

Scobol Solo 2022

Packet 14 (Round 14)

1. This phenomenon was shown to occur at equal rates with and without selection in the Luria–Delbrück experiment, which is sometimes called the Fluctuation Test. Saltation, which emphasized this phenomenon more than natural selection, was viewed as an alternative to Charles Darwin's theories. In general, the point types of this phenomenon have less of an impact than the frame-shift type, which can lead to a change in the way many codons are interpreted. This phenomenon generally occurs when DNA is being replicated or when an organism is exposed to radiation. Name this phenomenon in which genetic material is permanently changed by damage or error.

Answer: mutations [accept mutating]

2. This painter depicted his son Jean [zhahn] standing in the background on a windy day as his wife wears a veil and white dress and holds a green parasol. In another painting, this artist portrayed his wife Camille holding up a fan and wearing a fancy red kimono in front of a wall displaying several Japanese fans. Several paintings by this artist show the Japanese footbridge over a pond in Giverny [zhee-vair-nee]. Several of those paintings by this artist also show water lilies. Name this painter who gave a name to an art movement via his painting *Impression, Sunrise*.

Answer: (Oscar-)Claude Monet

3. Photographs of this city were taken from *Plane 91*, which is now better known as *Necessary Evil*. A famous hospital in this city is near the Aioi [ah-ee-oy] Bridge. This city has a peace bell that is covered by a map of the world [pause] and a peace flame that has been continuously lit since 1964. Paul Tibbets piloted the *Enola Gay* when he bombed this city on August 6, 1945. Name this city that was hit by the Little Boy atomic bomb three days before Fat Man was dropped on Nagasaki.

Answer: Hiroshima, Japan

4. At the end of September 2022 in this country, an attack on a police station killed over a dozen people, including members of the Revolutionary Guard. This country's Guidance Patrol claimed that a September 16 death was caused by a heart attack, but most people believe the death was caused by police brutality. Mahsa Amini died in this country after she was arrested for not wearing a hijab, sparking several protests for women's rights. Name this country ruled by Supreme Leader Ali Khamenei from Tehran.

Answer: (Islamic Republic of) Iran [or Jomhuri-ye Eslami-ye Iran]

5. When this character goes to the capital city of Mildendo, he learns about the Tram·eck·san and Slam·eck·san factions that wear different heel sizes. Another disagreement is heightened when this character takes several ships from the island of Blefuscu [bleh-FUSS-koo], though much of that dispute is over which end to use when breaking an egg. Later on, this character is cared for by Glum·dal·clitch, a girl who is about 40 feet tall. That happens when this character travels to Brob·ding·nag. Name this character who is surrounded by little people when he travels to Lilliput in a novel by Jonathan Swift titled for this character's *Travels*.

Answer: Lemuel Gulliver [accept either; accept *Gulliver's Travels*]

Check the score.

6. The Korteweg–de Vries equation describes the cnoidal [k'-NOY-dul] types of these things. The so-called “breaking” of these things can be quantified by the Iribarren [eer-ee-bah-ren] number and occurs when their height is more than 1/7 their length or when the depth below them is less than or only slightly more than their own height. The breaking occurs because these things' crests move faster than their troughs [trawffs]. These objects are usually caused by wind, but some destructive examples caused by earthquakes or explosions are called tsunamis. Name this water movement whose smallest examples are ripples.

Answer: (water or ocean) waves

7. A monument designed by this architect is 202 feet tall and has a gilded urn on top of a Doric column. That monument by this architect is near Farynor's [FAIR-uh-nur'z] bakery. This architect also designed a building, sometimes referred to as Flamsteed House, which has a large room in the shape of an octagon to make it easier to see out in several directions. That building designed by this architect is on the Prime Meridian. This architect is best known for a building on Ludgate Hill that is the burial place for himself in addition to Florence Nightingale and John Donne. Name this architect of the Royal Observatory and St. Paul's Cathedral who helped rebuild London after the Great Fire.

Answer: Christopher Wren

8. In order to woo his second wife, this god turned himself into a cuckoo during a storm. When one of this god's lovers died, he put the fetus she was carrying in his thigh, and that fetus grew into a god. This god sent horses that were swift and immortal to Tros, the founder of Troy, as compensation for this god taking Ganymede [GAN-ih-meed]. Those events happened after this god turned his first wife into a fly and ate her. That wife, Metis [may-TEESS], was pregnant with Athena when that happened, which is why Athena was born from this god's forehead. Name this husband of Hera who was the king of the gods on Mount Olympus.

