

# NEW TRIER SCOBOL SOLO 2011

## REPLACEMENT QUESTIONS

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*If you need to use a replacement question, use the attached sheet and its instructions to determine the correct one to read.*

1. Poincaré stresses ensure that electrons remain stable under this principle, and the Ehrenfest paradox attempted to show that Born rigidity was not compatible with it. When combined with Maxwell's Equations, this principle explains synchrotron light, while an important consequence of this concept created the twin paradox. This concept led to the formulation of Minkowski spacetime, and Lorentz transformations are used to calculate its effects of time dilation and length contraction. First described in the 1905 paper *On the electrodynamics of moving bodies*, name this theory which states that the speed of light is constant in all inertial frames of reference and that mass is a measure of energy, a key work of Albert Einstein.

ANSWER: special relativity [prompt on relativity, do not accept "general relativity"]

2. Diabetes mellitus can damage this micro-system in the retina, and an occlusion of this type often results in thrombosis. *Cooksonia* from the Silurian Period is the earliest known plant of this type, and the stems of dicots are distinguished from monocots by a ring arrangement of these bundles. This term is combined with *gastro-* to name the central cavity of cnidarians (nai-DAIR-ee-ins), and the tube feet of echinoderms (eh-KAI-no-durmz) are propelled by a water version of this system. Bryophytes like moss lack this tissue type, whose cambium produces xylem and phloem. Give this term that refers to the transport of liquids through living things, a term often prefixed with "cardio-" to describe the circulatory system.

ANSWER: vascular

3. Einstein's equation for Rayleigh scattering was once used to give an independent measurement for this constant, and a recent high precision measurement of this used silicon spheres. Jean Perrin performed a Brownian motion experiment that measured this constant, and it can be found by dividing Faraday's constant by the elementary charge. This constant is also equal to the ideal gas constant divided by Boltzmann's constant, and in stoichiometry problems it is used to convert particles to moles. Equivalent to the number of atoms in 12 grams of carbon-12, name this constant that is approximately equal to 6.02 times ten to the twenty-third.

ANSWER: Avogadro's number [or Avogadro's constant; accept 6.022... times 10 to the 23<sup>rd</sup> power inverse moles; accept one mole; prompt on mole]

4. An inactive one of these features is termed an aulacogen, and the largest on land is divided into Albertine and Gregory branches. The topography of these features generally consists of grabens and a notable one begins at the Afar Triangle. These form when magma heated by mantle decompression fill in cracks in the Earth's surface. The upper Rhine River, Lake Baikal, and Lake Tanganyika all lie within these features, which, like mid-ocean ridges, form by dip-slip faults at divergent zones. Including one that marks the boundary of the Nubian and Somali plates, name these geologic features that occur where tectonic plates are separating, such as east Africa's Great one.

ANSWER: rift valley [prompt on a partial answer]

5. One of these types of relationships uses different numbers from the Fibonacci sequence and is named after Catalan, though a special case of that relationship is named after Cassini. The relationship of this type named after Fibonacci and Brahmagupta shows the relationship between squares of magnitudes of vectors and is a special case of the type named after Lagrange. In addition to those examples, which are equations which are always true no matter what values the variables take on, another definition of this term is a function that returns its argument. This term also refers to the number zero with respect to addition. Give this term which also refers to a matrix that has the value one along its main diagonal and zero everywhere else.

ANSWER: identity/ies

6. Gerhard Gentzen showed that for each of these entities that uses the cut rule there is another one that does not use the cut rule. One form of these entities is classified as “by construction”, which generally is a subset of the existence type of these, which can be contrasted with the uniqueness type. Another existence type of this entity, which is used for limits, is the delta-epsilon type. A common type of this entity starts by establishing that a statement is true for a particular value and then establishing that whenever the statement is true for one value, then it is true for the next value, which is known as induction. These statements often end with the phrase “quod erat demonstrandum”, and to organize these entities, some students use two columns labeled Statements and Reasons, respectively. Name these entities which use deductive logic to show that their conclusions are true.

