**VHSL Conferences 2016-2017 - Round 01 - First Period, Fifteen Tossups**

1. Several plays from this country were translated into English by Donald Keene. Two types of play popular in this country followed the triad forms of "beginning, breaking, urgency" and "sing, dance, skill." Shamisen players were incorporated into this country's puppet theater, which is called Bunraku, and other forms of theater that originated here include Noh and Kabuki. For 10 points, name this country where theatrical innovations were developed in Osaka.
ANSWER: **Japan**

2. This statement is generalized to L-p spaces by the Minkowski inequality. This statement is a special case of the Cauchy-Schwarz inequality for the Euclidean norm. It can be stated as the absolute value of x plus y is less than or equal to the absolute value of x plus the absolute value of y. For 10 points, name this inequality that says the sum of the shortest two sides of a three-sided figure is greater than or equal to the length of the longest side.
ANSWER: **triangle** inequality

3. This character notes that having "nothing" happen to a youth would "not [be] much fun for little Harpo." She constantly repeats the address "P. Sherman, 42 Wallaby Lane, Sydney." In her most recent appearance, this character is reunited with her parents, Jenny and Charlie, with the help of an octopus named Hank. She first appeared helping Marlin find his son Nemo. For 10 points, name this forgetful Ellen DeGeneres voiced fish who appeared in two Pixar movies.
ANSWER: **Dory** [or *Finding* ***Dory***]

4. Legendarily, this empire's founder was born a crippled son of a hunchbacked "buffalo woman." This empire was ruled by a man who once devalued the gold markets for a decade in cities like Cairo during an infamous pilgrimage to Mecca in the 1320's. Founded by Sundiata, this empire was once led by Mansa Musa. For 10 points, what largest empire in West Africa shares its name with a modern-day country that has a capital at Bamako?
ANSWER: **Mali** Empire [or **Manden Kurufaba**]

5. Along with Coates, this mathematician names a set of formulas used for numerical integration. A recursive method involving derivatives that is used to find the roots of polynomials is named for him. This mathematician developed a simple differential equation known as his namesake "law of cooling." He introduced his laws of motion in his *Principia Mathematica*. For 10 points, name this British mathematician and physicist who feuded with Leibniz over who invented calculus.
ANSWER: Sir Isaac **Newton**

6. This man once allowed two rivals to choose between the services of his entire army and himself, unarmed. In one story, he gave Draupadi an endless sari after she was humiliated by her husbands' cousins. This man served as a charioteer during the Kurukshetra (KOO-ruck-SHAY-tra) War fought between two groups of cousins. He frequently flirts with the Gopis, especially Radha. For 10 points, name this avatar of Vishnu who spoke to Arjuna in the *Bhagavad Gita*.
ANSWER: **Krishna** [prompt on Vishnu until mentioned]

7. A character in this play in unable to finish telling a joke because the laughter causes him to urinate. Another character in this play performs a dance called the "Net" and is able to talk when he puts on a literal thinking cap. The two main characters of this drama complain about their uncomfortable boots and consider hanging themselves from a tree while engaged in the title activity. For 10 points, name this absurdist play about Vladimir and Estragon by Samuel Beckett.
ANSWER: ***Waiting for Godot***

8. This author collected experimental poems about mundane objects in the collection *Tender Buttons*. This writer was the actual author of the 1933 memoir *The Autobiography of Alice B. Toklas*. In Paris, this woman ran a famous salon that included such "Lost Generation" attendees as Ernest Hemingway, F. Scott Fitzgerald, and Pablo Picasso. For 10 points, what modernist poet wrote the line "rose is a rose is a rose is a rose"?
ANSWER: Gertrude **Stein**

9. Fubini's (FOO-bee-nee's) theorem provides conditions for which the order of applying this operation does not matter. This operation can be approximated using parabolas by Simpson's rule, though its numerical form is usually introduced with the trapezoid rule. The indefinite form of this operation does not have lower and upper limits. Conceptually, this operation gives the area under a curve. For 10 points, name this operation that is the opposite of differentiation.
ANSWER: **integral** [or **integration**]

