

Scobol Solo 2017

Packet 1 (Round 1)



1. In one equation describing this phenomenon, a derivative with respect to time equals the divergence of the product of the coefficient named for this phenomenon, times the gradient of the quantity whose derivative is on the other side of the equation. That equation describing this phenomenon sometimes has additional terms to account for convection. The coefficient named for this quantity is in units of area per time, is orders of magnitude larger for gases than for liquids, and is multiplied by the derivative of concentration with respect to position in Fick's first law. This phenomenon and effusion are both described by Graham's law. Name this phenomenon in which molecules move from regions of high concentration to regions of low concentration.

Answer: diffusion [or diffusing]

2. In October 2017, Mark Yusko called this company a "cash incineration engine", and Scott Miller said that this company's founder was "full of crap" when he said that this company's hardware is already able to handle Level Five. This company owns SolarCity, which makes residential solar panels, and its founder is in talks to use them to replace Puerto Rico's power grid. This company has been criticized for not producing enough of the Model 3. It has previously produced the Model S and the Roadster. Name this company started by Elon Musk that produces electric cars.

Answer: Tesla, Inc. or Tesla Motors

3. In one book by this writer, a character in Sing Sing prison gives information to the protagonist, encoded as "the weather report", that she passes on to his so-called lawyer, Oliver O'Shaughnessy [oh-SHAWN-uh-see]. In that novel by this author, the protagonist lives in New York but is married to a horse doctor who lives in Tulip, Texas. In another book by this writer, Susan Kidwell discovers the bodies of the Clutter family after they have been murdered by Perry Smith and Dick Hickock. This author used Holcomb, Kansas as the setting of what he called a "non-fiction novel". Name this author of *In Cold Blood* who wrote about the New York socialite Holly Go-lightly in *Breakfast at Tiffany's*.

Answer: Truman (Garcia) Capote [kuh-POH-tee] [or Truman Streckfus Persons]

4. One film directed by this person opens with a bomb being placed in the back of a car and the car being driven past Mr. and Mrs. Vargas before the bomb explodes. That movie, in which this person directed Charlton Heston and Janet Leigh [lee], is *Touch of Evil*. Another film directed by this person opens with a view of a gate in front of a mansion whose owner drops a snow globe as he dies. This person also directed and narrated a 1938 radio broadcast in which news reports described an attack by Martians. Name this director of *The War of the Worlds* radio episode and the movie *Citizen Kane*.

Answer: (George) Orson Welles

5. Peter Boysen-Jensen determined that mica blocks the hormones necessary for this phenomenon, but gelatin doesn't; his experiments were inspired by Charles and Francis Darwin noticing that two different parts of grass seedlings participate in this phenomenon. Frits Warmolt Went [var-molt vent] discovered the hormones that cause this phenomenon, which are made in coleoptile [ka-lee-OP-tul] tips in monocots like grasses. Indole-3-acetic acid [IN-dawl "three" uh-SEE-tik "acid"] is one of the class of hormones that cause this phenomenon, called auxins. Name this behavior in which plants bend in response to stimuli like gravity or light.

Answer: tropism(s) [accept phototropism or gravitropism or heliotropism]

Check the score.

6. Early in this person's presidency, the Ohio Life Insurance and Trust Company failed, contributing to a worldwide economic crisis. This president supported the Lecompton Constitution for Kansas, but it was rejected strongly by both Congress and Kansas voters. Many members of this president's own party criticized him for supporting the *Dred Scott* decision, which came out just after his inauguration. This person's presidency caused sectional divisions within the Democratic Party, causing him to be succeeded by the first Republican president. Name this leader, considered one of America's worst presidents, who served just before the Civil War.

Answer: James Buchanan

7. A poem of this type by Ralph Waldo Emerson ends "If God thou be, Unmake me quite, or give thyself to me." Another poem of this type forms the basis of Philip Glass' sixth symphony, is by Allen Ginsberg, and refers to the arms race using plutonium. One poem of this type is about "two socks made of wool in winter", and another is about a large tuna in the market. In addition to those poems by Pablo Neruda, another poem of this type begins "Thou still unravish'd bride of quietness" and later states "Beauty is truth, truth beauty,—that is all / Ye know on earth, and all ye need to know." Name this type of poem often addressed to its subject, including the one that John Keats addressed "to a Grecian urn".

Answer: odes

8. In Jainism, a *lagna lekhan* must be held in somebody's house before this event can occur. In Hinduism, this event evokes responsibility towards Bhaga, Ar-ya-ma, Savita, and Purandhi. For Hindus and Jains, this event takes place in a specialized *mandap*, which serves the same purpose as a Jewish chuppah [HOO-pah]. For Hindus, the central part of this event is the *sapta-padi*, which consists of taking seven steps around a fire. At one of these events in the New Testament, Jesus performed his first miracle, turning water into wine. Name this kind of event that in many traditions involves two people exchanging something of value, such as rings.

