

SCOP Novice 4 | Round 11

Brad Fischer • Jonah Greenthal • Rebecca Kobernat • Sabrina Lato • Greg Peterson • Jay Shirodkar
Kristin A. Strey • Mark Taylor • Brittany Trang • Tristan Willey • Michael H. Wong

Tossups

1. The distance between a hydrogen nucleus and its ground-state electron is called this man's "radius". He explained Balmer's spectral lines by positing a model in which energy emitted is proportional to the inverse of an integer (*) n squared, and in which electrons orbit the nucleus in quantized distances. For 10 points, name this scientist who developed a quantized planetary model of the atom, and who was from Denmark.

Answer: Niels Bohr (accept Bohr radius)

2. This event caused the formation of the "Elephant Foot," from cooled black corium. A concrete sarcophagus was built over Unit 4, the site of this event, to contain cesium-137 and other contaminants. It took 40 hours after this event to begin (*) evacuating the city of Pripyat, Ukraine, which remains in an exclusion zone 27 years later. Radioactivity spread throughout Europe and Asia as a result of, for 10 points, what 1986 Soviet nuclear disaster?

Answer: Chernobyl nuclear reactor explosion (accept equivalents, like Chernobyl accident)

3. In one play written in this country, The Bride runs off with Leonardo before he and The Groom kill each other. *Blood Wedding* was written in this country, where drama earlier flourished during the (*) Habsburg-era "Golden Century." In a Hemingway novel, Lady Brett Ashley romances Jake Barnes and Romero in this country's city of Pamplona, where they watch the Running of the Bulls. For 10 points, name this European country home to Federico Garcia Lorca.

Answer: Kingdom of Spain (accept Reino de España)

4. Parasitic members of this phylum cause river blindness and elephantiasis. This phylum exhibits a radially symmetric head but a bilaterally symmetric body. Trichinosis [trih-kih-NOH-siss] is caused by a member of this phylum whose members are not (*) segmented and have a two-ended digestive system without a stomach. This pseudocoelomate ["pseudo"-SEE-lum-ayt] phylum includes a model organism studied by Sydney Brenner, called *C. elegans*. For 10 points, name this phylum that includes roundworms.

Answer: Nematoda (accept nematodes; accept roundworms before mention; prompt on worms)

5. This artist depicted a red-haired woman bending around a man's neck in *Vampire*. His *Frieze of Life* series includes a painting of his sister sitting in a wicker chair while surrounded by black-clad family members in (*) *Death in the Sick Room*. In his most famous work, two dark figures walk behind a person standing on a bridge under a red sky, who clutches his head while performing the title action. For 10 points, identify this Norwegian artist of *The Scream*.

Answer: Edvard Munch [MOONK]

6. One deity of these natural entities pursued the nymph Arethusa. In one myth, two of these called Alpheus and Peneus were used to help Hercules complete his fifth labor with the Augean (*) stables. One of these consisting of fire was called Phlegethon. Drinking from one of these caused forgetfulness, and Charon ferried people across one of these entities. The Lethe and Styx are examples of, for 10 points, what type of geographic feature with running water?

Answer: rivers

7. Early participants in this event traveled south to Coloma using the Siskiyou Trail. This event began at the South Fork of the American River at a water wheel built by James Marshall. Its participants used equipment like (*) long-toms, cradles, and pans and faced legal issues like claim jumping. A discovery at Sutter's Mill in 1848 began, for 10 points, what mining boom that helped cities like San Francisco grow?

Answer: California Gold Rush (accept clear knowledge equivalents for "gold rush;" prompt on partial answer)

8. An algorithm named for Euclid can be used to find the GCD, or to perform this operation on integers. Subtraction of two logarithms is equivalent to first performing this operation on the two arguments of the logarithms. A (*) "synthetic" version of this operation can be used on polynomials, but this operation is not defined if the second operand is zero. Its result is called a quotient. For 10 points, name this operation, the inverse of multiplication.