10. Many Jewish groups have complained about this religious practice being performed on deceased victims of the Holocaust, including Anne Frank. After a completion of this practice, a spirit descends "like a dove" and a voice says "This is my beloved Son." Mormons controversially perform this sacrament on the dead. The Catholic Church insists this sacrament is required for infants. For 10 points, what Christian sacrament may involve sprinkling someone with water?
ANSWER: **baptism** [or **baptism** for the dead]

11. A composer from this country depicted four of its authors and philosophers in his *Concord Sonata*. Minimalism is a style of music developed by composers from this country such as Philip Glass. This country was home to the composer of *Adagio for Strings* as well as the so-called "March King," John Philip Sousa. For 10 points, name this home country of Leonard Bernstein, long-time conductor of the New York Philharmonic.
ANSWER: **United States** of America [or **U.S.**A.; or **America**]

12. These people almost entirely made up the 442nd Infantry Regiment, whose motto was "Go for Broke." The 1907 Gentlemen's Agreement almost entirely barred their immigration to the U.S. In America, these people are known as the "Issei" (ees-SAY) and "Nisei" (nee-SAY). Over 100,000 of them were forcibly relocated on order of Franklin Roosevelt. For 10 points, the forcible internment of what group of Asian-Americans occurred during World War II?
ANSWER: **Japanese**-Americans [or **Issei** until it is read; or **Nisei** until it is read]

13. During this battle, Daniel Sickles had his leg amputated after being hit near the Peach Orchard. Joshua Lawrence Chamberlain's daring bayonet charge during this battle won him the Medal of Honor. The winning side of this battle maintained positions at Cemetery Ridge and Little Round Top. It culminated when the Confederates staged the failed Pickett's Charge. For 10 points, name this bloodiest battle of the Civil War, a three-day engagement in Pennsylvania.
ANSWER: Battle of **Gettysburg**

14. Benvenuto Cellini created a *Salt Cellar* out of this material for Francis I. Along with ivory, this material was used in Ancient Greek chryselephantine statues. Many paintings by Gustav Klimt, including *The Kiss*, incorporated thin sheets of this material. Several bronze rods were coated with this material to simulate the sun shining onto Bernini's *Ecstasy of Saint Theresa*. For 10 points, name this valuable metal that covers anything gilded.
ANSWER: **gold** [or **Au**]

15. The Yungas Road in this mountain range is often called the "world's most dangerous road." Hiram Bingham found an abandoned city in this range, and many salt flats in this mountain range are found in its Altiplano region. It was where the potato was first cultivated. The highest navigable lake in the world, Lake Titicaca, is in this mountain range. Alpacas and llamas are domesticated in, for 10 points, what South American mountain range?
ANSWER: **Andes** Mountains

 **VHSL Conferences 2016-2017 - Round 01 - Directed Period**

1A. Which 3-dimensional, regular solid with pentagonal faces is the dual of the icosahedron?
ANSWER: **dodecahedron**

1B. What common map projection named for a Dutchman distorts Greenland so that it appears to be the same size as Africa?
ANSWER: **Mercator** (murr-KAY-ter) projection

2A. The recently passed Justice Against Sponsors of Terrorism Act is expected to allow victims of the 9/11 attacks to sue what Middle Eastern country?
ANSWER: Kingdom of **Saudi Arabia** [or **KSA**]

2B. From 1994 to 2015, the Los Angeles Rams NFL team was based in what city?
ANSWER: **St. Louis**

3A. This is a 20-second calculation question. Find the angle x between pi/2 ("pi over 2") and 2pi such that the cosine of x is equal to the sine of pi/10 ("pi over 10")?
ANSWER: **8pi/5** ("8 pi over 5") or **eight-fifths pi** [Sine of pi/10 equals cosine of pi/2-pi/10=2pi/5, and cosine of 2pi/5 is equal to cosine of 2pi-2pi/5=8pi/5.]

3B. This is a 20-second calculation question. In terms of pi, what is the volume of a sphere whose diameter is 6?
ANSWER: **36** times **pi** [The radius is 3, and so V=(4pi/3)\*r^3=(4pi/3)\*27=36pi.]