Answer: weddings or marriages or marriage ceremony/ies

9. Caldwell 14 is called a “double” one of these objects, since two of these objects are visible in the same part of the Perseus constellation. Though one type of these objects is generally not visible to the naked eye, an exception is Omega Centauri, which is in the Milky Way and contains some blue stragglers. The Pleiades [PLEE-uh-deez] and Hyades [“HI”-uh-deez] in Taurus are examples of these objects. These objects are classified as globular or open, and they become associations as they come apart. These objects are useful in the study of stellar evolution because their constituents are roughly the same age. Name these massive collections of stars.

Answer: star clusters [accept globular clusters or open clusters]

10. Chicagoan Maury Kravitz tried but failed to find this person’s tomb. One of this leader’s generals was given a name meaning “Arrow” because, before they were allies, the general shot this person in the neck at the Battle of Thirteen Sides. This ruler was one of the first people to set up a series of posts for messengers, a system called “Yam”. An attempt was made to call this person Taizu and label him as the founder of a dynasty, but the Yuan dynasty started after this person’s death. This person was born with the name Temüjin. Name this brutal early-13th-century leader, the father of Ögedei [oh-GUH-day] and the grandfather of Kublai Khan.

Answer: Genghis Khan [accept Taizu or Temüjin before each is mentioned]

Check the score.

11. Early in a play by this writer, one character asks another whether she is a true sister or a traitor to the family. That question is asked of the character who says “I know that two sisters lost two brothers.” In another play by this writer, a man sits on a stone and asks some old men if he can see Theseus [THEE-see-uss], who makes that man a citizen of Athens. In an earlier play by this writer, a king is told “You yourself are the criminal you seek” when he asks Tiresias [“tie”-REE-see-uss] who murdered Laius [LAY-uss]. That king marries Jocasta [joe-KAS-tuh], who turns out to be his mother. Name this ancient Greek playwright whose Theban trilogy includes *Antigone* [an-TIG-uh-nee] and *Oedipus at Colonus*.

Answer: Sophocles

12. A universal but unequal system of this type that was used in the 19th century was the Prussian three-class system. Charles Borelli developed a system of this type called Ley de Lemas [lay day lay-mahss] that allows coalitions to break themselves down into subgroups. The “paradox” of these systems, which comes from the fact that they are not transitive, was described by the Marquis de Condorcet [mar-kee duh kohn-dor-say]. Participants in the Borda count type of this system can rank their preferences. One of the simple and widely used types of these systems is first-past-the-post, which is based on a plurality. Name these systems used in representative democracies to select leaders.

Answer: elections or voting or votes [or balloting or ballots]

13. The Boy surface can be formed by attaching one of these surfaces to a disk. This surface can be created as a quotient space of a torus by a diagonal loop. A cross-cap is a homeo-morphic [hoh-mee-oh-MOR-fik] equivalent of this surface. This surface has a boundary and, like the torus, has an Euler [OY-lur] characteristic of zero. This surface can be represented by a picture of a square with an arrow on the top pointing right and an arrow on the bottom pointing left. Gluing two of these surfaces together along their edges creates a Klein bottle. This surface can be formed by connecting a pair of opposing sides of a rectangle with opposite orientations. Name this one-sided surface equivalent to a loop with a half-twist.

Answer: Möbius strip [or Möbius surface or Möbius band]

14. A run of 30 consecutive eighth notes in this piece begins with two triplets of staccato eighth notes. The title of this piece was selected by the composer's brother, who was inspired in part by James Whistler paintings. The creation of this piece was spurred by a newspaper story that the composer was collaborating with Paul Whiteman, which he indeed did, though the story came out before they had agreed to work together. Ferde Grofé [fer-dee groh-fay] orchestrated this piece, though parts of it were improvised during its 1924 premiere at a concert billed as "An Experiment in Modern Music". Ross Gorman created the clarinet glissando that opens this piece. Name this work for piano and jazz band by George Gershwin.

Answer: *Rhapsody in Blue*

15. Ventidius [ven-TID-ee-uss] is told not to say anything bad about this character because "She deserves more worlds than I can lose" in John Dryden's *All for Love*. In another play, this person complains that she was going to sacrifice a white cat, but it ran away after a black cat; in the same play, several people have trouble pronouncing the name of this person's nurse. This character appears in a George Bernard Shaw work as well as in another play in which she kills herself with the poison from an asp after she is denounced by Mark Antony. Name this leader who had a relationship with Julius Caesar.

Answer: (Queen) Cleopatra [accept Cleopatra VII Philopator]

Check the score.

