

# Scobol Solo 2015

## Packet 8 (Round 8)



1. This quantity and voltage potential are plotted on the axes of a Pourbaix [por-bay] diagram. For sufficiently concentrated solutions, this quantity can be replaced by the Hammett function. University of Illinois alumnus Arnold Beckman invented a device that uses a glass electrode to measure this quantity. This quantity can be calculated given the pKa [P-K-A] and two concentrations using the Henderson-Hasselbalch [HAH-sul-bahlk] equation. Buffered systems resist changes in this quantity. When this quantity is high, phenolphthalein [FEE-nawlf-THAY-leen] turns pink, and red litmus turns blue. This quantity is defined as the opposite of the base-10 logarithm of hydrogen ion concentration, and is 7 for water. Name this measure of acidity.

Answer: pH [accept power of hydrogen or potential hydrogen; accept acidity before “pink”]

2. This composer transcribed for two pianos Henri Duparc’s [awn-ree doo-“park’s”] symphonic poem *Lenore* based on a ballad by Gottfried August Bürger. This composer wrote the film score for *The Assassination of the Duke of Guise* [“geese”]. The radio show *The Shadow* used a piece by this composer that was the first French tone poem, depicts a time when Hercules had to work disguised as a woman, and is entitled *The Spinning Wheel of Omphale* [ohm-FAH-lay]. Another of this composer’s tone poems makes heavy use of xylophone and ends with an oboe portraying a rooster welcoming the sunrise. Name this composer of *Danse Macabre* whose suite for children, including “Royal March of the Lion”, is *The Carnival of the Animals*.

Answer: (Charles-)Camille Saint-Saëns [kaa-meel san-sahnss]

3. In one story by this writer, a coffin-maker overcomes his dislike of Jews, eventually giving his violin to Rothschild. In another story by this writer, a man confronts a woman he had an earlier affair with at a showing of *The Geisha*. That story about Anna Ser·ge·yev·na and Dmitri Gurov is “The Lady with the Dog”. A play by this writer is named for a gift from the playwright Konstantin to Nina. Nina later compares herself to that dead bird. In another work by this writer, Lo·pak·hin orders his workers to chop down trees that had belonged to Lyu·bov Andrey·ev·na Ra·nev·ska·ya. Name this Russian playwright who wrote *The Seagull* and *The Cherry Orchard*.

Answer: Anton (Pavlovich) Chekhov

4. Attempts to enlarge this project were significantly slowed by the Stop and Tax Act, which made it more difficult for the state to borrow money. Benjamin Wright was nicknamed “the father of American civil engineering” because of his work on this project, whose construction began in 1817. A later attempt to enlarge this object was called the Nine-Million Dollar Improvement, which turned out to be an underestimate. Its use declined due to competition from railroads. Critics of building this project nicknamed it “Clinton’s folly” and “Clinton’s ditch” after the Governor of New York. Identify this route from the Hudson River to a namesake great lake.

Answer: Erie Canal

5. Conversion of oxalo-acetate [AHK-suh-loh-ASS-ih-tayt] to PEP [pep] results in the production of this gas. Histamine [HIS-tuh-meen] is formed by removing this molecule from histidine [HIS-tih-deen]. The presence of this substance causes an increase in hemo-globin-oxygen binding called the Bohr effect. The fermentation of glucose by yeast produces ethanol and this substance. This gas reacts with ammonia to form urea [yur-EE-uh] and is consumed in algae bioreactors. Along with water vapor, this compound is a reactant of photo-synthesis and a product of aerobic respiration. Emissions of this gas are largely responsible for the greenhouse effect. Name this molecule whose formula is CO<sub>2</sub>.

Answer: carbon dioxide [accept CO<sub>2</sub> before the end]

***Check the score.***

6. The old part of this city is connected by several bridges to its Southwark [SUTH-urk] district. This city contained a series of Eleanor crosses, including one that was at Charing Cross near Trafalgar Square. A museum in this city displays the Elgin Marbles and the Rosetta Stone. Several musical theatres are located in its West End districts Leicester [“LICE”-stur] Square and Covent Garden. The stores along Regent Street lead to the open area of Piccadilly Circus. The Crown Jewels are held in a tower that shares its name with this city, and coronations take place at Westminster Abbey. Name this city on the Thames [temz] River, the capital and most populous city of the United Kingdom.

Answer: London, England

7. One story by this writer is based on the sentence “When one loves one’s Art no service seems too hard.” That story about Joe Larrabee and Delia Caruthers is “A Service of Love”. Another story by this writer describes an attempt to raise \$2,000 “to pull off a fraudulent town-lot scheme in Western Illinois” but ends up costing \$250. That scheme by the narrator and Bill Driscoll goes astray because Ebenezer Dorset knows what it is like to take care of Dorset’s son. In another story by this writer, Jim Dillingham and his wife Della exchange useless Christmas gifts. Name this author of “The Ransom of Red Chief” and “The Gift of the Magi”.

