Inferno*?
ANSWER: the **ninth** circle [or **Cocytus**]

2B. What 1944-1945 engagement was the last major German offensive during World War II and featured the highest American casualties during the European theater?
ANSWER: Battle of the **Bulge** [or Operation **Watch on the Rhine**]

3A. This is a 20-second calculation question. What is the length of the diagonal of a rectangular parallelepiped whose side lengths are 2, 3, and 6?
ANSWER: **7** [Use the 3-dimensional distance formula: sqrt(2^2+3^2+6^2)=sqrt(49)=7.]

3B. This is a 20-second calculation question. For the sequence of Fibonacci numbers beginning 1, 1, 2, 3, and so on, what is the interquartile range of the first 8 terms?
ANSWER: **9** [Q1 is the average of 1 and 2 and Q3 is the average of 8 and 13. Then IQR=Q3-Q1=10.5-1.5=9.]

4A. Historically, both Greece and what other country have made claims on the island of Cyprus?
ANSWER: Republic of **Turkey**

4B. What conjecture in number theory claims that every even integer greater than or equal to four can be written as the sum of two primes?
ANSWER: **Goldbach** conjecture

5A. What kind of animal dies at the ends of both *Where the Red Fern Grows* and *Old Yeller*?
ANSWER: **dog**s

5B. In 1517, Martin Luther wrote how many theses attacking the Catholic Church, which he later posted on a church door?
ANSWER: **95**

6A. Menander wrote in the "New" style of what genre of Greek drama contrasted with tragedy?
ANSWER: **comedy**

6B. What Hungarian mathematician pioneered the use of the probabilistic method in combinatorics, and names a number of separation in paper collaborations?
ANSWER: Paul **Erdős** (AIR-doosh)

7A. What name is shared between two Greek heroes, the "greater" of whom loses a competition for Achilles's armor to Odysseus?
ANSWER: **Ajax**

7B. A common type of what food is named after the capital of French Guiana, Cayenne (ky-ENN)?
ANSWER: **pepper**s

8A. This is a 30-second calculation question. Find the sum of the first 25 terms of the arithmetic progression that begins 7, 10, 13, and so on.
ANSWER: **1075** [The common difference is 3, so the 25th term is 7+24\*3=79. The sum is 25\*(7+79)/2=43\*25=1075.]

8B. This is a 30-second calculation question. What is the smallest positive value of x at which the function 3-4sin(5x-pi) ("3 minus 4 times the sine of the quantity 5 x minus pi end quantity") has a minimum?
ANSWER: **pi/10** ("pi over 10") or **one-tenth pi** [The cosine function has a minimum at pi/2+2pi\*k, so we solve 5x-pi=pi/2+2pi\*k. The smallest positive x corresponds to k=-1.]

9A. Which conic section has an eccentricity between zero and one and is shaped like an elongated circle?
ANSWER: **ellipse**

9B. In what kind of location did a man stab nine people in St. Cloud, Minnesota, a 2016 incident that ISIS claimed responsibility for?
ANSWER: a shopping **mall** [prompt on store; prompt on Macy's]

10A. In *Animal Farm*, what type of animal is Boxer, who adopts the motto "I will work harder"?
ANSWER: **horse**

10B. The movies *Shane* and *High Noon* are part of what film genre?
ANSWER: **western**s

 **VHSL Conferences 2016-2017 - Round 02 - Third Period, Fifteen Tossups**

1. In order to avoid a suitor, Artemis transformed Arethusa into a form of this substance. A god produced some of this substance from the Acropolis during a contest judged by Cecrops, but lost since his opponent created an olive tree. The god Nereus presided over a form of this substance, which comprised the domain of the nymphs named Naiads (NYE-ads) and Oceanids. For 10 points, name this substance found in the Aegean Sea.
ANSWER: **water**

2. This man was stabbed to death on a fishing boat after fleeing to the kingdom of Ptolemy (TAHL-uh-MEE) XIII. Supported by the conservative Senators known as Optimates (OPT-ee-MOTT-ees), he fled to Egypt after losing the Battle of Pharsalus. This man's fourth wife was Julia, the daughter of his one-time ally, who later crossed the Rubicon and forced this man to flee Rome. For 10 points, what Roman joined Caesar and Crassus to form the First Triumvirate?
ANSWER: **Pompey** the Great [or Gnaeus **Pompeius** Magnus]