16. The struggle leading to the independence of this country started with fighting between the half-sisters Teresa and Urraca. Centuries later, in 1926, a coup in this country led to a National Dictatorship under Óscar Carmona [AWSH-kar kar-MOH-nuh], who worked with António de Oliveira Salazar [aw-TAW-nee-oo oh-lee-VUR-uh SUH-luh-zar] for much of the 20th century, leading this country's Estado Novo [ish-TAH-thoo NOH-voov] government until it was overthrown in the 1974 Carnation Revolution. This country sponsored Pedro Álvares Cabral [PETH-roo AHL-vuh-rish kuh-BRAHL] in 1500 when he discovered Brazil, and its Prince Henry the Navigator encouraged exploration. Name this country that split the New World with Spain under the Treaty of Tordesillas [tor-duh-SEE-yas], and which still shares the Iberian Peninsula with Spain.

Answer: Portugal [or Kingdom of Portugal or Reino de Portugal; or Portuguese Republic or República Portuguesa]

17. In this country, the Agoyán [ah-goh-YAHN] waterfall is on the Pastaza River near the town of Baños de Agua Santa [BAHN-yohss day ah-gwah SAHN-tah]. In this country's capital, the TelefériQo [tay-lay-"FAIR"-ee-koh] lift takes people up the Ruku peak of the volcano Pichincha [pee-CHEEN-chah]. An archipelago [ark-ih-PEL-uh-goh] off the coast of this country formed over the last four million years by volcanic activity on the north side of the Nazca plate. This country's national river, the Guayas ["GUY"-ahss], flows from Mount Chimborazo [cheem-boh-RAH-zoh] to the Gulf of Guayaquil ["guy"-ah-KEEL]. Name this South American country in which the world's longest-living tortoises and some scientifically important finches live on the Galápagos Islands.

Answer: (Republic of) Ecuador [or (República del) Ecuador]

18. One painting by this artist shows the painting's donor praying in the presence of Saint Donatian, Saint George, and Mary holding the baby Jesus; the donor was Joris van der Paele [JOR-ees van dur "pale"]; this artist also painted a similar work on a commission from Chancellor Nicolas Rolin. This artist's portrait of his wife Margaret shows her wearing a wimple that makes her hair look horn-shaped. A 1434 work by this painter shows a man wearing black, including a wide top hat, and a woman with her left hand on her belly wearing green. That painting by this artist has a convex mirror in back and a chandelier with one lit candle. Name this Flemish painter of the *Arnolfini Portrait*.

Answer: Jan van Eyck [yahn van "Ike"] [accept Johannes de Eyck; prompt on Eyck]

19. This physical phenomenon underlies a kind of stove that only works on pots of specific materials, and also underlies electric guitar pickups. In a transformer, this phenomenon is used to change voltage in an alternating-current circuit. The "law of" this phenomenon is that the voltage it causes equals the opposite of the rate of change of magnetic flux, and has a negative sign implied by Lenz's [LENT-suz] law. Solenoids are commonly used to create this phenomenon or its reverse. Name this phenomenon in which changing magnetic fields cause a voltage, the subject of Faraday's law.

Answer: electromagnetic induction

20. This person's horse was shot under him twice in the half-hour Battle of Winceby, at which he defeated William Widdrington. This person was hated in Ireland because of the Siege of Drogheda [DRAW-duh] and sack of Wexford, which have been called genocidal. This person was unable to get Scottish support before winning the Battle of Dunbar, but he later joined forces with the Earl of Leven [LEE-ven] to defeat Prince Rupert at the Battle of Marston Moor. Name this leader who fought with Thomas Fairfax during the English Civil War and who later became the Lord Protector of the Commonwealth of England after the beheading of King Charles I.

Answer: Oliver Cromwell

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.

- ^{TB}21. This person worked with Émile Zuckerkandl [ay-meel zoo-kur-kahn-dul] to develop a theory, later boosted by Motoo Kimura, that uses amino acids in hemo-glo-bin to determine a timeline for evolution. In addition to his work on the molecular clock, this person stated that “stable molecules and crystals have electronic structures such that the electric charge of each atom is close to zero”, which is his principle of electro-neutrality. This person's radius ratio rule and rule of parsimony are among his rules on ionic crystals. Name this scientist who developed the first electronegativity scale, promoted megavitamin therapy, and won Nobel Prizes in both Chemistry and Peace.

Answer: Linus (Carl) Pauling

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

- ^{TB}22. During this war, Operation Shingle led to forces under Major General John Porter Lucas crossing the Gustav Line in Italy after fighting the Battle of Anzio. In this war's Western Desert Campaign, the British carried out the successful Siege of Tobruk. In the African theater of this war, the Battles of El Alamein took place shortly before Operation Torch. During part of this war, Harold Alexander controlled armies that were led by Bernard Montgomery and George Patton, who moved his troops to the Battle of the Bulge. Name this war in which the Allies defeated the Axis Powers.

Answer: World War II

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

- ^{TB}23. Some of the great moments in this sport's history have involved David Tyree, Franco Harris, and Malcolm Butler. This sport is depicted in the movies *Rudy*, *Brian's Song*, and *The Waterboy*. Some of the greatest stars of this sport have been Jerry Rice, Walter Payton, and Tom Brady. Name this sport played by the Chargers, Steelers, and Patriots.

Answer: (American or gridiron) football

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.