New Trier Scobol Solo 2012

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. One method to measure this quantity using two different meters is known as four-terminal sensing. The alternating current analogue of this quantity depends on phase and is represented by a capital Z; that quantity, generally expressed using complex numbers, is impedance. In addition to being dependent on the type of material, this quantity varies directly with the length and inversely with the cross-sectional area of the material. The reciprocal of this quantity is measured in siemens and known as conductance. Give this quantity equal to voltage divided by current and typically measured in ohms.
ANSWER: electrical **resistance** [prompt on **impedance** before it is mentioned]

2. Coming about 100 years after the Maunder Minimum, the 1795 to 1820 period of low solar activity was named for this man. He wrote the first published table of atomic weights, which listed only six elements. In *Meteorological Observations and Essays*, he proposed that in a mixture of gases, each gas would exist independently with respect to the others. That proposition supported the idea that the pressure exerted by a mixture of gases in a fixed volume is equal to the sum of the pressures exerted by each individual gas, his law of partial pressures. Name the English scientist whose law of multiple proportions formed the basis of his atomic theory.
ANSWER: John **Dalton**

3. A part of this tissue layer turns into the otic [OH-tik] vesicle and otic placode, which in turn form the sacculus and cochlea [KOHK-lee-uh] in the inner ear. One part of this layer forms the lacrimal gland and optic diverticulum, while another part forms the lens, making this layer primarily responsible for forming the eye. The first of the three germ cell layers to develop in an embryo, it is responsible for the integumentary system. Two parts of this are the neural crest and neural tube, which form most of the nervous system. Name this most distal layer in developing embryos, located outside the mesoderm and endoderm.
ANSWER: **ectoderm**

4. A two billion-dollar project to use this source of power is being built at Ivanpah in eastern California, and the largest of several projects in Gujarat, India is at Charanka. A dish/Stirling system or parabolic trough is often used to harness it. Increased efficiency comes from multi-junction parts, and this is harnessed by crystal layers of doped semiconductors in an electric field under a cover plate. Several recent projects have combined this power source with thermoelectric. Name this power source utilizing photovoltaic cells often used by space stations because they are not impacted by cloud cover.
ANSWER: **solar** power [accept **sun**; prompt on **light** or **photon**]

5. Each of these entities has a product divisible by 60, and primitive examples contain exactly one multiple of five. One method to generate them involves finding numbers whose product is half of a perfect square, and a method named for Euclid uses the difference of two squares and the sum of the same two squares. These sets always have an even sum, and their existence makes it necessary to include the requirement that n be greater than two in Fermat's [fair-mah'z] last theorem. In any one of these sets all three numbers must be integers, even though the equation they satisfy often gives an irrational third value when the first two are integers. Name these sets of integers that can be the side lengths of a right triangle.
ANSWER: **Pythagorean triple**(t)s

6. An equation equivalent to one of these equations but with only three terms can be expressed using the Bring–Jerrard normal form, which uses the Tschirnhaus ["CHURN-house"] transformation. These are the simplest equations addressed by the Abel–Ruffini [AH-bul roo-FEE-nee] theorem, also known as Abel's impossibility theorem, and they are also the simplest equations for which Galois [gal-wah] theory can be used on a case-by-case basis to determine whether or not they are solvable. The graph of one of these polynomials can have at most four critical points, two local maximums, and two local minimums, and when simplified these equations can have at most six terms. Name these polynomials with degree five.
ANSWER: **quintic** polynomials [or **quintic** equations; accept **fifth-degree** polynomials or **degree-five** polynomials before "five"]

7. This president allowed the Wilson–Gorman Tariff to go into effect, though his critics often pointed to his dislike of protective tariffs. This president's Secretary of State Richard Olney insisted on arbitration to solve a border dispute between British Guiana and Venezuela. He was against the annexation of Hawaii, but after the Morgan Report he gave up hope of reinstating Queen Lili'uokalani. He also broke up the Pullman Strike and was in office during the Haymarket Riot. This only Democratic President between Andrew Johnson and Woodrow Wilson was defeated in the Election of 1888 by Benjamin Harrison. Name this only American president to serve nonconsecutive terms.
ANSWER: (Stephen) Grover **Cleveland**

8. Early in his career, this writer completed a translation of Newton's *Opticks*. Georges Danton [zhorzh dan-taw] persuaded this man to join a resistance group known as the Cordeliers [kor-dil-yay]. During this man's exile to London, he wrote a powerful denunciation of Finance Minister Jacques Necker. This man started a publication titled *Friend of the People*, and he feuded with the Girondins [zhih-rawn-deen] following the execution of Louis XVI [16]. This man was murdered in his bathtub by Charlotte Corday, as depicted in a painting by Jacques-Louis David [zhahk loo-ee dah-veed]. Name this politician and journalist during the French Revolution.
ANSWER: Jean-Paul **Marat**

