

# Scobol Solo 2018

## Packet 2 (Round 2)



1. This property of an electromagnetic field equals the integral with respect to position of vacuum permittivity [PUR-mit-IV-ih-tee] times the cross product of electric field and magnetic field potential. The vector components of this quantity are complementary variables in Heisenberg's uncertainty principle. The specific relative type of this quantity is used in the two-body problem and can be used to prove Kepler's second law. The conservation of this quantity explains some types of precession and is used by some athletes to change their rate of rotation. A net torque is required to change what conserved quantity, equal to moment of inertia times angular velocity?

Answer: angular momentum [do not accept or prompt on "momentum"]

2. During a tour in this novel, half a dozen nurses set up bowls of roses and then are told to "set out the books." Soon after that, a character in this novel says "They'll be safe from books and botany all their lives." That statement, made after infants experience loud noises and mild electric shocks, occurs in this novel's Central London Hatchery and Conditioning Centre, where the infants were all dressed in khaki because they were deltas. Part of this novel is set on the New Mexico Savage Reservation, which is home to people who were not mass-produced. Name this dystopian novel by Aldous Huxley.

Answer: Brave New World

3. This U.S. President was criticized by his own party for appointing ex-Confederate lieutenant colonel David Key as his Postmaster General and appointing Liberal Republican Party co-founder Carl Schurz as his Interior Secretary. This president's wife was a temperance movement supporter and probably influenced his decision to ban alcohol from the White House. This person supported a "let alone" policy towards the South, so federal troops ended involvement in Southern politics when he became president. Name this man whose ascent to the presidency was due to an Electoral Commission selecting him over Samuel Tilden in 1877.

Answer: Rutherford B(irchard) Hayes

4. This country pushed for the United States to extradite Omar Ameen, who was charged with killing a police officer and is believed to be a member of al-Qaeda and ISIS. This country's May 2018 election, which took months to certify, was won by Saairun ["SIGH-run"], a coalition of communists and Shia [SHEE-uh] Islamists. That result strengthened cleric Muqtada al-Sadr [mook-TAH-duh al SAH-dur] and weakened this country's Prime Minister, Haider al-Abadi ["HI"-dur al ah-BAH-dee], who in 2014 had replaced Nouri al-Maliki [NOOR-ee al MAH-lih-kee]. ISIS recently lost control of a lot of territory in Syria and this country, including the city of Mosul [moh-SOOL]. Name this country that the U.S. invaded in 2003 to overthrow Saddam Hussein.

Answer: (Republic of) Iraq [or Jumhuriyat al-Iraq]

5. This person was supposed to fly on Gemini 3, but he was replaced by "Gus" Grissom because this person had an inner-ear disorder. After that disorder was fixed, this person and Edgar Mitchell walked on the Moon during the Apollo 14 mission, during which this person hit two golf balls. Before that, this person was the only astronaut in Mercury-Redstone 3, which was also called *Freedom 7* and was launched in 1961. Name this astronaut who followed Yuri Gagarin [YUR-ee guh-GAR-in] as the second person in space and the first American.

Answer: Alan (Bartlett) Shepard (Jr.)

**Check the score.**

6. In a painting by this artist, lyrics to a folk song are written on the wall behind the subject, who sits in a chair surrounded by cut hair. This artist's body is pierced by nails and has a pillar for a spine in the painting *The Broken Column*. The title woman is on the ground, floating in midair surrounded by clouds, and hanging out of a window in this artist's *The Suicide of Dorothy Hale*. Veins connect the hearts of two people, one dressed in traditional Tehuana [teh-WAH-nah] dress and the other in a Victorian dress, in a painting in which this artist showed two different versions of herself. Name this Mexican artist who painted many self-portraits depicting her pain from being injured in a streetcar collision.

Answer: (Magdalena Carmen) Frida Kahlo (y Calderón) (de Rivera)

7. This person's friend Pierre Foucault [foo-kohl] helped popularize this person's most famous invention by developing the raphigraph [RAF-uh-graf]. This person's most famous invention improved on the work of Charles Barbier [barb-yay] and went against a system pushed by Valentin Haüy [au-ee]. Barbier had developed a system of night writing for the army. This person's best known textual work, written in Paris during the 1820s, is *Procedure for Writing Words, Music, and Plainsong in Dots*. Name this person who developed a system of writing with raised dots, primarily used by blind people.

Answer: Louis Braille

8. This god placed the sword Gram in the Barnstokkr [“barn-STOKER”] tree and challenged men to pull it out to keep it. This god later broke Gram after Sigmund used it. This god called himself Bölverk [BEL-vurk] to steal the mead of poetry from the mountain of Suttungr [SUT-ung-ur]. This god killed Ymir [EE-mir] alongside his brothers to create the world. This god consults the head of Mimir [MEE-mir] and gave up an eye in return for wisdom. This god hung himself for nine nights from the world tree Yggdrasil [IG-druh-sil] to gain knowledge of the runes. Name this father of Thor, the chief god of Norse mythology.

