**VHSL Regular Season 2016-2017 - Round 21 - First Period, Fifteen Tossups**

1. Problems involving this theory can be visualized on light cones in Minkowski (ming-KAWF-skee) space. This theory was formulated as a response to the Michelson-Morley experiment, which is also a good way to test this theory. This theory proposed mass-energy equivalence and that the speed of light is a universal constant that cannot be exceeded. For 10 points, what theory was proposed by Einstein in 1905 and is the source of the formula E equals m c squared?
ANSWER: **special relativity** [or the **special** theory of **relativity**; or **SR**; or **STR**; prompt on relativity; do not accept "general relavitiy"]

2. This composer's operas about Mohandas Gandhi and Amenhotep IV (uh-MEN-oh-tep "the fourth") are the second and third in his "Portrait Trilogy." This composer of *Satyagraha* (SOT-yuh-GRAH-hah) wrote a series of "knee plays" connecting the acts of his abstract opera about a 20th-century theoretical physicist. For 10 points, name this contemporary American composer of *Einstein on the Beach.*
ANSWER: Philip **Glass**

3. This man is conceived when his father is magically disguised as his enemy Gorlois (gor-LWAH) so that he can sleep with Igraine (EE-grain). This man's "death" titles an influential prose work written by Thomas Malory. This man is antagonized by his half-sister Morgan le Fay, who learns magic from Merlin. For 10 points, name this legendary king of England whose knights include Galahad and Lancelot.
ANSWER: King **Arthur**

4. The derivative of log base *a* of *x* features this number in the numerator. The limit as *x* goes to zero of sine of *x* over *x* equals this number. If two integers *a* and *b* are relatively prime, their greatest common divisor is this number. Though not 100, the probability of an event occurring is a number between zero and this number. For 10 points, what number is the multiplicative identity, meaning multiplying a number *s* by this number yields just *s*.
ANSWER: **one**

5. This painting is shown in the background of Grant Wood's *Daughters of Revolution*. The flag seen in this painting was not adopted until after the event it depicts occurred. The original version of this painting was created 75 years after the event it depicts, the prelude to the Battle of Trenton. For 10 points, name this painting by Emmanuel Leutze (LOYT-zuh) that shows the commander of the Continental Army crossing a river.
ANSWER: ***Washington Crossing the Delaware***

6. Six of these concepts comprise the Gilbert Model, which is named for the sociologist Dennis Gilbert. A *parvenu* is someone who has just joined a new one of these constructs. The ability to quickly move between these constructs is called social mobility. Karl Marx discussed a struggle between two of these groups called the proletariat and the bourgeoisie (BOOHJ-wah-SEE). For 10 points, society is stratified into "upper," "middle," and "lower" types of what concept?
ANSWER: social **class**es

7. One of these beings gives the magic staff Ruyi Jingu Bang to Sun Wukong in *Journey to the West*. Frequently depicted with a flaming pearl under their chin, these beings have four "kings" who each rule one of the Four Seas. The rain god Yinglong resembles one of them. The Hongwu Emperor declared that these beings had five claws. For 10 points, what mythically powerful beings were frequently used as a symbol by the Emperor of China?
ANSWER: **dragon**s [prompt on snake; prompt on serpent]

8. Characters in this novel include a Civil Surgeon who allegedly tortured a man by putting pepper on his wounds. In this novel, Ronny Heaslop breaks off his engagement after his fiancée retracts an accusation against a local. After a trip to explore the Marabar Caves in this novel, Adela Quested accuses Dr. Aziz of sexual assault. For 10 points, name this novel about British relations with the title country written by E. M. Forster.
ANSWER: *A* ***Passage to India***

9. An example of this unit of time that contains six subdivisions, including the Devonian and Carboniferous, ended with the largest mass extinction in history. The Permian-Triassic and Cretaceous-Paleogene extinctions delineate the Phanerozoic into three examples of this unit of time: the Paleozoic, Mesozoic, and Cenozoic. For 10 points, what unit of geologic time covers several hundred million years, as it is smaller than an eon and larger than a period?
ANSWER: **era**s