ANSWER: proofs

7. One of the early candidates in this election was former Delaware Governor Pierre du Pont IV, and one of the early poll leaders was Illinois Senator Paul Simon, who benefited when it was discovered that Donna Rice and Gary Hart were having an affair. Pat Robertson finished second in the Iowa Caucus on the Republican side, while Dick Gephardt won Iowa on the Democratic side. During the Vice Presidential debate for this election, Lloyd Bentsen directed the remark, “Senator, you’re no Jack Kennedy,” at his opponent, Dan Quayle. Give the year in which Massachusetts Governor Michael Dukakis lost to Reagan’s Vice President, George H. W. Bush.

ANSWER: United States presidential election of 1988

8. Legend has it that this man once said, “Judas Iscariot sold Christ for 30 pieces of silver; Your Highness is about to sell him for 30,000 ducats (DUCK-ets).” This person started the task he is famous for with the support of Gonzalez de Mendoza, and he eventually was replaced with Diego Deza. He oversaw a High Council with five members, including the advocatus fiscalis. Sanctioned by Pope Sixtus the Fourth, this person supported the issuance of the Alhambra Decree by Ferdinand and Isabella in 1492 which ordered the expulsion of Jews. Name this Inquisitor General of Spain who is believed to be responsible for burning two thousand Jews.

ANSWER: Tomás de Torquemada

9. This event led to the deaths of Hugh Wheeler and Henry Lawrence, and it involved the Bibighar Massacre, during which women and children were killed with meat cleavers. The Bibighar Massacre followed the Siege of Cawnpore. Lawrence was assisted by Henry Havelock and James Outram, and later Colin Campbell was able to capture Lucknow. One of the reasons often given for this rebellion is the Pattern 1853 Enfield Rifle ammunition, which supposedly contained beef and pork grease. Name this rebellion of Indian soldiers against the British in 1857.

ANSWER: Sepoy Rebellion [accept logical equivalents for “Rebellion”; accept answers logically equivalent to India’s First War of Independence before “Indian”; accept Indian Rebellion of 1857 or logical equivalents mentioning 1857; prompt on Great Rebellion]

10. This weapon's design was based on the ZK 476 and M23 and 25, which were Czech weapons, but it used a simpler manufacturing process based on the Madsen M50, a Danish weapon. First used during the Suez Crisis, it was very popular until it started being phased out in some countries to make way for the H&P MP7, though it is still manufactured. Containing a grip safety and a fire control selector, its name is the shortened version of the first name of its designer Major Gal from the Israeli Defense Forces. Name this submachine gun that has been exported throughout the world by Israel.

ANSWER: Uzi

11. This writer used a character he created in the short story "The Mold of Yancy" as the President in his novel *The Penultimate Truth*. Another novel by this author includes a description of Operation Dandelion, a fictional planned Nazi bombing of Japan after the Axis Powers win World War II. In another novel by this author, there is a television show called "Buster Friendly and his Friendly Friends" and a religion based upon the suffering of Wilbur Mercer. In that novel, John Isidore helps Pris Stratton trap Rick Deckard. In another story by this writer, an employee of the West Coast Emigration Bureau finds out that he is a secret agent who has been to Mars. Name this author of *The Man in the High Castle*, *Do Androids Dream of Electric Sheep?*, and "We Can Remember It for You Wholesale" who also wrote *Paycheck* and *Minority Report*.

ANSWER: Philip K(indred) Dick

12. None of the major characters, including the narrator of this novel, is ever named, though we know the narrator lives in the town of Working. This novel sees the narrator cut off from his wife in Leatherhead, and meets up with an artilleryman and curate, the latter of which is captured when he will not remain quiet while in hiding. The brother of this novel's narrator escapes from Europe when the *HMS Thunder Child* rams two of the enemy before sinking. The enemy in this novel deploy two weapons from their walking machines, one of which is called "Black Smoke". Identify this novel which deals with topics ranging from colonialism to Darwinism, and sees the enemy eventually succumb to "the humblest things that God, in his wisdom, has put upon this earth"; a work by H.G. Wells.

ANSWER: *The* War of the Worlds

13. In one story by this writer, a doctor is fired while on vacation with a formerly wealthy postmaster. In another story by this writer, the main character goes to a performance of "The Geisha" to run into Anna Von Diderits, whom he fell in love with during a vacation. The title character in a play by this writer is obsessed with a professor's wife and tries to shoot his brother-in-law after working for him for many years. Another play by this writer includes a boy nicknamed Simple Simon and takes place on the Ranevsky estate. Name this Russian writer of "Ward Six", "The Lady with the Dog", *Uncle Vanya*, and *The Cherry Orchard*.