Answer: Zeus [accept Jupiter]

9. This western U.S. city was the Peoples Temple headquarters between its founding in Indianapolis and its mass suicide in Guyana. In 1975, the Peoples Temple helped elect George Moscone [muh-SKOH-nee] as this city's mayor, but Moscone was murdered in 1978 by former supervisor Dan White, who also killed gay activist Harvey Milk. A 1989 World Series game in this city was delayed by an earthquake, and this city suffered thousands of deaths in a 1906 earthquake. Name this city in northern California.

Answer: San Francisco, California

10. This author wrote about a company with the unwritten motto "No employee makes the same mistake twice. He is fired the first time." This author adapted some of his stories, including "Runaround" and "Catch That Rabbit", into a book about that company, which employs Dr. Calvin. A series of books by this author takes place during the Galactic Era, during which a group of people is creating *Encyclopedia Galactica*. Those books by this author feature the psycho-historian Hari Seldon. Name this author who created the Three Laws of Robotics for the book *I, Robot* and who also wrote the *Foundation* series.

Answer: Isaac Asimov

Check the score.

11. When preceded by "fixed", this word means an element that is unchanged under a transformation. When preceded by "accumulation", this word means an element that the Bolzano-Weierstrass [bohl-ZAH-noh VY-ur-shtrahss] theorem guarantees exists for bounded infinite sets of real numbers. When preceded by "stationary", this word means a place on a graph where the derivative is zero, and when preceded by "critical", it means a place where the derivative is zero or undefined. On its own, this word means a geometric concept, two of which are mentioned in Euclid's [YOOK-lid'z] first postulate. Give this word that, on its own, means a zero-dimensional geometric thing.

Answer: point(s) [accept or fixed point(s) or accumulation point(s) or stationary point(s) or critical point(s)]

12. Jean Sibelius's last piece of this type was called by Peter Franklin "the grandest celebration of C major there ever was". Sibelius debated whether that work was this type of piece, eventually deciding it was, even though it contains only one movement. Antonín Dvorák [d'-VOR-zhak] referred to the spiritual "Swing Low, Sweet Chariot" in a piece of this type that he completed in Spillville, Iowa, which he nicknamed "From the New World". Ludwig van Beethoven wrote works in this genre nicknamed "Choral", "Pastoral", and "Eroica". Name this type of musical piece Beethoven's most famous example of which starts with the "short-short-short-long" motif, his fifth.

Answer: symphony/ies

13. A thought experiment critical of this school of thought involves a monster imagined by Robert Nozick. One book important to this school of thought states “It is better to be a human dissatisfied than a pig satisfied.” Many of the ideas in this school were first described in the book *An Introduction to the Principles of Morals and Legislation*. This school of thought was started by Jeremy Bentham and further developed by John Stuart Mill. Name this school of thought based on the idea that “it is the greatest happiness of the greatest number that is the measure of right and wrong.”

Answer: utilitarianism [accept utilitarianist philosophy]

14. This poet wrote the line “Our birth is but a sleep and a forgetting.” That line is in a poem that in some editions begins by quoting this poet’s other work “My Heart Leaps Up”, which states “The child is father of the man.” In another poem by this writer, the speaker says “again I hear these waters” after returning to a place after five years. This poet addressed the last section of that poem to his sister, Dorothy. Yet another poem by this writer ends with the lines “And then my heart with pleasure fills, and dances with the daffodils.” Name this English poet who wrote “Ode: Intimations of Immortality”, “Tintern Abbey”, and “I Wandered Lonely as a Cloud”.

Answer: William Wordsworth

15. This book states “It is a mistake to make propaganda many-sided, like scientific instruction, for instance.” This book also said “It would never come into their heads to fabricate colossal untruths, and they would not believe that others could have the impudence to distort the truth so infamously.” That latter quote is in this book’s description of “the big lie”. When he started writing it, this book’s author was in prison due to a failed coup in Munich. This book’s second volume gave a favorable description of the National Socialist Movement. Name this anti-Semitic book from the 1920s that was edited by Rudolf Hess and written by Adolf Hitler.

Answer: *Mein Kampf* [accept *My Struggle* or *My Battle*]

Check the score.