4A. What member of the Five Good Roman Emperors is the namesake of a wall that is the northern limit of the province of Britannia that was later supplanted by the Antonine Wall?
ANSWER: **Hadrian**

4B. How many syllables are in a standard line of verse written in iambic pentameter, the form of many of Shakespeare's plays?
ANSWER: **ten**

5A. What American poet wrote that "so much depends upon a red wheelbarrow" in a 1923 poem?
ANSWER: William Carlos **Williams**

5B. What German verb tense is formed by using the imperfect conjugation of "haben" (HAH-ben) or "sein" (ZAIYN) combined with the past participle, creating expressions such as "er war gefahren" (air vahr geh-FAH-ren)?
ANSWER: **pluperfect** tense [or **plusquamperfekt**; or **präteritumperfekt**; or **vorvergangenheit**; do not prompt on "perfect tense"]

6A. What child prodigy became a Fields Medal winning mathematician who names a theorem concerning arithmetic progressions in the primes with Ben Green?
ANSWER: Terence "Terry" **Tao**

6B. What king of England was the first ruler from the House of Plantagenet (PLANN-tajh-UH-net) and who probably ordered the death of former friend Thomas a Becket?
ANSWER: **Henry II** [or **Henry Curtmantle**; or **Henry FitzEmpress**; prompt on Henry]

7A. Alban Berg and Anton Webern studied under what Viennese composer who invented the twelve-tone technique of composition?
ANSWER: Arnold **Schoenberg**

7B. What brother of Remus and son of Rhea Silvia was abandoned with his sibling in the Tiber River?
ANSWER: **Romulus**

8A. This is a 30-second calculation question. Three vertices are randomly chosen from the vertices of a regular nonagon. Expressing your answer as a simplified fraction, what is the probability that the chosen vertices form an equilateral triangle?
ANSWER: **1/28** or **one twenty-eighth** [There are 9 choose 3, or 84, ways to choose the vertices, and only 3 equally-spaced triples form an equilateral triangle. So, the probability is 3/84=1/28.]

8B. This is a 30-second calculation question. Simplify the expression: quantity 1-plus-3*i* times quantity 3-plus-2*i*.
ANSWER: **-3 + 11*i*** [FOIL the two complex numbers to get 3 + 2i + 9i + 6i²; the last term becomes -6, and we combine like terms.]

9A. July 14 is a holiday in France that celebrates the storming of what infamous prison?
ANSWER: **Bastille** [or **Bastille** Saint-Antoine]

9B. What author created Dorothy Gale in his beloved fantasy novel *The Wonderful Wizard of Oz*?
ANSWER: L. Frank **Baum** [or Lyman Frank **Baum**]

10A. What king is the title character of the first play in Aeschylus's *Oresteia* (or-uh-STY-uh), in which he is murdered by his wife?
ANSWER: **Agamemnon**

10B. What operation between 3-dimensional vectors returns a vector whose length is the area of the spanned parallelogram and whose direction obeys the right-hand rule?
ANSWER: **cross-product**

 **VHSL Conferences 2016-2017 - Round 01 - Third Period, Fifteen Tossups**

1. While this President was staying at the Blair House, he was shot at by Puerto Rican nationalists. In an election, he mocked the "Do Nothing Congress" and was opposed by "Dixiecrat" Strom Thurmond. A famous photo shows him holding a newspaper inaccurately predicting he would lose an election to Thomas Dewey. For 10 points, name this President who ordered atomic bombs to be dropped on Japan, the successor to Franklin Roosevelt.
ANSWER: Harry S. **Truman**

2. This party's principles were laid out in the Tamworth Manifesto. The namesake of a declaration endorsing the creation of a Jewish homeland, Arthur Balfour, was from this party, as was a man who was Prime Minister during the Anglo-Zulu War. Benjamin Disraeli was a leader of this party who was a favorite of Queen Victoria and opposed William Gladstone's Liberal Party. For 10 points, what British political party is also known as "the Tories"?
ANSWER: **Conservative** Party [or **Conservative** and Unionist Party; or **Tory** until it is read]

3. Squarefree numbers with an odd number of prime factors return this value under the Mobius function. The product of i, j, and k in the quaternions is equal to this number. Euler's number raised to the power of pi times i equals this number, which is also equal to the cosine of pi. Raising x to this power is equivalent to taking the inverse of x. The imaginary number squared is equal to this number. For 10 points, name this number whose sum with one is zero.
ANSWER: **negative one**