10. Marcus Reno was accused of being a coward during this battle. The commander who died during it racked up a record 726 demerits at West Point. Twenty days before this battle, a Lakota leader had a vision during a Sun Dance of "soldiers falling…like grasshoppers." During this battle, Chief Gall and Crazy Horse wiped out much of the U.S. 7th Cavalry. For 10 points, what June 1876 battle in Montana is also known as Custer's Last Stand?
ANSWER: Battle of the **Little Bighorn** [or Battle of the **Greasy Grass**: or **Custer's Last Stand** until it is read]

11. This city was occupied by Robert Ross after he won the Battle of Bladensburg. Its creation was reportedly part of a bargain that involved the government assuming state debts. Pierre L'Enfant designed this city and named many of its streets after letters. Legendarily, a portrait of the first President was saved by Dolley Madison as she fled this city. For 10 points, in what city, during the War of 1812, did the British burn buildings like the White House?
ANSWER: **Washington** D.C. [or **D.C.**; or **District of Columbia**]

12. This event led to the burning of hundreds of Jews in Strasbourg (STRAH-borg) on Valentine's Day. People who responded to this event wore beak-like masks covering their faces, and flagellants (FLUH-gell-ENTS) whipped themselves to seek God's favor during it. This event started in Europe because of fleas living on black rats found on merchant ships bound from Asia. For 10 points, what disease killed more than a third of Europeans during the 1300's?
ANSWER: **Black Death** [prompt on plague; prompt on bubonic plague]

13. This substance was the main product of the Anaconda Company in Butte (BYOOT), Montana. The northwestern area of Michigan's Upper Peninsula produced most of the American supply of this metal, which is represented by the star on Arizona's flag. The patina (puh-TEE-nuh) that forms on this metal is responsible for the Statue of Liberty's green color. This metal coats the zinc interior of the U.S. penny. For 10 points, name this metal combined with tin in bronze.
ANSWER: **copper** [or **Cu**]

14. In this film, a character wearing a leaf on his head roars in delight at the noise the raindrops make on an umbrella that is given to him. At the beginning of this film, the protagonists move into a new house inhabited by soot spirits. The protagonists of this film are taken to the hospital where their mother is staying by the Catbus. For 10 points, name this Hayao (hi-YOW) Miyazaki film about Satsuki and Mei's interactions with the title giant furry creature.
ANSWER: ***My Neighbor Totoro*** [or ***Tonari no Totoro***]

15. In a play in this genre, the title character assaults Corvino's wife Celia after singing a song. Plays in this genre were the specialty of Ben Jonson. Peter Quince and the "rude mechanicals" stage a play for the wedding of Theseus, the Duke of Athens, in another play in this genre whose characters include Puck. For 10 points, name this genre exemplified by *A Midsummer Night's Dream* and contrasted with tragedy.
ANSWER: **comedy**

 **VHSL Regular Season 2016-2017 - Round 21 - Directed Period**

1A. The Russian chemist Dmitri Mendeleev (MEN-duh-LAY-ev) is credited with creating an early version of what scientific object?
ANSWER: **periodic table**

1B. What profession is shared by Paul Gachet (gas-SHAY) and Nicolaes Tulp, the subjects of paintings by Van Gogh and Rembrandt, respectively?
ANSWER: **doctor**s [or synonyms such as **physician**]

2A. In Greek myth, unbreakable oaths were sworn with water from what river of the underworld?
ANSWER: **Styx** (STICKS)

2B. What British poet wrote about how "your mum and dad…fill you with the faults they had" in his oft-quoted poem "This Be the Verse"?
ANSWER: Philip **Larkin**

3A. This is a 20-second calculation question. Lisa has a standard fifty-two-card deck. If she randomly draws one card from the deck, what is the probability its number is prime?
ANSWER: **4/13**

3B. This is a 20-second calculation question. Miguel has a triangle whose angles are 30 degrees, 60 degrees and 90 degrees. If the side length opposite the 30-degree angle of Miguel's triangle is 2.2 meters, what is the length of the hypotenuse?
ANSWER: **4.4** meters