Answer: Odin [or Wotan]

9. This poet wrote “From time to time the clouds give rest to the moon-beholders.” In his first published collection, this poet included two of his own works, but most of the book consists of comparisons between poems by other writers. This author of *The Seashell Game* included the lines “Even a thatched hut may change with a new owner into a doll’s house” in his later book *The Narrow Road to the Deep North*. One of this writer’s poems states “An ancient pond / a frog jumps in / the splash of water.” Name this 17th-century poet of the Edo [ay-doh] Period in Japan who wrote many haikus.

Answer: Matsuo Basho [or Matsuo Kinsaku or Matsuo Chuemon Munefusa; accept any underlined name]

10. A phragmoplast [FRAG-muh-plast] is needed to build this structure during cell division. *Mycoplasma* bacteria do not have this structure. The middle lamella [luh-MEL-uh] connects these structures in sclerenchyma [skluh-REN-kuh-muh] tissue, which contains a thick type of this structure reinforced with lignin. Turgor pressure can only be maintained in cells with this structure. Peptidoglycan [PEP-tid-oh-GLY-kan] in this structure is detected by Gram staining. In plants, wood is made of the “secondary” version of this structure. This structure is composed of chitin [KY-tin] in fungi [FUN-jie]. Name this protective structure that, in plants, is made of cellulose and is outside the cell membrane.

Answer: cell wall

### **Check the score.**

11. After this person’s troops killed the runaway mercenary Dhondia Wagh [DOHN-dee-uh wah] in battle, this person paid for Wagh’s orphaned son’s education. This military commander wept openly after winning the brutal Siege of Badajoz [bah-dah-“HOSE”]. Jean-de-Dieu Soult [zhahn ded-yoo soolt] was this man’s constant adversary during the Peninsular War. It is unlikely that this man actually said that his most famous victory “was won on the playing fields of Eton”. This commander collaborated with Gebhard von Blücher [BLOO-shur] to defeat Marshal Ney [neh]. Name this British military commander who defeated Napoleon at the Battle of Waterloo.

Answer: Arthur Wellesley, (1st) Duke of Wellington [accept either underlined portion]

12. In this opera, two men in armor perform a recitation to the tune of the Luther hymn “Oh God, look down from heaven”. Emanuel Schikaneder [SHEE-kuh-nay-dur] premiered a role in this opera that sings the aria “Der Vogelfänger bin ich ja” [“dare” VOHG-ul-fahn-gur bin ik yah]. A group of priests in this opera sing the chorus “O Isis und Osiris” [oh “EYE”-siss oont oh-“SIGH”-riss]. In this opera’s most famous aria, “Der Hölle Rache kocht in meinem Herzen” [“dare” HUR-luh RAH-kuh kokt in “MY”-num HAIRT-sin], the antagonist instructs her daughter Pamina to kill Sarastro. At the beginning of this opera, a serpent is killed by three attendants of the Queen of the Night. Name this opera by Mozart in which Tamino goes on a quest with a mystical instrument.

Answer: *The Magic Flute* [or *Die Zauberflöte*]

13. This book states “Clearly the musician is wise, and he who is not a musician is foolish.” This book critiques democracy by describing a captain being overpowered by a crew that does not know how to sail. This work describes a man who could not face consequences for his actions because he was invisible. In addition to the “Ship of Fools” and “Ring of Gyges [JY-jeez]” metaphors, this work includes a description told to Glaucon of men whose experience consists of looking at shadows projected onto a wall. Name this dialogue that includes the “Allegory of the Cave” and describes a city ruled by philosopher kings, a book by Plato.

Answer: *The Republic* [or *Politeia*]

14. A calculation from this experiment expected an object with a maximum size of 27 femtometers, but the actual size is about 7 femtometers. The outcome of this experiment was confirmed by Henry Moseley’s study of X-ray spectra, leading to a reordering of the periodic table. This experiment used a fluorescent zinc sulfide screen and a target that was 4 hundred-thousandths of a centimeter thick. The result of this experiment was compared to firing a 15-inch shell at a piece of tissue paper and having the shell come back and hit you. The deflection of alpha particles in this experiment caused the rejection of Thomson’s plum pudding model. Name this experiment that proved the existence of the atomic nucleus.

Answer: Rutherford gold foil experiment [accept either underlined portion; accept Geiger-Marsden experiment]

15. This empire had hotels called *tambos* that served as resting places for *chasquis* [CHAHSS-keess], or running messengers. The southern expansion of this empire ended when neither side wanted to keep fighting the Battle of the Maule [MAO-lay]. The capital of this empire was built in the shape of a puma. This empire kept records using knotted strings, called quipus [KEE-pooss]. The people of this empire spoke Quechua [KECH-wah]. Name this South American empire centered in Cuzco [KOOZ-koh], led by Atahualpa [ah-tuh-WAHL-pah], and conquered by Francisco Pizarro.

