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

1. The philosophy of this thing is explained in the "beetle in a box" argument, which argues against the possibility of this thing being private. Herodotus wrote about the Egyptian pharaoh Psamtik I's **(SAHM-tik the first's)** experiment in this philosophical field that found a conclusion about the Phrygians and bread. For 10 points, name this human faculty whose philosophy is discussed in *How to Do Things With Words*, which coined the term "speech acts."
ANSWER: **language**

2. In 1687, this structure suffered extensive damage when a Venetian bomb ignited a cache of ammunition stored inside this building by the Ottomans. It was constructed using funds embezzled from the Delian League's treasury. A chryselephantine **(kris-ell-uh-FAN-tine)** statue of Athena was sculpted for this building by Phidias, and the Elgin Marbles were looted from it in 1803. For 10 points, name this building at the top of the Acropolis which was the main religious center of classical Athens.
ANSWER: **Parthenon**

3. During this war, Etienne Marcel backed a revolt led by Guillaume Cale **(gee-YOME “CALL”)** called the Jacquerie. During this war, the Treaty of Bretigny ransomed John the Good after he was captured at the Battle of Poitiers. Cavalry charging downhill were defeated by longbowmen during the Battle of Agincourt in this war, during which the siege of Orleans was lifted by Joan of Arc. For 10 points, name this lengthy war between France and England that lasted from 1337 to 1453.
ANSWER: **Hundred Years'** War

4. A linear constant over two times this quantity gives the damping coefficient of a simple harmonic oscillator. The resonant frequency of a simple harmonic oscillator equals the square root of the spring constant over this quantity. In the derivation of the equation for the period of a pendulum, this quantity is cancelled, which gives the surprising result that it does not affect the pendulum's period. For 10 points, name this quantity that is measured in kilograms.
ANSWER: **m**ass

5. This singer states "I've been unfaithful, I don't know why you call on me" in the lead single from his most recent album. He claims to "fantasize about a white picket fence" on another song, which he "traded" to Kendrick Lamar at a November 2015 performance. This man performs the songs "Work Out," "A Tale of 2 Citiez," and "Apparently." For 10 points, name this rapper of the albums *Born Sinner* and *2014 Forest Hills Drive*.
ANSWER: J. **Cole** [or Jermaine Lamarr **Cole**]

6. A poet writing in this language declared, "I will lower you down into the humble, sunny earth," in her *Sonnets of Death*. A poem in this language begins, "The memory of you emerges from the night around me," and includes the refrain "In you everything sank!" A poet using this language included "Tonight I Can Write the Saddest Lines" in his *Twenty Love Poems and a Song of Despair*. For 10 points, name this language used by Gabriela Mistral **(mee-STRAHL)** and Pablo Neruda **(nay-ROO-duh)**.
ANSWER: **Spanish** [or **Espanol**]

7. Some of these equations may be solved using the method of variation of parameters. One of these equations can be used to model Newton's Law of Cooling. The first-order linear type of these equations must be solved using an integrating factor. Some other first-order examples of these equations may be solved simply by integrating both sides. For 10 points, name these equations, in which the terms include the dependent variable and its derivatives.
ANSWER: **differential equations**

8. The completion of this event is commemorated by Three Flags Day. This event originated with a European country acquiring territory that was previously the subject of Pinckney's Treaty of 1795. This event was made possible by the successful slave revolt in Saint-Domingue **(SAN doe-MANG)**, which thwarted Napoleon's New World ambitions. For 10 points, name this massive 1803 acquisition of western territory from France by the United States.
ANSWER: **Louisiana Purchase**

9. This country's prime minister owns the large steel producer Ittefaq **(it-uh-FOCK)**. In 2015, this country executed over three hundred people following its decision to end a seven-year death penalty moratorium in the wake of a terrorist attack on a school in Peshawar by the Taliban. This home country of Malala Yousafzai re-opened peace talks with its southeastern nuclear neighbor in 2015. For 10 points, name this Nawaz Sharif-governed country currently in discussions with its rival India.
ANSWER: **Pakistan** [Islamic Republic of **Pakistan**; or Jamhuryat Islami **Pakistan**]