4A. What Irish playwright created Christy Mahon in his controversial play *The Playboy of the Western World*?
ANSWER: J. M. **Synge** [or John Millington **Synge**]

4B. Rodrigo Diaz de Vivar was given what simple, two-word name by the Muslims he fought in medieval Castile?
ANSWER: **El Cid** (SID) [or **El Campeador**; or **The Lord**]

5A. Lewis Carroll coined what term for words like "smog" which have two meanings "packed up into one word"?
ANSWER: **portmanteau** words

5B. Donald Trump suggested that what rival politician's father was with the assassin of President Kennedy shortly before his murder?
ANSWER: Ted **Cruz** [or Rafael Edward **Cruz**]

6A. Munich is the capital of what southeastern German state?
ANSWER: **Bavaria** [or **Bayern**]

6B. What racist poem by Rudyard Kipling tells its addressees to "send forth the best ye breed" on colonial enterprises?
ANSWER: "The **White Man's Burden**"

7A. Norns are a fictional species often used to to demonstrate what "dichotomous" (dy-KOT-uh-mus) species classification technique that relies on shared characteristics?
ANSWER: **key**

7B. What Holy Roman Emperor died during the Third Crusade and had a nickname meaning "Red Beard"?
ANSWER: **Frederick I** [or Frederick **Barbarossa**; prompt on Frederick]

8A. This is a 30-second calculation question. What are the coordinates of the vertex of the graph of y equals two x squared minus eight x plus five?
ANSWER: **two comma negative three**[or **two, negative three**]

8B. This is a 30-second calculation question. What is the value of cotangent of thirty degrees plus the sine of forty-five degrees plus the cosine of one hundred thirty-five degrees?
ANSWER: **sqrt(3)** [or **square root of 3**]

9A. What type of solutions are able to resist a change in pH because it consists either of a weak acid and its conjugate base or a weak base and its conjugate acid?
ANSWER: **buffer**

9B. During a 1930's civil war in what country did an army make the impressive Long March, crossing over 5,000 miles in 370 days?
ANSWER: **China** [or the Republic of **China**; or the People's Republic of **China**; or **PRC**]

10A. What Beatles song, which has been covered over 2,000 times, laments "All my troubles seemed so far away"?
ANSWER: "**Yesterday**"

10B. In French, what part of speech generally ends in the four-letter suffix "*m-e-n-t*"?
ANSWER: **adverb** [or ***adverbe***]

 **VHSL Regular Season 2016-2017 - Round 21 - Third Period, Fifteen Tossups**

1. This president was the subject of a punk music video urging the "Mother of God" to "drive" him away that was illegally filmed in 2012 at a cathedral. In September 2015, this world leader's country intervened to help Syria against rebels, leading to one of its jets being shot down by the Turkish Air Force. He previously served as Prime Minister under his successor, Dmitry Medvedev (MED-vuh-DEV). For 10 points, name this current President of Russia.
ANSWER: Vladimir **Putin**

2. This activity is performed in positions such as "ruku" and "i'tidal." This activity follows the ritual cleansing known as "wudu" and fulfills the pillar of "salat." At the prescribed times for this activity, a muezzin (MOO-ay-ZIN) recites the adhan from the top of a minaret. For 10 points, name this activity which Muslims engage in five times a day, reciting verses from the Quran and other statements of worship.
ANSWER: Islamic or Muslim **prayer** [or **salat** until it is read; or **salah** until "salat" is read]

3. This athlete claimed that he tripped and was never actually knocked down by the relatively unknown Chuck Wepner. A famous photograph shows him almost roaring as he stands over the body of Sonny Liston. This man won the "Thrilla in Manila" over Joe Frazier and the "Rumble in the Jungle" over George Foreman. Soon after his conversion to Islam, he abandoned the name "Cassius Clay." For 10 points, what recently deceased boxer was known as the "Greatest"?
ANSWER: Muhammad **Ali** [or "Cassius Marcellus **Clay** Jr." until it is mentioned]