16. This quantity combines the same way that inductance does for series and parallel circuits, meaning the reciprocal of the total of this quantity for a parallel circuit equals the sum of the reciprocals of the individual branches. This quantity is the reciprocal of conductance, and this quantity is also the real part of impedance. Objects that increase this quantity in a circuit have color bands around them to denote their strength and are represented on a circuit diagram by a zigzag line. This quantity equals electric potential difference divided by current. By definition, insulators have a very high value of this quantity. Name this quantity that is measured in ohms.

Answer: resistance [prompt on R ; prompt on impedance before it is mentioned; do not accept “resistivity”]

17. The northern part of this country contains the Rif mountains, and the far north of this country is at Cape Spartel. This country has the closest continental land to the Canary Islands, and this African country controls the water around those islands. The western end of the Atlas Mountains is near this country's city of Marrakesh. This country controls most of Western Sahara, which is directly south of it. Name this country that is northwest of Algeria and across the Strait of Gibraltar from Spain, whose capital is Rabat and whose most populous city is Casablanca.

Answer: (Kingdom of) Morocco [or al-Mamlakah al-Maghribiyah]

18. In one novel by this author, one of the characters who used to be Cardinal Spada's secretary suffers from an attack of catalepsy ["CAT"-uh-lep-see]. This author showed how two pieces of paper in that character's possession combine to describe where Spada's treasure can be found. In addition to writing that novel featuring Abbé Faria [ah-bay fah-ree-ah], this author wrote a novel in which Comte de Rochefort [kawmt duh rohsh-for] works for Cardinal Richelieu [ree-shell-yoo]. In that novel, this writer described d'Artagnan [dar-TAN-yun] eventually befriending Athos, Aramis, and Porthos. Name this French author of *The Count of Monte Cristo* and *The Three Musketeers*.

Answer: Alexandre Dumas [ah-lek-sawn-dr' doo-mah] (Davy de la Pailleterie) (père)



19. Large amounts of this substance were set on fire in 1989 by Richard Leakey and Kenyan President Daniel arap Moi. An initial worldwide ban on trading this substance was put in place in 1989, and over the next several years that ban was extended to prevent getting this substance from Botswana, South Africa, Zimbabwe, and Namibia. This substance was used to make buttons, billiard balls, and piano keys. Name this substance whose popularity during the 19th and 20th centuries caused a huge decline in African elephant populations.

Answer: ivory

20. One method of karyo-typing ["CARRY-oh-typing"] uses this element's nitrate as a stain. This element's oxide precipitates for aldehydes [AL-duh-"hides"] but usually not ketones ["key-tones"] in a Tollens' test. The Tollens' test uses this element's nitrate, which is also used to make photographic film. This element's iodide is used to seed clouds. An alloy combining a little bit of copper with this element is used to make eating utensils, but over time this element combines with hydrogen sulfide to make a black tarnish. Name this precious metal whose Latin name is "argentum" [ar-JEN-tum], which is why this element's symbol is Ag [spell].



Answer: silver [accept Ag before "argentum"]

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. An organization promoting music from this country became controversial during the 1880s when the composer of the *Istar* symphonic variations, who was from this country, allowed it to play music from other countries. That move by Vincent d'Indy upset the composer of the *Introduction and Rondo Capriccioso* [kah-preet-CHOH-zoh], who was also from this country. That organization later premiered *The Sorcerer's Apprentice* by this country's Paul Dukas [doo-kah] and *Prelude to the Afternoon of a Faun* by this country's Claude Debussy [deb-yoo-see]. Name this home of Camille Saint-Saëns [sain sawn], which is the country for which Hector Berlioz ["bear"-lee-ohz] composed the *Grande Messe des morts* [grahnd mess day mort].


Answer: France [or French Republic or République française]

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

-   ^{TB}22. If the determinant of a matrix is this type of number, then the transformation represented by the matrix must include a reflection. If all of the coefficients of a polynomial are positive, then all of its real roots must be this type of number. If a number greater than 1 is raised to the power of this type of number, the result is less than 1. If the derivative of a function is this type of number, then the function is decreasing. The tangent of angles in the second and fourth quadrants is this type of number. These numbers are additive inverses of positive numbers. Name these numbers that are less than zero.

Answer: negative numbers [accept negatives; accept less than 0 before “less” but do not accept “less than or equal to 0” or “non-positive”]

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

-  ^{TB}23. In one song on *The White Album* by the Beatles, a voice repeatedly says this number. Several composers, including Ludwig van Beethoven, died after writing this number of symphonies. A baseball batting order has this number of players. Name this highest single-digit number.

Answer: 9

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.