ANSWER: Anton Chekhov

14. This writer called the sun a "busy old fool" in one work, and in another he requested, "Let me pour forth / My tears before thy face." Another work by this poet ends with the lines, "Thy firmness makes my circle just, And makes me end, where I begun." Another poem by this man addresses its subject with the line, "Thou art slave to fate, chance, kings, and desperate men." This person also wrote *Devotions upon Emergent Occasions*, which contains the line, "No man is an island." Name this metaphysical poet of "A Valediction: Forbidding Mourning" and a group of *Holy Sonnets*, one of which begins, "Death, be not proud."

ANSWER: John Donne

15. In one of this artist's early works he depicts a simple scene of a woman in a long white dress standing upon a wolf skin rug holding a flower pointed down. In addition to that painting, sometimes called *The White Girl*, he made decorations that were supposed to surround his work *The Princess from the Land of Porcelain* in the home of Frederick Leyland. Those decorations became known as *The Peacock Room*. His work showing Thomas Carlyle followed a work that includes a small image of his *Black Lion Wharf*. That work shows a seated woman wearing a lace cap and black dress facing left. Name this painter of *Arrangement in Grey and Black: The Artist's Mother*.

ANSWER: James Abbott McNeill Whistler

16. This person wrote the incidental music for his own play *Medusa's Trap*. Some of his music had unusual musical instructions written in red ink such as "Light as an egg" or "Here comes the lantern", and there is some debate over whether or not his piece *Vexations* is supposed to be played eight hundred forty times in succession. This composer titled several of his pieces *Ogives*, a term otherwise only used in architecture, and *Gnossiennes*, a term he made up. One of his goals was to write what he called "furniture music", which is meant to be played in the background, and his best known works are three piano pieces published in 1888 that were orchestrated by his close friend Claude Debussy. Name this composer of *Gymnopédies*.

ANSWER: Erik Satie

17. This style of architecture is exemplified by the Choragic Monument of Lysicrates in Athens and the Temple of Bacchus at Baalbek in modern-day Lebanon, and many buildings in this style have a fleuron on each side of an abacus. An example of this style in Rome is the Column of Phocas, and, like the Composite order, this style often used acanthus leaves in its capitals. It also uses flat roofs and fluted columns. Name this classical order which chronologically came after Doric and Ionic.

ANSWER: Corinthian order

18. This council was never officially ended, as it was forcibly suspended when France invaded. *Dei Filius* had to be changed to include the word "apostolic" to avoid being seen as deferring to Anglicanism. The most notable outcome of this council was to enshrine an already established policy into dogma, by restricting it to matters *ex cathedra*, just as this council's leader, Pius IX, had done in 1854. This council was the twentieth to be convened, but the first in some three hundred years since the Council of Trent. Identify this 1869 to 1870 ecumenical council, the first such council to be held at St. Peter's Basilica.

ANSWER: First Vatican Council [or Vatican I; prompt on Vatican Council]

19. This writer supported the work of John Locke and discussed what it would be like for a blind person to gain sight in *Letter on the Blind*. This person also wrote a satirical dialogue between Moi and Lui titled *Rameau's Nephew*. This person worked closely with mathematician Jean d'Alembert on his most famous project, which was based on an earlier work by Ephraim Chambers and sponsored by André Le Breton and later Catherine the Great. Name this Frenchman who in the 1750s and 60s tried to bring together every branch of human knowledge into a twenty-seven volume work, the Encyclopedia.

ANSWER: Denis Diderot

**20.** On Mars, this entity is defined by the crater Airy-0 (airy zero); on Venus, it is defined by the central peak in the crater Ariadne. Its current designation on Earth dates back to 1884 when President Arthur assembled 41 delegates from 25 nations to establish a worldwide standard. In the Northern Hemisphere, ground access to this location exists in the UK, France, Spain, Algeria, Mali, Burkina Faso, Togo, and Ghana, but there is none in the Southern Hemisphere other than Antarctica. In conjunction with the International Date Line, this line divides the earth into the Eastern and Western hemispheres. Name this line that passes through the Royal Observatory in Greenwich, England.

ANSWER: **Prime Meridian** [or **International Meridian**; accept **Greenwich Meridian** before “Greenwich”; prompt on **meridian**]