4. Dogs have the bicornuate (by-CORN-yu-wate) form of this organ. A copper device can be inserted into this structure as a highly effective form of contraception called an IUD. A drop in progesterone (pro-JES-tuh-rohn) levels causes this organ to shed its endometrium (en-doh-ME-tree-um) every 28 days. The cervix connects this organ to the vagina. For 10 points, name this female organ in which a fetus grows.
ANSWER: **uterus** [or **womb**]

5. The darkfield type of these devices doesn't use staining. Some types of these devices require oil immersion. The "dissecting" type of these instruments uses reflected rather than transmitted light. Other kinds of them have several compound objectives that produce a virtual image through the eyepiece and can be used to see cells. For 10 points, name these instruments that greatly magnify the images of samples on slides.
ANSWER: light **microscope**s [or **microscopy**; or electron **microscope** before "oil" is read]

6. This process's indicator error is determined by the difference between the endpoint and the equivalence point. In a common example of this volumetric analysis technique, one uses a buret to neutralize an acidic solution containing a pH indicator such as phenolphthalein (FEE-nuhl-THAY-leen). For 10 points, what technique allows one to determine the unknown concentration of a chemical species in a solution?
ANSWER: **titration** [or **titrimetry**; or **volumetric analysis** until it is read]

7. In 1899, a hoax claimed American businesses would tear this structure down to build a road. It took thousands of lives to build the first, now largely destroyed version of this structure, which was ordered by the first emperor, Qin (CHIN) Shi Huang. As early as 1754, people were falsely claiming it could be seen from the moon. For 10 points, what over 13,000 mile long structure was meant to protect an Asian empire from outside invaders?
ANSWER: **Great Wall** of China

8. A device that measures this property is the sclerometer and this property is defined as the force needed to create an indentation with a square-pyramid-shaped tip in the Vickers test. For water, this term denotes the amount of dissolved calcium and magnesium ions. This property is defined as scratch resistance according to a system that assigns a value of one to talc and ten to diamond. For 10 points, name this mineral property that can be quantified using the Mohs scale.
ANSWER: **hard**ness

9. The tallest building in this country's capital, the Kingdom Centre, contains a massive shield-shaped hole in its upper portion. Several Air Force personnel were killed when this country's Khobar Towers were bombed in 1996. The U.S. helped start this country's giant oil company Aramco. The Rub' al Khali, or Empty Quarter, extends into this country's southern neighbors Yemen and Oman. For 10 points, name this large Middle Eastern country ruled from Riyadh.
ANSWER: **Saudi Arabia** [or Kingdom of **Saudi Arabia**; or Al-Mamlakah Al-**Arabiyah As-Saudiyah**]

10. Large examples of these structures often contain a large courtyard with a fountain, known as the "sahn." A raise platform called a "minbar" is found within these structures, which may be used to address a crowd on Fridays, when people gather at these structures for "jummah." The "mihrab" found in each of these structures is a niche in the wall indicating the direction of Mecca. For 10 points, name these Islamic places of worship.
ANSWER: **mosque**s [or **masjid**s]

11. In 1983, this organization's "Able Archer 83" exercise almost led to a nuclear war. It was created through a 1949 treaty with an article promising mutual self-defense that was not invoked until the September 11 attacks. This group's first wartime action took place in 1994 during the Bosnian War. This organization's Communist counterpart was created with the Warsaw Pact. For 10 points, what military alliance consists of 28 countries in North America and Europe?
ANSWER: **NATO** [or **North Atlantic Treaty Organization**; or **North Atlantic Alliance**]

12. The narrator of this novel gets in trouble for holding a funeral and giving a eulogy for his friend Tod Clifton. This novel's narrator is given a college scholarship for participating in a "battle royal" on an electrified rug. After moving to Harlem, the narrator of this novel encounters Ras the Exhorter and joins the Brotherhood. For 10 points, name this novel by Ralph Ellison about an unnamed black man.
ANSWER: ***Invisible Man*** [do not accept "*The Invisible Man*"]