Answer: O. Henry [or William Sydney Porter; prompt on Henry]

8. In the 13th century, Roger Bacon described toys that use this substance, and the earliest description of its creation dates to the year 1044. This substance was the subject of a dispute between Lord Dunmore and Patrick Henry in Williamsburg in 1775. Along with compasses, paper, and printing, this substance was one of the Four Great Inventions. In 1605 in England, Lord Monteaule received an anonymous letter saying that Guy Fawkes was going to use this substance to kill King James I. The use of this substance, starting with the Tang and Song Dynasties, revolutionized warfare. Name this explosive containing saltpeter that is used in guns to propel bullets.

Answer: gunpowder [or blackpowder]

9. If the divergence of a field is this type of number, then the field is more outward than inward. If the derivative of a function is this type of number times the original function, then exponential growth occurs. If a function's second derivative has this property, then the function is concave up. Considering only real outputs, the domain of the logarithmic function is the set of these numbers. When a function's first derivative has this property, the function is increasing. The counting numbers are the integers that are also these numbers. Name these numbers that are shown on the right side of the number line.

Answer: (strictly) positive (real) numbers

10. Peter Kreeft wrote several books imagining this person meeting other philosophers. The type of irony named for this person is a technique of pretending to be ignorant in order to get somebody to say something wrong. The title of a Søren Kierkegaard book about irony states that it makes continual references to this person. The method named for this person consists of asking probing questions to students. This person's self-defense became the "Apologies" of both Xenophon [ZEE-noh-fahn] and Plato, two philosophers who were students of this philosopher. Name this man forced to drink poison hemlock.

Answer: Socrates

***Check the score.***

11. One character in this novel daydreams that she is near a brook through Deepden in Northumberland. That character, who in this novel is treated harshly by Miss Scatcherd but nicely by Miss Temple, dies during a typhus outbreak. That outbreak, which kills Helen Burns, discredits the school director Mr. Brocklehurst. In this novel, Helen's friend later teaches Adele Varens at Thornfield Hall, where Grace Poole is supposed to take care of Bertha Mason, who is locked in the attic by her husband Edward Fairfax Rochester. Name this novel whose title character is an orphan, written by Charlotte Brontë.

Answer: Jane Eyre

12. This country's Tom Mboya [um-BOY-uh] started Airlift Africa to give African students an education at American universities, but he was assassinated in 1969. This country's Forum for the Restoration of Democracy was founded by its first Vice President, O-ging-a O-ding-a. U.S. embassies in Tanzania [tan-zah-NEE-ah] and this country were bombed by al-Qaeda in 1998. This country was headed for over 20 years by Daniel arap Moi, who lessened government control by the Ki-ku-yu people. During the 1950s, the Kikuyu headed the Mau Mau Rebellion. This country has recently helped its neighbor Somalia fight al-Shabaab [ahl shah-BAHB]. Name this country where al-Shabaab retaliated by attacking a shopping mall in its capital, Nairobi.

Answer: Kenya

13. Some newer versions of this musical use the song "Topsy-Turvy" in place of the song "The Rumor". A 2015 Broadway revival of this musical stars Danny Burstein. At the end of this musical's first act, Motel's [MOH-tul'z] wedding party is broken up, and near the end of this musical a Russian constable tells all of the characters that they must leave their homes. Its wedding scene contains the song "Sunrise, Sunset". After his daughters sing "Matchmaker, Matchmaker", this musical's protagonist Tevye [TEV-yuh] sings "If I Were a Rich Man." Name this musical set in Anatevka, a Jewish shtetl [SHTET-ul].

Answer: Fiddler on the Roof

14. This person is the namesake of a European Union program that will be similar to GPS. A spacecraft named for this person orbited Jupiter for eight years. The acceleration unit named for this person equals a centimeter per second squared. Newtonian physics is built on the pre-Einsteinian theory of relativity and transformations between reference frames described by this person. Kepler's refracting telescope was an improvement on the design by this person, who used his telescope to discover the four largest moons of Jupiter. This scientist was put under house arrest in the 17th century for backing Copernicus's helio-centric theories. Name this Italian scientist who, according to one of his students, dropped two cannonballs from the Leaning Tower of Pisa.

Answer: Galileo Galilei [accept either]

15. This country is suing the Massandra winery for serving valuable wine to former Italian Prime Minister Silvio Berlusconi [SEEL-vee-oh bair-looss-KOH-nee]. A lawsuit over an election in this country was thrown out when a U.S. judge dismissed money laundering charges against Dmitry Firtash. That lawsuit was brought by this country's former Prime Minister Yulia Tymo-shenko against her predecessor, who became the president of this country until a 2014 revolution replaced him with Petro Poro-shenko. A war in the Donbass region in the eastern part of this country is blamed on Russia. Name this country which, according to the United States, still controls the Crimean Peninsula.