9. This country expelled the Seljuk Turks in 1121 at the Battle of Didgori, increasing the power of David the Builder from its Bagrationi dynasty. During World War I, it tried to gain the Lori Province, which is now controlled by Armenia. One of Lenin's last writings criticized Stalin's handling of this Soviet republic after Budu Mdivani and Filipp Makharadze had their power reduced. After the dissolution of the Soviet Union, it was headed by former Soviet Minister of Foreign Affairs Eduard Shevardnadze, who was deposed in the Rose Revolution. It is now led by Mikheil Saakashvili, who got into a brief war with Russia in 2008 over South Ossetia. Name this country that several times has lost control of its capital of Tbilisi.
ANSWER: **Georgia** [or **Sakartvelo**]

10. This site was occupied by the Sicarii after they ejected a Roman garrison. Lucius Flavius Silva led the Tenth Legion to lay siege to this site, which had originally been built up as a compound for Herod the Great. As part of the siege, Silva ordered the construction of a ramp up the mountain to this site, where today Israeli officers go to take an oath that "this site" shall never fall again. Identify this mountaintop site overlooking the Dead Sea where rebellious Jews committed mass suicide in 72 CE to prevent capture by the Romans at the end of the First Roman–Jewish War.
ANSWER: **Masada**

11. A salesman in this novel asks "What color is lightning? Where does thunder go when it dies?". It also contains a sign that reads "Closed on account of illness" on the barber shop that once belonged to Mr. Crosetti. The seventh grade teacher Miss Foley is visited at home by Mr. Cooger, who pretends to be her lost nephew. This story is about two boys, one born a minute before midnight and the other born a minute after midnight, who are now thirteen years old, and their experience with Cooger & Dark's Pandemonium Shadow Show. Those boys, Jim Nightshade and William Halloway, live in the same town where the story *Dandelion Wine* is set. Name this novel about a traveling carnival, written by Ray Bradbury.
ANSWER: *Something Wicked This Way Comes*

12. This author wrote about a painter who loses his eyesight named Dick Heldar. This author of *The Light that Failed* wrote a work whose title character tries to find the River of the Arrow and takes part in The Great Game, a conflict between the Russian Empire and British Empire. He wrote about the Biblical Solomon in his story *The Butterfly that Stamped*, which appears in a collection purporting to explain certain natural phenomena to children, such as *How the Rhinoceros Got His Skin*. Another collection includes characters such as Hathi, Kaa, King Louie, Shere Khan, and a mongoose named Rikki Tikki Tavi. Name this author who wrote *Kim*, *Just So Stories*, and *The Jungle Book*.
ANSWER: (Joseph) Rudyard **Kipling**

13. In one work by this writer, a character writes about Sapo throwing a cane through a window. Sapo later transforms into Macmann, who—unlike Sapo—is similar to the character who writes his story. That work is part of a trilogy that ends with *The Unnamable*. In another work by this writer, Nagg and Nell, the parents of Hamm, are stuck in ash bins. In another work, a character claims that he minds goats and that his brother who minds sheep gets beaten. The two main characters in that work are nicknamed Didi and Gogo by a character who owns the slave Lucky, and one of them often says "Nothing to be done." Name this Irish playwright of *Malone Dies*, *Endgame*, and *Waiting for Godot* ["GOD"-oh].
ANSWER: Samuel (Barclay) **Beckett**

14. This poem is about objects whose "monody compels" "a world of solemn thought". At the beginning of this work, "their melody foretells" "a world of merriment", and they produce a "tintinnabulation". In the second stanza, they are used in a wedding and heard by a turtle dove, while in the third stanza they are used to tell a "tale of terror" during a fire. They are described as "silver", "golden", "brazen", and "iron" in this poem's four stanzas, respectively, each of which names them repeatedly near its end. Name this poem about "the jingling and the tinkling" objects, written by Edgar Allan Poe.
ANSWER: "The **Bells**"

15. In the upper right corner of this work, a man with orange-striped clothes is putting his hand around a woman who is adjusting her hat and wearing black gloves. A man in brown facing away from the painting is talking to a woman wearing orange and white and leaning on a railing. A table near the foreground has several bottles of wine on it, and a woman in a blue dress is admiring a man straddling a backwards chair. That man, a painter who did not create this work, is Gustave Caillebotte, and this painting also features Aline Charigot [shah-ree-goh], this work's painter's future wife, holding a dog. Name this painting in which the titular group shares a meal, a work by Renoir [ren-war].
ANSWER: *Luncheon of the Boating Party* [or Le *déjeuner des canotiers*]