13. In a story by this author, the barber Ivan Yakovlevich (YAH-koff-LAY-vitch) cuts a loaf of bread in which he finds the title body part belonging to Major Kovalyov (koh-VOL-yoff). In another story by this author, the tailor Petrovich (peh-TRO-vitch) makes the title garment for the clerk Akaky Akakievich (ah-KOK-ee AH-kok-YAY-vitch). For 10 points, name this Russian author of the short stories "The Nose" and "The Overcoat."
ANSWER: Nikolai **Gogol**

14. In this country, the Canadian Caper involved the fictitious filming of a movie called *Argo*. The sale of arms to this Asian country was a plan by Oliver North to fund the Contras during the Reagan presidency. Religious conservatives in this country were angry at American support of its former leader, the Shah. For 10 points, 52 Americans were held hostage beginning in 1979 in what country after the embassy at Tehran was attacked?
ANSWER: Islamic Republic of **Iran** [prompt on Persia]

15. A companion piece to this painting shows the blue Alps behind several olive trees. A year before this painting was made, its artist made a similar painting set at the Rhone River. This painting shows the view from its artist's room at the Saint-Paul Asylum, which includes a small church steeple next to a cypress tree that dominates its left side. For 10 points, name this painting featuring a dark swirling sky by Vincent van Gogh.
ANSWER: *The* ***Starry Night*** [or *De* ***Sterrennacht***]

 **VHSL Regular Season 2016-2017 - Round 21 - Tiebreaker Questions**

1. This is the primary artistic medium utilized by the director of the film *Exit Through the Gift Shop*. That artist who uses this medium is the enigmatic British personality "Banksy." Artists using this medium leave a personalized signature called a tag. During World War II, this medium was used to create numerous images captioned "Kilroy was here." For 10 points, what kind of art typically involves using marker pens or spray paint in urban areas?
ANSWER: **graffiti** [or **street art**; prompt on murals]

2. This man failed to obtain profits promised him in the Capitulations of Santa Fe. An exchange named for this man explains how peanuts and tomatoes were first grown in Europe. This man's imposition of a tribute system may have wiped out the Taino people on the island of Hispaniola (HISS-pan-yo-la). For 10 points, name this captain of the ship *Santa Maria*, who was sent by Spanish monarchs Ferdinand and Isabella on a 1492 voyage to the Caribbean.
ANSWER: Christopher **Columbus** [or Cristóbal **Colón**]

3. Two materials with this property are connected by an insulator to form a Josephson junction. The distance into a material with this property that a magnetic field can penetrate is known as the London penetration depth. This property is explained using Cooper pairs by the BCS theory. When a material transitions into having this property it releases a magnetic field due to the Meissner effect. For 10 points, name this property of materials with zero electrical resistance.
ANSWER: **superconductivity** [or **superconductors**]

4. The narrator of a novel by this author recalls a story his father told him about a servant who calmly shot a tiger in his employer's dining room. He wrote a dystopian novel about clones raised to be organ donors named Kathy and Ruth. In another novel by this man, the fascist Lord Darlington employs the delusional butler Stevens. For 10 points, name this Japanese-British author of *Never Let Me Go* and *The Remains of the Day.*
ANSWER: Kazuo **Ishiguro**

5. In his early life, this man lost a sandal while crossing the river Anauros. The future wife of this man removed a nail from the bronze giant Talos to defeat it. King Pelias ordered this man to travel to a land where he had to plant the teeth of a dragon in the ground. This hero eloped with King Aeetes' (AY-ee-TEEZ) sorceress daughter after meeting her in Colchis. For 10 points, name this leader of the Argonauts, a Greek hero who sought the Golden Fleece.
ANSWER: **Jason**

In triangle ABC, the coordinates of A are zero comma zero, the coordinates of C are one comma zero, and B lies on the unit circle. If the measure of angle CAB is one-hundred thirty-five degrees, what are the coordinates of B?
ANSWER: **-sqrt(2)/2, sqrt(2)/2** [or **-1/sqrt(2), 1/sqrt(2)**] [or **negative square root of 2 over 2, square root of 2 over 2** or **negative one over square root of 2, one over square root of 2**]

The Second Viennese School composed atonal music using what technique in which each note of the chromatic scale is used with equal frequency?
ANSWER: **twelve-tone** technique [or **serialism**]