Answer: division (accept long division; accept answers mentioning greatest common denominator or greatest common factor or GCD or GCF or highest common denominator or highest common factor before "GCD")

9. This man shot a 66 in the final round at Muirfield to win a 2013 major tournament. After seeing his daughter's graduation in California the night before a 7 AM tee time, this man lost to Justin (*) Rose for his sixth runner-up finish at a US Open. He was known as the "best player without a major" before he won the 2004 Masters. For 10 points, name this left-handed winner of golf's 2013 British Open.

Answer: Phil Mickelson

10. The protagonist of one of this author's novels mistakes Mr. Bodwin for Schoolteacher and is separated from Denver by the spirit of her dead daughter. Another novel by this woman sees Pecola driven insane as she idolizes (*) Shirley Temple. Sethe cuts her daughter's throat to save her from slavery in a work by this author; that daughter returns as the title woman, "Beloved." For 10 points, name this American author of *The Bluest Eye*.

Answer: Toni Morrison (accept Chloe Anthony Wofford or Chloe Ardelia Wofford)

11. Water can enter these objects via moulins, and water underneath them can cause basal sliding. Erosion of these objects creates corries or cirques, which, when filled with water, become tarns. When these objects move, they pick up till, which settles into hills called (*) moraines. Calving of these objects can create icebergs. Most of the Earth's freshwater is frozen in, for 10 points, what large land-based bodies of ice?

Answer: glaciers

12. Protests along this country's Epifanio de los Santos Avenue fueled the People Power Revolution in 1986, after which Corazon Aquino was named President and Ferdinand Marcos was exiled to Hawaii. In 1942, (*) Douglas MacArthur said "I shall return" as he fled to Australia from this modern nation, then a US commonwealth, shortly before the Bataan Death March. For 10 points, name this Pacific island nation whose capital is Manila.

Answer: Republic of the Philippines

13. This novel's protagonist is briefly employed by the undertaker, Mr. Sowerberry. In this novel, Old Sally takes a ring and locket, which Mr. Monks throws into a river, and a kind prostitute, Nancy, is brutally murdered by (*) Bill Sikes. This work's namesake protagonist joins a pickpocket gang that includes the Artful Dodger and Fagin. For 10 points, identify this Charles Dickens novel about a title orphan who asks "Please, sir, I want some more."

Answer: Oliver Twist; or, The Parish Boy's Progress

14. The Gathas are hymns written by the founder of this religion. A guide against evil spirits of this religion is the Vendidad, which is interpreted in the Zend along with other sections of the Avesta, this religion's most sacred text. Adherents of this religion worship in (*) fire temples. The conflict between Angra Mainyu and Ahura Mazda is central to, for 10 points, what ancient Persian religion founded by the subject of Nietzsche's *Also Sprach Zarathustra*?

Answer: Zoroastrianism (accept Mazdaism before "Ahura Mazda" is read)

15. This country's Amalienborg Palace is a winter home for its royal family. Part of this country's capital is on the island of Amager, where the Oresund Bridge connects it to Malmo, though most of the capital, including (*) Tivoli Gardens, lies on the island of Zealand. The Jutland peninsula is home to, for 10 points, what European country north of Germany with capital Copenhagen?

Answer: Kingdom of Denmark

16. One character from this work straps a policeman to a bear and throws him into a river. Hélène Kuragin [eh-LEHN koo-RAH-gihn] is abandoned by that character after he converts to Freemasonry and decides he must kill (*) Napoleon. In this work, Prince Andrei's engagement to Natasha is ended before she marries Count Pierre Bezukhov [pee-YAIR beh-ZOOK-huhv]. For 10 points, name this work focusing on the Bolkonskys and Rostovs during Napoleon's invasion of Russia, a very long novel by Leo Tolstoy.