16. One of these pieces has a second movement that is *affettuoso* and features the harpsichord as part of its *concertino* and *ripieno*. Another one of these has a second movement consisting of two chords, which is interpreted to mean that the musicians can improvise or place other music in that spot. These pieces were originally sent to a person who did not have musicians who could play them well, so they were ignored for over one hundred years. The first one has four movements, while the other five each have three movements. Name these pieces written for Margrave Christian Ludwig by Johann Sebastian Bach.
ANSWER: *Brandenburg* **Concertos** [or *Six **Concerts à plusieurs instruments***; prompt on partial answers]

17. This man's sons were the dedicatees of the Maison Carrée temple in Nimes [neem]. One structure named for this man was the first triple arch in the Roman Empire. While riding a dolphin, Cupid hangs on to this man's tunic in a statue of this man found at Prima Porta. This leader was the dedicatee of Vitruvius's *De architectura*. His most famous commission celebrated his victories in Hispania and Gaul, and includes a western façade that features a history of Rome; that structure is known as Ara Pacis. Name this leader who established the Pax Romana with his military success as Rome's first emperor.
ANSWER: (Gaius Julius) Caesar **Augustus** [or Gaius Julius Caesar **Octavian**us]

18. Hermes took this figure to dwell in Nysa after Zeus turned this figure into a kid. This god built pillars in India after he was driven mad by Hera and he began wandering through Asia. A group of pirates tried to sell him as a slave an Asia; this god then turned them into dolphins. This child of Semele [SEH-meh-lee] was born when he was removed from Zeus' thigh. The followers of this god were known as Maenads, and he caused the death of Pentheus by causing the women of Thebes to enter a drunken frenzy. Identify this Greek god who discovered the vine, and was the god of partying and drunkenness.
ANSWER: **Dionysus** [or **Diwonusos** or **Diwonysos** or **Dionusos** or **Zonnusos** or **Zonnysos**; accept **Bacchus**]

19. This person wrote that history travels from Asia to Europe, and that freedom spreads from one to some to all, in *Lectures on the Philosophy of History*. After he died, a group of writers associated with him—such as Bruno Bauer and David Strauss—argued that political laws would weaken because they were based on weak religious justifications. One of his works builds on the work of Immanuel Kant on transcendental logic and has books devoted to being, essence, and concept; each of those three books is divided into three sections, each containing three chapters. In addition to that work, *Science of Logic*, his work addressing shapes of consciousness was *The Phenomenology of Spirit*. Name this writer who wrote about the process of thesis, antithesis, and synthesis, which is known as his dialectic.
ANSWER: Georg [GAY-awrk] Wilhelm Friedrich **Hegel**

20. This peninsula has hot springs at its towns of Esso and Paratunka. It is west of the Commander Islands and north of Paramushir Island, and its weather is impacted by the Oyashio Current. Its northern Koryak region was the site of a series of 2006 earthquakes near its Korfa Bay. A 2007 landslide on this peninsula did severe damage to its Valley of Geysers, and it has several volcanoes in its Sredinny Range, including Kronotsky. The Kuril Islands appear to extend southward from it, and it separates the Pacific Ocean from the Sea of Okhotsk. Name this large peninsula southwest of the Bering Sea in eastern Russia.
ANSWER: **Kamchatka** Peninsula [or **Poluostrov Kamchatka**]

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Round-Category Mappings

Round	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	16	7	12	20	9	19	17	6	14	2	10	13	3	4	18	1	11	5	8	15
2	17	7	1	14	15	6	19	2	8	11	20	3	12	9	16	13	5	10	18	4
3	5	8	18	4	14	20	7	16	2	13	19	17	11	9	6	3	15	12	10	1
4	19	4	7	14	15	3	13	16	10	5	11	18	1	9	12	20	17	6	8	2
5	1	12	8	6	19	13	2	20	15	7	5	11	10	3	17	14	4	9	16	18
6	19	7	3	14	6	12	10	15	2	18	20	5	11	8	1	17	9	4	16	13
7	18	13	1	9	15	11	10	3	16	5	14	7	20	4	8	6	17	2	12	19
8	13	5	10	17	2	12	18	7	16	1	20	4	19	8	11	3	15	14	6	9
9	9	14	3	19	18	7	6	11	2	15	13	17	4	20	10	5	1	8	16	12
10	14	3	8	19	16	13	10	20	4	11	2	9	6	17	18	12	15	7	5	1
11	7	1	17	6	11	16	8	19	3	13	20	2	10	15	18	4	12	9	14	5
12	5	14	1	20	10	16	19	8	13	9	15	4	3	18	6	11	17	7	2	12
13	13	1	10	6	17	19	7	3	12	20	14	4	8	15	9	5	11	16	2	18
14	15	18	1	8	11	9	16	6	13	2	14	10	4	19	12	17	3	20	5	7

To use a replacement question, choose the row corresponding to the round number containing the question you wish to replace.

Then go to the column corresponding to the number of the question you wish to replace.

The number in the cell at the intersection of your chosen row and column is the replacement number you should use.