

Scobol Solo 2019

Packet 8 (Round 8)



1. Henry Kater developed a version of this device to measure the Earth's gravitational field. One of these devices was used in the Paris Observatory in 1851 to demonstrate the rotation of the Earth. If you use the small-angle approximation, you can prove that this device shows simple harmonic motion. This object's period is inversely proportional to the square root of the gravitational field [pause] and directly proportional to the square root of the distance from the center of mass to its pivot. Name this device that consists of a mass hanging from a string, swinging back and forth.

Answer: (simple) pendulum(s)

2. In October 2019, the United States imposed sanctions against this country's Atul, Ajay and Rajesh Gupta [GOOP-tuh] due to their corrupt connections to this country's former president. That former president of this country, who ruled from 2009 to 2018, is now on trial due to a corrupt 2-billion-dollar arms deal. This country is now led by Cyril Ramaphosa [rah-muh-POH-suh], who replaced Jacob Zuma [ZOO-muh] after gaining the support of the African National Congress. Name this country whose president rules from Pretoria [pray-TOR-ee-uh], though its legislature meets in Cape Town.

Answer: (Republic of) South Africa

3. In a play by this writer, a character states "We are ashamed of everything that is real about us." In this writer's play, the character who says that is supposed to be one of the two men to care for Ann Whitefield when her father dies, but he ends up marrying her. In that play about John Tanner, this writer put a scene called *Don Juan in Hell*. Another play by this writer is about a bet between Colonel Pickering and Henry Higgins over whether it is possible to teach a flower girl to behave like a duchess. That flower girl is Eliza Doolittle. Name this author of *Man and Superman* and *Pygmalion*.

Answer: George Bernard Shaw

4. Some of the top jazz performers on this instrument studied under Franz Schoepp [shohp], including Buster Bailey and Jimmie Noone. A bandleader who specialized in playing this instrument popularized Cole Porter's song "Begin the Beguine [bug-EEN]". Another bandleader who specialized in this instrument headlined a 1938 jazz concert at Carnegie Hall at which he performed "Sing, Sing, Sing". Those bandleaders who played this instrument were Artie Shaw and Benny Goodman. Name this single-reed woodwind instrument.

Answer: clarinet

5. In a book written by this person, Solon [SOH-lun] says that Cleobis and Biton were the happiest humans after Tellus, which disappoints Croesus [KREE-suss]. This person's most famous book has been divided into nine sections, which are often named for the muses. The ninth part of this writer's most famous book describes the Battles of Plataea [pluh-TEE-uh] and Mycale [MIK-uh-lee]. This writer often focused on the cruelty of Xerxes I [ZURK-seez "the first"] of Persia. Name this person from Halicarnassus who wrote *The Histories* about the Greco-Persian Wars and who became known as "The Father of History".

Answer: Herodotus [hur-AH-dih-tuss]

6. This book ends with the statement "I seek refuge in the Lord of men, The King of men, The God of men, From the evil of the whisperings of the slinking, Who whispers into the hearts of men, From among the jinn and the men." In the first section of this book, people are told to sacrifice a cow and then strike a dead man with one of the cow's limbs. This book is generally considered holier than the Sunnah and Hadith [huh-DEETH]. This book was spoken by the Archangel Jibril [jib-RIL] during the seventh century. It is divided into 114 surahs. Name this book written down by Muhammad, the holiest book in Islam.

Answer: Qu'ran

7. Applying this function to a sum gives the same result as applying this function to the inputs separately, adding the results, and then dividing by 1 minus the product of the results. The slope of a line equals this function of the angle between the line and the x -axis. 1 plus the square of this function's output equals the square of the secant function's output for the same angle. This function's derivative equals the secant function squared. On the unit circle, this function's output for an angle equals " y over x " for the coordinates of the point representing the angle. Name this function that, in a right triangle, is defined by "opposite side length divided by adjacent side length".

Answer: tangent [accept answers that additionally mention a variable; do not accept or prompt on "cot(angent)"]

8. This author's first novel starts with Uncle Silas and Aunt Marilyn driving away. In that novel, this author described Mem forcing her husband Brownfield to get a factory job; Brownfield eventually kills her. In another novel by this author, the protagonist writes "My mama dead. She die screaming and cussing. She scream at me." That protagonist later tells Harpo to beat Sofia, which she apologizes for. In that novel, this author portrayed the blues singer Shug Avery. This author wrote that novel in the form of letters from Celie [SEE-lee] to God. Name this author of *The Third Life of Grange Copeland* and *The Color Purple*.