Answer: Ukraine [or Ukrayina]

*Check the score.*

16. William Carlos Williams said that these objects “stand sleeping in the cold” during winter. Robert Frost said that he wonders about these objects in a poem about the sound of them. William Blake wrote about seeing his foe outstretched beneath one of these objects in a poem beginning “I was angry with my friend” and named for a poison one. Another poem ends “poems are made by fools like me, / but only God can make” one of these things. That poem by Joyce Kilmer begins “I think that I shall never see a poem lovely as” one of these. Name these living things, of which a “Giving” one was the subject of a Shel Silverstein book.

Answer: trees [accept winter trees or poison trees or The Giving Tree; prompt on plants]

17. One leader of this country lost popularity after telling a *Daily Telegraph* reporter, “You English are mad, mad, mad as March hares.” A former leader of this country is the namesake of the panhandle of Namibia, the Caprivi Strip. Shortly after this country was unified in 1871, part of it attempted to discredit Catholicism through its Kulturkampf policies. This country took over Austria during the *Anschluss* [AHN-shlooss], and it then formed an alliance with Italy and Japan known as the Axis. Name this country that was called the Weimar [VY-mahr] Republic between the World Wars, when President Hindenburg appointed Chancellor Adolf Hitler.

Answer: Germany [or German Empire or Deutschland]

18. Radiance equals this quantity divided by the quantity area times solid angle. Radiant flux is equivalent to this quantity, while luminous flux is the perceived value of this quantity. Irradiance is a measure of this quantity per unit area. Sound intensity also equals this quantity per area, and the log of sound intensity is used to calculate decibel level. In an electric circuit, this quantity equals current times electric potential difference, and it is a measure of how much the circuit heats up. This quantity equals force dotted with velocity, and is defined as the work done per unit time. Name this quantity measured in watts.

Answer: (radiant) power [accept radiant flux and prompt on flux before “Radiant”]

19. One painting by this artist shows a woman who is probably an usher leaning against a wall next to an upwards stairway with her chin resting on the back of her hand. He used his wife Jo as a model for several of his paintings, including that one, *New York Movie*. Jo can be seen sitting by herself at night looking down into a cup of coffee in *Automat*. She is seated with another woman in an upstairs restaurant with a small teapot on the table in *Chop Suey*. In another painting by this artist, three people sit at a triangular counter, inside of which is a server dressed in white with a white hat. Name this American realist who painted *Nighthawks*.

Answer: Edward Hopper

20. An accord prohibiting trade with followers of this person was eaten by termites. Just before this person died, he gave his wife seven coins to donate to the poor. This person caused the Moon to split so that its parts could be seen on opposite sides of a mountain. Some poems read during Mawlid are from the point of view of this leader's mother, Aminah. Descriptions of this person's actions are called *sunnah*, and his sayings are the *hadith*. The angel Jibra'il [JEE-brah-EEL] spoke to this man in the the cave of Hira. The Hijra [HEEJ-rah] is this person's journey from his birthplace, Mecca, to Medina with Abu Bakr in the year 622. Name this prophet who founded Islam.

Answer: Muhammad or Mohammed [or Abu al-Qasim Muhammad ibn 'Abd Allah ibn 'Abd al-Muttalib ibn Hashim]

***This is the end of regulation. Check the score. If it is tied, proceed to overtime tossups. If it is not tied, the game is over.***

<sup>TB</sup>21. This person made several works portraying Pierre de Wissant [day wee-sawn]. He showed two right hands facing each other in *The Cathedral*. This artist portrayed a woman curled around the head of a man as they emerge from a block of marble that is held by a right hand in the work *The Hand of God*. One of his works, which originally contained a spear in the subject's left hand, led to accusations that this artist cast it from a live model, and is entitled *The Age of Bronze*. Some of his famous works are found within his nearly twenty-foot-tall *The Gates of Hell*. Name this French sculptor of *The Burghers of Calais* [ka-lay] and *The Thinker*.

Answer: Auguste Rodin [oh-goost roh-dan] [or François-Auguste-René Rodin]

***If the score is still tied, continue. If it is not tied, the game is over.***

<sup>TB</sup>22. Early in this person's career, he was captured but released when he promised not to build a fort on the Ohio River. That occurred after his men killed Coulon de Jumonville [koo-lawn day zhoo-mon-veel] at Fort Duquesne [doo-kayn] and while he was defending Great Meadows, which became known as Fort Necessity. This person led a retreat across the East River following the Battle of Long Island. This person gave several promotions to Nathanael Greene, and he selected Baron von Steuben [vawn SHTOY-bin] to inspect and train his troops. He later led his troops to victory at Trenton after crossing the Delaware River. Name this Revolutionary War leader who became the first President of the United States.

Answer: George Washington

***If the score is still tied, continue. If it is not tied, the game is over.***

<sup>TB</sup>23. This state's senators are Ron Johnson and Tammy Baldwin. This state's governor is Scott Walker. This state is east of Minnesota. Name this state whose cities include Appleton, Madison, and Milwaukee.

Answer: Wisconsin

***There are no more overtime questions available. If the score is still tied, contact the control room for further instructions. If it is not tied, the game is over.***