10. The Buckey O'Neill Cabin and El Tovar Hotel are adjacent to this feature, which is commonly viewed from the Toroweap **(TORR-uh-weep)** Overlook or a Hualapai-controlled **(HWALL-uh-“pie” controlled)** Skywalk that opened in 2007. Visitors approach this feature from the North Rim or South Rim and can view two billion years of stratigraphic layers within it. For 10 points, the Colorado River carves out what mile-deep gorge in northern Arizona?
ANSWER: **Grand Canyon**

11. This collection contains a poem beginning with the line "Flood-tide below me! I see you face to face!" The third part of this collection begins with the statement, "I celebrate myself." Many of the poems published in *Drum-Taps* and its sequel were absorbed into later editions of this collection, including "When Lilacs Last in the Dooryard Bloom'd." For 10 points, name this poetry collection which includes *Song of Myself*, the major work of Walt Whitman.
ANSWER: ***Leaves of Grass***

12. The death of one of these people alleged to be Federico Borrell Garcia **(fed-uh-REE-ko “boar”-ELL gar-SEE-uh)** is the subject of a 1936 Robert Capa photograph. A 1945 photograph depicts six of these people, including John Bradley and Harlon Block, leaning against one another and lifting up a flagpole on Mount Suribachi **(“sir”-uh-BOTCH-ee)**. For 10 points, name this profession, members of which are shown on Iwo Jima in a famous photograph by Joe Rosenthal.
ANSWER: **soldier**s [or obvious equivalents]

13. At the end of this novel, a man appears with a new set of teeth and announces his intention to remarry. Another character in this novel is a carpenter who repeats, "I made it on the bevel." The shortest chapter in this novel is the single sentence, "My mother is a fish." Many chapters in this novel are written from the perspective of Vardaman or Darl, whose family journeys to Jefferson to bury their matriarch Addie. For 10 points, name this novel about the Bundren family by William Faulkner.
ANSWER: ***As I Lay Dying***

14. This character tells his wife that "war is a man's concern" when she tells him that his "courage" has doomed him. This hero's body is dragged behind a chariot after his death, but Apollo preserves it from injury. This man kills Patroclus **(puh-TRO-klus)**, who is dressed in the armor of the hero who eventually kills this person. This first-born son of King Priam **(“PRY”-um)** is ultimately killed in mortal combat with Achilles. For 10 points, name this greatest Trojan hero from Homer's *Iliad*.
ANSWER: **Hector**

15. Olaf Roemer first deduced that this quantity was not infinite based on the orbital velocities of Jupiter and Earth. An apparatus developed by Fizeau and Foucault accurately measured this quantity by rotating a mirror and measuring an incident angle and an exit angle. Galileo told his assistant to stand on a nearby hilltop and uncover a lamp in an unsuccessful attempt to measure this quantity. For 10 points, name this quantity symbolized c, which is equal to about 300 million meters per second.
ANSWER: **speed of light** [or **c** before it is read]

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

1A. In what Johann Strauss opera does Falke **(“FALL”-kuh)** get revenge on Eisenstein for leaving him in a bat costume?
ANSWER: *Die* ***Fledermaus*** **(dee FLAY-der-“mouse”)** [prompt on *The* ***Bat***]

1B. Name the indigenous people of Hokkaido **(ho-KIE-“doe”)** who have been attempting to regain civil rights in Japan since Koshamain's **(KO-shuh-“mines”)** Revolt.
ANSWER: **Ainu**

2A. What British Prime Minister promised "peace in our time" after ceding the Sudetenland **(soo-DAY-ten-“land”)** to Germany in the Munich Agreement?
ANSWER: Neville **Chamberlain**

2B. The presence of what sugar found in milk stimulates activation of a namesake operon **(OP-uh-ron)** that allows translation of beta-galactosidase **(BAY-tuh guh-lak-tuh-SYE-dace)**?
ANSWER: **lactose**

3A. This is a 20-second calculation question. In triangle WXY, the ratio of the measures of the largest angle to the middle angle to the smallest angle is 4 to 3 to 2. What is the measure of the smallest angle?
ANSWER: **40** degrees

3B. This is a 20-second calculation question. How many ways are there to arrange the letters "VHSL", if the V cannot be in either the first or the last position?
ANSWER: **12**

4A. The time traveler Hank Morgan is the protagonist of what novel by Mark Twain?
ANSWER: *A* ***Connecticut Yankee in King Arthur's Court***