Answer: War and Peace (or Voyna i mir)

17. This piece is to be played *leggiero* at a *molto vivace tempo*, and it opens with a right hand trill into the running eighth-note melody four measures before the left hand begins playing quarter notes. This work in (*) three-four time was inspired by the sight of a dog chasing its tail, and its nickname means "small," rather than its intended duration. For 10 points, name this work by Frederic Chopin, a short waltz for solo piano that takes more than 60 seconds to perform.

Answer: Minute Waltz

18. This man argued that "existence precedes essence" in a work that argued that his philosophy "is a Humanism." In another work, he described people who define themselves by their class as living in "bad faith." This lover of (*) Simone de Beauvoir turned down the 1964 Nobel in Literature, earned for novels like *Nausea* and plays like *No Exit*. For 10 points, name this French existentialist, the author of *Being and Nothingness*.

Answer: Jean-Paul Sartre

19. A house on this city's Osage Avenue was bombed by its own police in 1985. Both Boston and this city benefitted from a two-century-long experiment in compound interest by Ben Franklin. The First and Second (*) Banks of the United States were located in this city, whose Carpenters' Hall and Independence Hall hosted the two Continental Congresses. For 10 points, name this former national capital, the largest city in Pennsylvania.

Answer: Philadelphia

20. A particle and its antiparticle are identical except for having opposite values of this quantity. Robert Millikan used drops of oil to measure the smallest isolatable value of it. The force between two objects with this property, like mass, is (*) inversely proportional to the square of the distance between them, according to Coulomb's law. Electric current is the movement of this. For 10 points, name this electric quantity that is positive for protons.

Answer: electric charge (or electrostatic charge)

Bonuses

1. This man from Seville begins an affair with the married Donna Julia, who is sent to a nunnery after they are discovered by Julia's husband. For 10 points each,

[10] Name this legendary womanizer, the title character of a satirical poem in 17 cantos.

Answer: Don Juan [JOO-ahn, but accept pronunciations like "wahn"]

[10] This author of *Don Juan* and "She Walks in Beauty" wrote "The Assyrian came down like a wolf on the fold" in "The Destruction of Sennacherib." He died after fighting in the Greek War of Independence.

Answer: Lord (George Gordon) Byron

[10] Due to the scandalous nature of his poetry, Lord Byron was denied a memorial in this church's Poet's Corner for nearly 150 years. This church is the site of British coronations.

Answer: Westminster Abbey

2. This index lost more than 10% of its value on three different days in October 1929; each of those days was described as "Black." For 10 points each,

[10] Name this stock index, which has listed 30 companies since a 1928 expansion. It reached a record-high of over 15,000 in 2013, and its 1929 crash helped start the Great Depression.

Answer: Dow Jones Industrial Average

[10] One company added to the Dow Jones index in 1928 was the New Jersey successor company of this petroleum monopoly, chaired by John D. Rockefeller until its 1911 breakup.

Answer: Standard Oil Company (of New Jersey)

[10] In this stock-buying practice, money is borrowed to purchase stocks. If the stock price fell before you repaid your loan, your lender placed a "call" on your stock, selling it to cover the loan. This drove the stock price down, causing others who used this method to suffer the same fate.

Answer: buying on margin (accept word forms and phrasing)

3. This moon's core of liquid iron makes it the only natural satellite in the solar system to have a magnetosphere. For 10 points each,

[10] Name this largest moon in the solar system. It, along with Io, Europa, and Callisto, was discovered orbiting Jupiter in 1610.

Answer: Ganymede

[10] Ganymede was one of four Jovian moons discovered by, and now often named for, this Italian astronomer. The discovery occurred after he improved on his version of the refracting telescope.

Answer: Galileo Galilei (accept either/both name(s))

[10] In 1979, Ganymede was shown to be larger than Saturn's moon, Titan, by the two probes in this program. The "Pale Blue Dot" picture of Earth from billions of miles away was taken by this project's 1 probe in 1990.