Answer: Alice (Malsenior Tallulah-Kate) Walker

9. This person established a government that lasted two months following the Autumn Harvest Uprising. This person met with U.S. President Richard Nixon shortly after the U.S. and this person's country had ping-pong exhibitions. One month after this person died, his fourth wife, Chiang Ch'ing, was arrested for her role in the Gang of Four during the Cultural Revolution. An enormous famine occurred due to this person's Great Leap Forward, which was his attempt to industrialize China. Name this chairman of the Communist Party of China who gained power after forcing Chiang Kai-shek to go to Taiwan.

Answer: Mao Zedong [or Mao Tse-tung; prompt on Zedong or Tse-tung]

10. This composer's *Concerto for Four Violins and Cello in B Minor* was arranged by J. S. Bach into a piece for four harpsichord soloists. That piece was part of this composer's *Harmonic Inspiration*. In 1725, this composer published a set of four pieces with accompanying poetry; the last poem begins "Frozen and shivering in the icy snow". Those works were part of a group of 12 concerti grossi ["con-CHAIR-tee GROSS"-ee] by this composer that were published as "The Contest Between Harmony and Invention". Name this Italian Baroque composer who was nicknamed "the Red Priest" and who wrote *The Four Seasons*.

Answer: Antonio (Lucio) Vivaldi

11. The name of one of these events used to reflect the fact that it was discovered by observing the Karoo basin's Dwyka formation in what is now South Africa. What is currently believed to be the oldest and longest of these events may have been caused by the oxygen catastrophe during the Siderian ["side-EERIE-in"] period and is named for Lake Huron. These events may be caused by variations in Earth's orbit or ocean currents from the poles. These events may not occur in the future due to increased methane and carbon dioxide in the atmosphere. Name these periods in the Earth's history characterized by widespread glaciation.

Answer: ice ages or glacial ages or icehouses [accept glaciation before the end]

12. A character in this play asks "How is it that of the four Evangelists, only one speaks of a thief being saved?" He says that after another character in this play says his memory of the Gospels is the colored maps of the Holy Land. Later in this play, a boy approaches those two characters, calling one of them "Mister Albert" and saying that another person "won't come this evening, but surely tomorrow". At several points in this play, one character says "Let's go" and the other main character replies "We can't". In this play, Lucky is the slave of Pozzo. Name this play in which Vladimir and Estragon do very little, written by Samuel Beckett.

Answer: Waiting for Godot [or En attendant Godot]

13. The so-called “battle of” this location was blamed on the bank robber Bernard Coy and took place in 1946. A group calling itself the United Indians of All Tribes occupied this location for 19 months starting in 1969. Though his studies were actually carried out at Leavenworth, Robert Stroud became known as the “Birdman of” this place, where he wrote a history of the U.S. prison system. Al Capone was moved to this location after serving the first part of his sentence in the U.S. penitentiary in Atlanta. Name this island in San Francisco Bay that was a maximum-security federal prison.

Answer: Alcatraz Island or Alcatraz Federal Penitentiary [prompt on The Rock]

14. Four paintings by this artist are collectively known as *Visions of the Hereafter*. One of those paintings depicts a tunnel to Heaven and is titled *Ascent of the Blessed*. The center of another painting by this artist shows a nun playing a lute and a friar leaning in to take a bite out of a hanging pancake. That painting from the late 15th century is *Ship of Fools*. The left part of another work by this painter is sometimes called the *Joining of Adam and Eve*, while the right part shows a knife blade between ears and depicts the results of sin. Name this Early Netherlandish painter of several triptychs [TRIP-tiks], including *The Garden of Earthly Delights*.

Answer: Hieronymus Bosch [or Jheronimus van Aken]

15. Problems with this protein cause a disease named for the Lepore family and the disease beta thalassemia [thal-uh-SEE-mee-uh]. The extent to which this protein is glycosylated [GLY-kay-tid] is measured to determine whether people have diabetes. This protein is broken down to form bilirubin [bil-ih-ROO-bin] in the body. This protein bonds strongly to carbon monoxide, which is why that gas is so harmful. Abnormalities in this protein cause sickle cell disease. This protein contains iron, and it is responsible for transporting another element from lungs or gills to body tissues. Name this red protein that transports oxygen in the blood.