4B. What character on *Empire* seeks to rebuild the Lyon family after being released from a drug trafficking sentence, and is played by Taraji P. Henson?
ANSWER: **Cookie** [or **Loretha** Lyon; prompt on **Lyon**]

5A. What type of heading material in a book is generally a nonfiction essay about the creation of the subsequent book, as opposed to a "preface" which may contain additional fiction?
ANSWER: **foreword**

5B. In what play by Wole Soyinka does the British colonial officer Simon Pilkings interrupt the ritual suicide of the title character, Elesin Oba?
ANSWER: ***Death and the King's Horseman***

6A. What Irish poet of *The Wanderings of Oisin* **(OO-sheen)** wrote about a "rough beast…slouching towards Bethlehem to be born" in "The Second Coming”?
ANSWER: William Butler **Yeats**

6B. What scientist names a law that relates the restoring force on a spring to the amount the spring is extended or compressed?
ANSWER: Robert **Hooke**

7A. What devices, which come in bipolar junction and field-effect types, control currents by amplifying them or switching their direction?
ANSWER: **transistor**s

7B. What civilization produced the *Popol Vuh* **(POO-“pull” VUH)**, which recounts how the Hero Twins travelled to the underworld Xibalba **(shih-BALL-buh)** to rescue their father in a ball game?
ANSWER: the **Maya** [or the **Mayans**]

8A. This is a 30-second calculation question. Suppose that f of x equals A plus B sine of x and g of x equals A plus B sine of quantity x minus pi over 2. Give a formula, in terms of an integer n, that expresses the values of x at which f of x equals g of x.
ANSWER: x equals **3 pi over 4 plus pi n**

8B. This is a 30-second calculation question. Find a complex number equivalent to the product of quantity i plus 3 end quantity and quantity 2 i minus 7 end quantity.
ANSWER: **-23 - i** [or **negative 23 minus i**]

9A. In 2015, Turkey charged doctor Bilgin Ciftci **(BIL-jin JIF-tee)** with a crime for comparing what man, the president of Turkey, to the Tolkien character Gollum?
ANSWER: Recep Tayyip **Erdogan** **(ray-JEP tay-EEP AIR-doh-wan, but accept English pronunciations)**

9B. What is the English word for the items that are sold at a "negozio di scarpe" **(neh-GOTCH-yo dee SCAR-pay)** in Italian or a "zapatería" **(zah-pah-ter-EE-ah)** in Spanish?
ANSWER: **shoe**s

10A. What revolt in British India started due to rumors that the cartridges used by its namesake soldiers were greased in pork or beef?
ANSWER: **Sepoy** **(SEE-poy)** Rebellion [**Sepoy** Mutiny; or the **First War** of **Independence**]

10B. At what battle did the Holy League under John of Austria defeat Ali Pasha's navy, thus symbolically halting Ottoman expansion in the Mediterranean?
ANSWER: Battle of **Lepanto** **(leh-PON-“toe”)**

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

1. Due to former prohibitions on consuming dairy during this observance, the day before its start is a traditional time to make pancakes. This observance commemorates the time Jesus spent being tempted by Satan in the desert. It lasts for forty days and begins on Ash Wednesday, following a last celebration at Carnival or Mardi Gras. For 10 points, name this time period ending on Easter, during which many Christians "give up" a luxury.
ANSWER: **Lent**

2. This composer included the movement "La Rejouissance" **(ray-zhwee-SONTZ)** in a piece celebrating the end of the War of the Austrian Succession, his *Music for the Royal Fireworks*. He wrote three suites for a concert on a barge going down the River Thames. King George II attended the premiere of a piece by this composer that includes the words "And he shall reign forever and ever." For 10 points, name this composer of *Water Music*, whose oratorio *Messiah* includes the "Hallelujah" chorus.
ANSWER: George Frideric **Handel** [or Georg Friedrich **Händel**]

3. Three trumpets play an ascending three-note fanfare at the start of a piece by this composer written to commemorate the middle class. This composer wrote a ballet whose seventh section is a set of variations on the Shaker hymn "Simple Gifts." That ballet by this composer depicts a group of American pioneers that build a farmhouse in the title region, during the title season. For 10 points, name this composer of *A Lincoln Portrait*, *Fanfare for the Common Man*, and *Appalachian Spring*.
ANSWER: Aaron **Copland**