3. Important leaders of this party include the twin sisters Maria and Angela Eagle. In September 2016, Owen Smith failed to unseat the leader of this party. After the May 2015 election, Ed Milliband was replaced by Jeremy Corbyn as this party's leader. In 2015, it lost 40 of its 41 seats in Scotland and lost further seats to the Conservative Party. For 10 points, as of October 2016, what party is the Official Opposition in the United Kingdom's Parliament?
ANSWER: **Labour** Party

4. A novel by this author begins with a recollection of a cat scratching the protagonist's enormous Adam's apple. This author wrote a novel partially set on a submerged minesweeper, *Cat and Mouse*. He also wrote a novel in which Roswitha (roz-VEE-tah) is killed during the Allied recapture of France and whose protagonist, Oskar Matzerath (MOT-zer-ot), refuses to grow up past the age of three. For 10 points, name this German author of *The Tin Drum*.
ANSWER: Gunter **Grass**

5. A revolution in this country was signaled by the playing of its 1974 Eurovision Song Contest entry. In Operation Vijay, India took Goa from this country. The Carnation Revolution toppled its right-wing government of Marcello Caetano. This country once governed the Asian state of East Timor and the African nations of Angola and Mozambique. For 10 points, the Estado Novo ruled what country on the Iberian Peninsula?
ANSWER: **Portugal** [or the **Portuguese** Republic]

6. All of these numbers are also Ore harmonic numbers, and all known examples of them are pernicious numbers and practical numbers. Furthermore, all known examples of these numbers can be expressed in the form 2 to the power of n minus one times the difference of 2 to the power n and one. These numbers are neither abundant nor deficient and they are related to Mersenne primes by the Euler-Euclid theorem. For 10 points, name these numbers equal to the proper sum of their divisors, such as 496, 28, and 6.
ANSWER: **perfect** numbers

7. This language was used to write the collections *Evening* and *Rosary* by a poet who reacted to the arrest of her son with the narrative poem *Requiem*. In another poem in this language, the title statue comes to life after a flood washes away a beloved's house. *The Bronze Horseman* was written by a poet of this language who also wrote the verse novel *Eugene Onegin* (oh-NAY-gin). For 10 points, name this language used by Anna Akhmatova and Alexander Pushkin.
ANSWER: **Russian**

8. A later version of this painting divided its landscape into blocks to represent the space between atoms; that version depicts this painting's "Disintegration." The depiction of some objects in this painting was inspired by a block of cheese exposed to the sun. Those objects in this painting hang from a tree branch, a table, and a stretched piece of skin. For 10 points, name this painting that features several melting watches, by Salvador Dali.
ANSWER: *The* ***Persistence of Memory*** [or *La* ***Persistencia de la Memoria***]

9. Although its decay has never been observed, many grand unified theories predict this particle's half-life to be about ten to the thirty third years. These particles are the main constituents of cosmic rays and they are composed of two up quarks and one down quark. The atomic number, Z, is defined as the number of these particles in the nucleus. For 10 points, name this positively charged particle found with neutrons in the nucleus.
ANSWER: **proton**

10. The natural log of this function of *n* is approximately equal to *n* times the natural log of *n* minus *n*, according to Stirling's approximation. This function appears three times in the definition of the binomial coefficients, n choose k. The number of possible permutation of *n* objects equals this function of *n*. This function of a positive integer *n* is equal to the product of all positive integers less than or equal to *n*. For 10 points, what function is symbolized by an exclamation mark?
ANSWER: **factorial**

11. The keeper of this object remains unhealed because Percival does not ask "the healing question." Many accounts claim it is kept by a man wounded in the legs or groin who is known as the "Fisher King." In one story, the greatest knight ever, Galahad, finally finds this object and apparently takes it to heaven, ending King Arthur's quest to find it. For 10 points, name this legendary cup used by Jesus at the Last Supper and believed to have healing properties.
ANSWER: Holy **Grail** [or Holy **Chalice**]

12. A king with this name was advised by the unpopular bishop William Laud. Another king with this name had numerous mistresses and was known as the "Merry Monarch." Anti-Catholic fears were sparked by the fictional Popish Plot during the reign of a king with this name, whose father was supported by the Cavaliers against the Roundheads. For 10 points, what name was held by two English monarchs, the first of whom was executed after the English Civil War?
ANSWER: **Charles** [or **Charles** I; or **Charles** II]