Answer: hemo-globin

16. The downtown area of this city contains Bagley Memorial Fountain and Campus Martius Park. The James Scott Memorial Fountain and several museums are on an island this city owns, Belle Isle. This city’s Institute of Arts contains a series of frescoes celebrating its industry that were created by Diego Rivera. The Ambassador Bridge connects this city to Windsor, Ontario. The Hitsville U.S.A. building in this city is where Berry Gordy started Motown Records. This city is next to Dearborn, which is the headquarters of Ford Motor Company. Name this most populous city in Michigan.

Answer: Detroit, Michigan

17. During this war, Count Tilly was prevented from combining with another army during the Battle of Mingolsheim [MEEN-gohl-shym]. That was a temporary victory for Ernst von Mansfeld, who would later be turned back during this war's Battle of Dessau Bridge. That battle was a victory for Albrecht von Wallenstein [VAWL-en-shtyn], who helped put down the Bohemian Revolt at the beginning of this war. Count Tilly was badly defeated at this war's Battle of Breitenfeld by Sweden's Gustavus Adolphus. This war was started by the most famous Defenestration of Prague and ended by the Peace of Westphalia. Name this war that lasted from 1618 to 1648.

Answer: Thirty Years' War

18. In one poem by this writer, a man who dug his child's grave says to his wife "A man can't speak of his own child that's dead." That poem, which ends with the man threatening to bring his wife back home by force, is this writer's "Home Burial". The last stanza of another poem by this writer begins "I shall be telling this with a sigh somewhere ages and ages hence" and ends "And that has made all the difference." Another poem by this author ends with a repetition of the line "And miles to go before I sleep." Name this 20th-century American poet who wrote "The Road Not Taken" and "Stopping by Woods on a Snowy Evening".

Answer: Robert (Lee) Frost

19. The heaviest naturally-occurring element in this group is formed when radium undergoes alpha decay; the result then undergoes further alpha decay to become polonium. Another element in this group is the third-most abundant gas in the Earth's atmosphere after nitrogen and oxygen. These elements have the highest ionization potential in their periods, or rows. Neil Bartlett discovered that elements from this group could form compounds with other elements, though such compounds are rare. Radon and argon are in this group of elements. Name this group of elements that have full valence electron shells and that are located on the right end of the periodic table.

Answer: noble gases [accept aerogens or Group 18; do not accept "inert gases"]

20. In Shapiro-Stiglitz theory, this phenomenon is a worker discipline device. Okun's law gives the relationship between gross domestic product and this phenomenon, stating that the gap between potential GDP and real GDP is twice the rate of this phenomenon. The Phillips curve originally showed the relationship between this phenomenon and wages but is now commonly used to show the relationship between this phenomenon and inflation. This phenomenon comes in frictional, structural, seasonal, and cyclical types. This phenomenon often increases during a recession. Name this measure of how many people are searching for, but unable to find, a job.

Answer: unemployment rate [accept being unemployed]

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. Carl Friedrich Gauss was the first person to make progress in finding a formula for how many lattice points are inside one of these shapes. This shape is the locus of points in a plane that are twice as far from one fixed point as they are from another fixed point. In polar coordinates, this shape can be generated by the function r equals the sine of theta. This shape is also generated by setting r equal to a constant. This shape is generated by taking all of the points in a plane that are a fixed distance from a fixed point. Name this shape with a circumference and a radius.

Answer: circle(s) [accept circles centered at the origin before “sine”]

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

- ^{TB}22. During this war, Operation Hailstone did considerable damage to the Combined Fleet at Truk Island. After that success, Chester Nimitz furthered his advances during this war with the Mariana and Palau Islands campaign. The United States then received Australian help in winning the massive Battle of Leyte [LAY-tee] Gulf, and a few months later in this war the U.S. won the Battle of Iwo Jima [EE-woh JEE-mah]. At Leyte Gulf, planes deliberately flew into battleships in kamikaze attacks. Name this war during which the U.S. won the Battle of Midway six months after the bombing of Pearl Harbor.

Answer: World War II

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

- ^{TB}23. An Alice Hoffman book title refers to one of these buildings *of Extraordinary Things*. An Orhan Parmuk book is titled for one of these buildings *of Innocence*. The Tate in the United Kingdom is one of these buildings. Several of these buildings make up the Smithsonian Institution in Washington, D. C. Name this type of building where educational exhibits and/or art are displayed.

Answer: museums

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.