4. A long poem in this language contains representations of the months of January through June and has a title translated as *Book of Days*. *Fasti* (FAH-stee) was written in this language by a poet who wrote *The Art of Love* and was exiled to the coast of the Black Sea. A poet who wrote in this language wrote many *Odes* and *Epodes* and coined a phrase usually translated as "seize the day." For 10 points, name this classical language used by Ovid and Horace.
ANSWER: **Latin**

5. Two people who hide in a forest during this event are named Lif and Lifprasir (LIFF-pray-SUR). As it begins, three winters pass without a summer and a ship made from human nails sets sail. As part of this event, a being kicks his foot into a monster's jaw and rips apart its mouth to avenge his father. During this event, the Midgard Serpent, the wolf Fenrir, Thor, and Odin all die. For 10 points, what event in Norse mythology results in the deaths of most of the gods?
ANSWER: **Ragnarok** [or **Fimbulwinter** until "winters" is read; prompt on twilight of the gods]

6. Eutherians (yu-THEER-ee-uns) are a clade in this class of organisms and include lagomorphs (LA-guh-morfs) such as pikas ("PIE"-kuz). A species that has poisonous spurs and uses electrolocation belongs to the monotreme order in this class, which unusually produces eggs. Other lineages in this class are the placentals and the marsupials. For 10 points, name this class of vertebrates that has mammary glands and includes whales and humans.
ANSWER: **mammal**s [or **Mammal**ia]

7. This character drops out of St. Olaf College, embarrassed at being a janitor. He is mentored by both the copper tycoon Dan Cody and by the gangster Meyer Wolfsheim. This character lives in a neighborhood called West Egg and is neighbors with a man named Nick Carraway. In love with Daisy Buchanan, he throws numerous lavish parties hoping to see her. For 10 points, name this "great" title character of a 1925 F. Scott Fitzgerald novel.
ANSWER: Jay **Gatsby** [or **Jay**; or **James**; or **Jimmy**; or **Gatz**; or *The Great* ***Gatsby***]

8. Some organisms prevent crystallization of these structures in the cold by increasing the proportion of unsaturated hydrocarbons in them. Two of these structures are joined together to form a tight junction. Described by the fluid mosaic model, they are comprised of hydrophilic heads and hydrophobic tails forming a phospholipid bilayer. For 10 points, name these structures sometimes surrounded by a cell wall that separate the cell from the outside environment.
ANSWER: **cell membrane** [or **plasma membrane**; prompt on phospholipid bilayer before it is read]

9. This man built off of Zellig Harris' work to propose X-bar theory. While collaborating with Morris Halle, he argued that a concept is transformational. In a 1959 review, this thinker refuted B.F. Skinner's *Verbal Behavior*, claiming that language was not learned behavior. To show that sentences can be grammatically correct but nonsensical, he invented the phrase "colorless green ideas sleep furiously." For 10 points, name this MIT linguist who wrote *Syntactic Structures*.
ANSWER: Noam **Chomsky** [or Avram Noam **Chomsky**]

10. During one of these events, a ten-year-old girl named Tilly Smith recalled a school lesson to save many lives. Another of these events disrupted the airport of the city of Sendai. Many countries on the Andaman Sea were affected by one of these events during the 2004 holiday season. Seawalls could not prevent one of these events from damaging the Fukushima nuclear reactor. For 10 points, name these events in which earthquakes create massive ocean waves.
ANSWER: **tsunami**s [prompt on tidal waves until "waves" is read; prompt on earthquakes until it is read]

11. C-cells in this organ secrete calcitonin (cal-sih-TOH-nin). This organ is hyperactive in Graves' disease. Activity of this organ is promoted by a namesake "stimulating hormone" produced in the anterior pituitary gland. Swelling of this organ called goiter can be caused by a dietary deficiency of iodine, which is required to synthesize the hormone thyroxine, or T4. For 10 points, name this butterfly-shaped endocrine organ located in the neck.
ANSWER: **thyroid** gland

12. One of these things that mentions "Merchandise 7X" was found in the diary of John S. Pemberton. A pirate named Burger-Beard attempts to steal a fictional one of these things in a 2015 movie. In August 2016, one of these things that calls for the use of "eleven herbs and spices" was supposedly found in a scrapbook by Colonel Sanders' nephew. For 10 points, identify these specifications that Coca-Cola and KFC closely guard to keep their flavors unique.
ANSWER: secret **recipe**s [or **secret formula**s]