13. Hundreds of records from this genre were blown up at a Chicago White Sox game during a so-called "Demolition Night." Adaptations of Mussorgsky and Beethoven pieces appear on a soundtrack in this genre, which opens with the line "Well, you can tell by the way I use my walk." A song about this genre's "Inferno" closes that soundtrack for the movie *Saturday Night Fever.* For 10 points, name this genre of dance music popularized by the Bee Gees in the 1970s.
ANSWER: **disco** [prompt on dance]

14. A Customs House in this city modeled after London's Houses of Parliament is part of this city's historic waterfront district. This city, which passed Singapore to become the world's busiest cargo port, is the "S" in the name of the bank HSBC. This city's tallest buildings, including the Oriental Pearl Tower, are in its Pudong district, located across the Huangpu River from the Bund. For 10 points, name this city in the Yangtze River delta, the most populous city in China.
ANSWER: **Shanghai**, China

15. One of these things called T2 was labelled with radioactive phosphorus and sulfur in the Hershey-Chase experiment. AZT combats a type of these agents, which undergo lytic (LIT-ik) and lysogenic cycles. Some types of them use reverse transcriptase to synthesize and incorporate DNA into a host. These pathogens are protected by a protein shell called a capsid. For 10 points, what infectious agents reproduce inside living cells and include HIV?
ANSWER: **virus**es [or bacterio**phage**s]

 **VHSL Conferences 2016-2017 - Round 02 - Tiebreaker Questions**

1. Christoffel symbols can be used to calculate the "covariant" form of this operation on curved surfaces. The gradient of a function dotted with a vector v gives the "directional" variety of this operation along v. This operation applied to functions f times g is f times g prime plus g times f prime. Applying this operation can often be simplified by using the chain rule, and applying it to x squared yields two times x. For 10 points, name this operation that gives the instantaneous rate of change, the opposite of integration.
ANSWER: **derivative**

2. Nikolai Rimsky-Korsakov wrote a piece in this genre titled for the Russian Easter Festival. One of these pieces includes a "Ranz des vaches" (RAHNZ duh VASH) and a "March of the Swiss Soldiers." The free-standing "concert" variety of these pieces includes *The Hebrides* (HEB-rid-eez) by Felix Mendelssohn. These pieces play before the curtain rises in *Fidelio* and *La traviata*. For 10 points, name these pieces that are usually introductions to operas.
ANSWER: **overture** [or concert **overture**]

3. A ship from this country fought the USS *Constellation* off Nevis Island. Charles C. Pinckney famously said "no, no, not a sixpence!" to a representative from this country. The U.S. fought the "Quasi-War" with this country, which demanded bribes during the XYZ Affair. It had previously signed a crucial 1778 Treaty of Alliance with the Americans during the Revolutionary War. For 10 points, the Marquis (mar-KEE) de Lafayette hailed from what European country?
ANSWER: **France** [or the Kingdom of **France**; or the **French** First Republic]

4. A character in this play brings up the Napoleonic Code in discussing the loss of the plantation Belle Reve. Its protagonist dates Mitch, a poker buddy of one of her relatives. Near the end of this play, the protagonist says "I have always depended upon the kindness of strangers" as she is taken away by doctors. It begins as the protagonist goes to live with her sister, Stella Kowalski. For 10 points, name this Tennessee Williams play about Blanche DuBois (doo-BWAH).
ANSWER: *A* ***Streetcar Named Desire***

5. Two countries in this desert fought the Toyota War over uranium deposits in the Tibesti Mountains. Dust from this desert travels along the harmattan and sirocco winds. The Sahrawi (sah-RAW-ee) people live in a territory named for this desert, whose expansion threatens the existence of Lake Chad. The Sahel stretches below this desert, which encompasses most of Algeria and Libya. For 10 points, name this large desert that covers North Africa.
ANSWER: **Sahara** Desert

A student has four test scores of 90, 89, 86, and 81. If the final test is weighted twice as heavily as each of the other tests, what minimum score is needed on the final for the student to get an average of at least 85?
ANSWER: **82** [There are essentially six tests, so the student needs 85\*6=510 points to meet the goal; they have 346, so need 164 more.]

For the proposition "p implies q", what is the name of the proposition "not q implies not p" that is logically equivalent to the original?
ANSWER: **contrapositive**