Answer: Incan Empire or Incas

**Check the score.**

16. A fictional resident of this U.S. state is described by his wife as “snotty and strong and quick, and like some kind of expensive animal”. That character’s life is contrasted with yacht owners who visit this state in Ernest Hemingway’s *To Have and Have Not*. Another fictional resident of this state sets her husband’s pistol so that he must go through three empty chambers before getting to a bullet, allowing her to shoot him with a rifle. This state is also where Jody Baxter is forced to kill Flag, his pet fawn. Name this state where Janie Crawford kills Tea Cake in Zora Neale Hurston’s *Their Eyes Were Watching God* and which is also the setting of Marjorie Kinnan Rawlings’ *The Yearling*.

Answer: Florida

17. The Salassi [suh-LAH-see] people lived in what is now this mountain range until they were enslaved in ancient times, living near what is now the city of Aosta [ah-OH-stah]. This range’s Lepontine [li-PON-tine] subrange contains the Simplon Tunnel to make it easier to reach the town of Brig. The Reschen [RESH-un] Pass borders the Ötztal [UTZ-tahl] subrange of these mountains, which is in Tyrol [tih-“ROLE”]. One city in this mountain range contains the Mole Antonelliana [MOH-lay ahn-toh-nel-YAH-nuh], a very tall museum near the Po River in Turin [TUR-in]. Name these mountains that can be seen from Innsbruck, Salzburg, and pretty much any location in Switzerland.

Answer: Alps

18. This composer imitated the eight *rasas* through 20 pieces in his *Sonatas and Interludes*. A piece by this composer was written for 24 performers and 12 radios and is from a series of pieces called *Imaginary Landscape*. This composer’s *Music of Changes* was composed using a divination text called the *I Ching* [ee cheeng]. This composer invented the concept of a “prepared piano.” A piece by this composer was inspired by a visit to an anechoic [an-uh-KOH-ik] chamber and typically opens with the performer closing the lid of a piano. Name this American composer of a piece that consists entirely of silence, “4’ 33”” [“four minutes 33 seconds”].

Answer: John (Milton) Cage (Jr.)

19. If you replace the first input to this binary operation with one less than the sum of both inputs, then you get multiset coefficients. If you fix the first input to this operation and find all the results of different second inputs, the sum of those values is 2 to the power of that fixed first input. The outputs of this operation are arranged in Pascal’s triangle. This operation can be defined as the first input factorial, over the second input factorial times the factorial of the difference between the inputs. Name this operation used to calculate how many ways you can select  $k$  out of  $n$  items without order mattering, as contrasted with permutations in which order matters.

Answer: binomial combination [or binomial choose function; accept  $n$  choose  $k$ ; prompt on binomial]

20. This literary movement was strongly influenced by a collaborative pamphlet, part of which described reading James Macpherson’s “Ossian [AW-shun]” while at sea. A Gothic poem from this movement is about a woman who rides a horse with a man she thinks is her fiancé but is actually Death; that poem is “Lenore”. Another work from this movement is told by a man who falls in love with Charlotte and writes letters to Wilhelm. The most prominent members of this movement eventually abandoned it for Weimar [VY-mar] Classicism. Name this 18th-century German movement of which Friedrich [FREED-rik] Schiller and Johann Wolfgang von Goethe [GRR-tuh] were proponents.

Answer: Sturm und Drang [shtoorm oont drahng] [or Storm and Stress or Storm and Drive or Storm and Urge]

***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. Charles Dana called this person “a renegade Jew who has denied his breed”. This person was the only Jewish person elected to the U.S. Congress in 1884, but he quit in 1886 to focus on his other work. This person sponsored the trip that Nellie Bly described in the book *Around the World in Seventy-Two Days*. This person started the *St. Louis Post-Dispatch* and then purchased the *New York World*, which led to a major rivalry with William Randolph Hearst. Name this Hungarian-born newspaper magnate whose will funded the Columbia School of Journalism, which led to the arts and journalism prizes named for him.

Answer: Joseph Pulitzer [“PULL”-its-ur] [or József Pulitzer]

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

- <sup>TB</sup>22. In an old Western fable sometimes attributed to Aesop [EE-sahp], one of these animals has its heart eaten by a fox after it is killed by a lion. A character who claims that he tried hunting these animals, but against his will, was given a ride by one of them over the ridge of Gendin, and he is told by his mother that he is lying. That story is told to Aase [AH-say] at the beginning of Henrik Ibsen’s *Peer Gynt*. Narnia’s Golden Age ended after an unsuccessful attempt to hunt one of these animals near the lamppost in *The Lion, the Witch and the Wardrobe*. Name these animals such as Robert Lewis May’s Rudolph and Felix Salten’s Bambi.

Answer: deer or stag [accept reindeer]

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

- <sup>TB</sup>23. Lake Vostok is under this continent, and the Ross Sea and Weddell Sea are on its edge. The heroic age of this continent’s exploration ended with the Shackleton-Rowett Expedition. Name this continent that has no native human population and contains the South Pole.

Answer: Antarctica

***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.***