13. This country's leader once told a reporter "just watch me" when asked how far he would go to resolve a hostage crisis. In this country, the FLQ kidnapped and murdered a cabinet minister, prompting the only peacetime usage of the War Measures Act. Its current Prime Minister is the son of a man who led this country during the October Crisis, Pierre Trudeau. For 10 points, what country is home to the Quebec separatist movement?
ANSWER: **Canada**

14. A building of this type features a space named for Joan Sutherland and is found at Bennelong Point. Jorn (YORN) Utzon designed a building of this type that has roof structures resembling shells. At one of these buildings in 1896, a chandelier counterweight fell from the ceiling, killing a person. The Palais Garnier (pah-LAY gar-NEE-ay) is one of these buildings in France. For 10 points, what type of building in Sydney and Paris may feature productions of *Carmen*?
ANSWER: **opera** house [prompt on theater]

15. This country held journalist Roxana Saberi prisoner under espionage charges. It has seen four scientists killed between 2010 and 2012, two of which using magnetic bombs attached to their cars. Blamed for the killings, Israel only commented that it needed to defend itself from this country. For 10 points, what Middle Eastern country, in January 2016, implemented plans to reduce the size of its nuclear program in exchange for the lifting of sanctions?
ANSWER: Islamic Republic of **Iran** [prompt on Persia]

 **VHSL Conferences 2016-2017 - Round 01 - Tiebreaker Questions**

1. When these devices are parallel they have the same voltage and their namesake quantity adds directly. The standard example of these devices has a value of epsilon times area over the separation for their namesake quantity, which can be increased by adding a dielectric. Their namesake quantity is measured in Farads and their first design was known as a Leyden jar. For 10 points, name these devices that come in "parallel plate" types and that store electrical charge.
ANSWER: **capacitor**s

2. This ruler ordered the execution of over 1,000 rebels after the Streltsy uprising. He set up the Table of Ranks so that precedence would be determined by merit, not birth. After taking a Grand Embassy in disguise across Europe, this man demanded that boyars cut off their beards. During his reign, his country won the Great Northern War against Sweden. For 10 points, what Russian Tsar (ZAR) ruled from 1682 to 1725 and is credited with modernizing his country?
ANSWER: **Peter the Great** [or **Peter I**; or **Peter Alexeyevich**; prompt on Peter]

3. Qanats (kuh-NOTS) were built by the Persians for transferring this resource, which is used to operate a clepsydra (klep-SID-ruh). A decline in the supply of this resource doomed the city of Petra. The world's largest system for distributing this resource makes use of a location sealed by Nubian sandstone and was built in Libya. The Middle East's Fertile Crescent relied on, for 10 points, what resource found in oases (oh-AY-sees) that was moved by Roman aqueducts?
ANSWER: **water**

4. This philosopher collaborated with Nathaniel Branden on the 1964 essay collection *The Virtue of Selfishness*. In 2005, Paul Ryan claimed this philosopher inspired him to enter politics and he reportedly required all his staffers to read copies of this woman's books. She founded the philosophy of Objectivism which she infused into a novel in which John Galt leads business leaders against the government. For 10 points, name this author of the novel *Atlas Shrugged*.
ANSWER: Ayn **Rand** [or Alisa **Rosenbaum**]

5. The speaker of this poem forecasts that "I shall be telling this with a sigh somewhere ages and ages hence" after doubting whether he will ever return to its central location. This poem's speaker describes looking into the undergrowth while making a decision that he plans to pretend "made all the difference." It opens by stating that two paths diverged in a yellow wood. For 10 points, name this poem by Robert Frost.
ANSWER: "The **Road Not Taken**"

Webster makes 70% of all his free throw attempts. When he goes to shoot a pair of free throws, what is the probability that he makes exactly one of them?
ANSWER: **0.42** or **42 percent** [We compute the probability as 1-Prob(hitting both)-Prob(missing both)=1-(.7)^2-(.3)^2=0.42.]

What President of the Republic of China fled to Taiwan in 1949 after losing the Chinese Civil War to the Communists?
ANSWER: **Chiang** Kai-shek [or **Jiang** Zhoutai; or **Jiang** Ruiyuan; or **Jiang** Zhiqing, prompt on Kai-shek]