4. A character in this story affirms "no pleasure but meanness" after claiming that Jesus "shown everything off balance" by raising the dead. At the end of this story, that character remarks, "She would of been a good woman if it had been somebody there to shoot her every minute of her life." In this story, the cat Pitty Sing leaps from a basket and causes a car crash, after which the grandmother and her family are murdered by The Misfit. For 10 points, name this short story by Flannery O'Connor.
ANSWER: "A **Good Man Is Hard to Find**"

5. By the axiom of regularity, every non-empty set S has an element that yields the null set when this operation is applied between it and S. This operation is the set-theoretic equivalent of logical conjunction. The area of overlap on a Venn diagram signifies this operation. For sets A and B, this operation yields a set of all the elements in A that are also in B. For 10 points, name this set operation symbolized by an upside down “u” that is the opposite of the union.
ANSWER: **intersection** [or **conjunction** until it is read; or **upside down u** until it is read; do not accept "u"]

6. An alternative to this number is the Bayes factor. Test statistics can be converted into this value by using a cumulative distribution function or a table. This value is defined as the probability of obtaining a more extreme observation if a hypothesis were true. It is compared to the significance value alpha, which often takes on the values of 0.01 or 0.05. For 10 points, name this value from statistical hypothesis testing that determines whether or not to reject the null hypothesis.
ANSWER: **p**-value

7. Demand for the oil of these trees has caused significant habitat loss for the orangutan. Franciscan missionaries and L. Glenn Hall advocated planting these trees, whose *Washingtonia filifera* **(WASH-ing-TONE-ee-uh “fill”-IF-er-uh)** species is the only one indigenous to the area now known for streets such as Colorado Boulevard that are lined with them. For 10 points, name these trees which grow dates and coconuts and are a symbol of the Los Angeles metro area.
ANSWER: **palm** trees

8. A type of this process elucidated by Carl von Weizsäcker **(VITES-zack-er)** and Hans Bethe **(BAY-tuh)** uses carbon, nitrogen, and oxygen as catalysts. Due to a peak in the binding energy curve, this process is no longer energetically favorable once iron-56 is produced. The proton-proton chain is the dominant mechanism for this process in the Sun. For 10 points, name this nuclear process that converts hydrogen to helium, releasing energy and powering stars.
ANSWER: stellar nuclear **fusion** [do not accept "fission"]

9. This monarch sent a letter reading "Hurray, Field-Marshall!" after Alexander Suvorov crushed the Kosciuszko **(kos-CHOOS-ko)** uprising. This monarch confined Jews to the Pale of Settlement. The Cossack leader Pugachev rebelled against this monarch. Fake villages were allegedly constructed to impress this monarch by Grigory Potemkin. She came to power after the murder of her pro-Prussian husband Peter III. For 10 points, name this 18th-century empress of Russia known as "the Great."
ANSWER: **Catherine** the **Great** [or **Catherine II**; or Ye**katerina** the **Great**; or Ye**katerina II**; prompt on **Catherine**]

10. A leader of this empire reportedly caused a scandal by throwing a Bible on the ground, sparking the Battle of Cajamarca and leading to his imprisonment in the Ransom Room. It was devastated by the "war of the two brothers," fought between ruler Huayna Capac's **(HWIE-nuh kuh-POCKS)** two sons Huascar **(HWAH-scar)** and Atahualpa **(ah-tuh-WALL-puh)**. With a capital at Cusco, this empire was conquered by Francisco Pizarro. For 10 points, what indigenous empire was based in Peru?
ANSWER: **Inca**n Empire

11. In the third film in this series, an arms smuggler played by Philip Seymour Hoffman attempts to acquire the never-identified "Rabbit's Foot" and is involved in a shootout on the Chesapeake Bay Bridge-Tunnel. Luther Stickell, played by Ving Rhames, is one of only two characters to appear in all five films in this series, which centers on Ethan Hunt. For 10 points, name this action franchise starring Tom Cruise as an agent of the fictitious IMF.
ANSWER: ***Mission Impossible*** series

12. The Bohm variety of this process occurs in plasma. The Einstein relation explains the molecular basis for this process using Brownian motion. Adolf Fick developed two laws that can be used to solve for the namesake coefficient of this process. When it occurs through a semipermeable membrane, this process is known as osmosis. For 10 points, identify this process in which particles move from areas of high concentration to areas of low concentration.
ANSWER: **diffusion** [prompt on **osmosis** until it is read; do not accept "effusion"]

13. This leader became irate after the failure of Felix Steiner's armies, which he blamed on men like Wilhelm Keitel. While at his headquarters, the Wolf's Lair, this man was almost killed in the 20 July Plot as part of Operation Valkyrie, when Claus von Stauffenberg planted a bomb. He dictated his memoirs to Rudolf Hess while in jail after a failed "beer hall putsch" in Munich. This leader killed himself in 1945 after marrying Eva Braun. For 10 points, name this dictator of Nazi Germany.
ANSWER: Adolf **Hitler**

14. Many differences between Arabic and Hebrew are attributed to the Canaanite example of this process, which took place around 1500 BC. William Labov identified the migration of laborers to build the Erie Canal as the cause of the still-ongoing "Northern Cities" example of this process. A process of this kind caused "eye" to no longer rhyme with "symmetry" in the poem "The Tiger." For 10 points, name this kind of process whose "Great" variety helped form Modern English.
ANSWER: **vowel shift**s

15. This poet wrote, "The pure products of America go crazy," in a poem addressed to the family nursemaid Elsie. This poet determined "To make a start, out of particulars," in the preface to his epic *Paterson.* His minimalist lyrics include a poem beginning, "I have eaten the plums that were in the icebox," and a poem about an object "glazed with rain water beside the white chickens." For 10 points, name this American poet of "This Is Just To Say" and "The Red Wheelbarrow."
ANSWER: William Carlos **Williams**

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

1. In these materials, the heat capacity goes as the exponential of negative the energy gap over Boltzmann's constant times the transition temperature. These materials show phonon-mediated combination of electrons into Cooper pairs according to the BCS theory. These materials are perfect diamagnets, meaning they expel magnetic fields in the Meissner effect. For 10 points, name these materials that have zero electrical resistance.
ANSWER: **superconductor**

2. This waterway was once known as the "Dragon's Tail" before it was explored by the *Trinidad*, *Victoria*, and other ships containing men such as Juan de Cartagena **(car-tah-HAY-nuh)**. The city of Punta Arenas overlooks this waterway, which is considered safer than the more southerly Drake Passage at Cape Horn. For 10 points, name this route through Tierra del Fuego between the Atlantic and Pacific Oceans at the tip of South America, and which is named for a Portuguese circumnavigator.
ANSWER: **Strait of Magellan** [or **Estrecho de Magallanes**; or **Straits of Magellan**]

3. This war was marked by the scheming of the "Kingmaker," the crafty Earl of Warwick. During this war, the Titulus Regius **(TITCH-uh-lus REE-jee-us)** gave power to a ruler who ordered the "Princes in the Tower" locked up and later murdered. This conflict ended with the Battle of Bosworth Field and the ascension of Henry Tudor. For 10 points, name this war fought for the English throne between the Houses of Lancaster and York and named for their flower emblems.
ANSWER: Wars of the **Roses**

4. A poem of this type begins, "When I consider how my light is spent," and was written by John Milton about his blindness. A type of this poem named for Petrarch divides the lines into an octave and a sestet. Another poem of this type notes how "summer's lease hath all too short a date" and opens, "Shall I compare thee to a summer's day?" For 10 points, name these poems that consist of 14 lines, many of which were written by Shakespeare.
ANSWER: **sonnet**s

5. In this religion, the shraddha funeral rites must be performed to avoid the deceased becoming stuck as a preta **(PRAY-tuh)** ghost between worlds. Members of this religion cremate the dead at an "antyesti" ritual, often at the Harishchandra Ghat **(hah-reesh-CHAHN-druh-got)** in Varanasi **(VAH-rah-nah-zee)** on the Ganges **(GAN-jeez)**. For 10 points, name this religion whose funerary rituals sometimes cause environmental problems in India.
ANSWER: **Hinduism**

What kind of reaction between two compounds exchanges bonds between the molecules, meaning the reactants AB plus CD yields products AC plus BD?
ANSWER: **double displacement** reaction [or **double replacement** reaction; or **salt metathesis** reaction]

This is a calculation question. How many horizontal asymptotes does the function y equals tangent of x have for x between 0 and 4pi, inclusive?
ANSWER: **0** [it only has vertical asymptotes]