Answer: Voyager (1 and/or 2)

4. This character was based on “Raumfahrer Rolf,” an explorer with a Charlie Chaplin mustache who travels through space in a dirigible. For 10 points each,

[10] Name this “interplanetary explorer extraordinaire,” an alliteration-loving hero who wields a Death Ray Blaster. He fights the Space Blob, who’s actually his teacher Miss Wormwood.

Answer: Spaceman Spiff

[10] Spaceman Spiff is an alter ego of this blond six-year-old loudmouth, who starred in a Bill Watterson comic strip with his stuffed tiger Hobbes.

Answer: Calvin

[10] Another of Calvin’s alter egos, Tracer Bullet, has this occupation. Other characters with this job include Dirk Gently, Nero Wolfe, and the protagonist of *The Maltese Falcon*, Sam Spade.

Answer: private detective (accept private eye, P. I., or private investigator; do not accept or prompt “policeman”)

5. For 10 points each, give the following about the Nazi Party.

[10] This leader of the Third Reich led Germany into World War II. He was targeted for assassination in Operation Valkyrie, and he committed suicide with Eva Braun in 1945.

Answer: Adolf Hitler

[10] Joseph Goebbels served as minister of this form of often biased communication meant to further a cause. Examples of this type of communication in Nazi Germany include the film *Triumph of the Will* and numerous posters and pamphlets.

Answer: propaganda

[10] This commander of the SS established and ran the concentration camps. He was expelled from the Nazi Party by Hitler for trying to negotiate a peace settlement with the western Allies.

Answer: Heinrich Himmler

6. This playwright’s *The Stone Guest* was based on *Don Giovanni* [jee-oh-VAH-nee]. For 10 points each:

[10] Name this Russian poet and playwright of *Boris Godunov*, *Eugene Onegin* [ohn-YAY-gihn] and a story in which Hermann is betrayed by the appearance of the title card, “The Queen of Spades.”

Answer: Aleksandr Sergeyevich Pushkin

[10] Pushkin died in one of these events after he offended Georges d'Anthès [zhorzh dahn-TEH]. Pushkin, who was sensitive about his honor and likely to offend people, fought in almost thirty of these events.

Answer: a pistol duel (prompt on anything that involves him being shot)

[10] Pushkin’s *Little Tragedies* include a play in which Mozart is poisoned and killed by this jealous rival composer.

Answer: Antonio Salieri

7. For 10 points each, give the following about the writings of Thomas Hobbes.

[10] Hobbes is best known for this work, named for a biblical monster, that advocates commonwealths be ruled by absolute sovereigns -- that is, by monarchs -- who could prevent mankind from falling into a war of all against all.

Answer: Leviathan

[10] Hobbes initially wrote *Leviathan* in English, but soon translated it into this language, where the phrase "war of all against all" became "bellum omnium contra omnes."

Answer: Latin

[10] Hobbes also translated this ancient Greek author's *History of the Peloponnesian War* into English.

Answer: Thucydides

8. At equilibrium, this quantity is at a maximum. For 10 points each,

[10] Name this measure of disorder that, according to the second law of thermodynamics, can never decrease without external work.

Answer: entropy (do not accept "enthalpy")

[10] Entropy, enthalpy and temperature factor into calculations for this quantity in order to determine whether a reaction is spontaneous.

Answer: Gibbs free energy (accept Gibbs function; prompt on free energy or G)

[10] The Gibbs free energy is the greatest amount of work that is observed in this type of system. A paradox named for Gibbs states that entropy may decrease in this type of system.

Answer: closed system

9. This genre of music often repetitively uses small motifs, as seen in one work with the repeated chanting of numbers. For 10 points each,

[10] Name this genre of music, popularized in the 20th century by composers like John Adams and Philip Glass.

Answer: minimalism (accept word forms)

[10] One of minimalism's inspirations is John Cage's *Four Minutes Thirty-Three Seconds*, which consists entirely of this musical concept.

Answer: silence (or tacet; accept equivalents that describe a lack of performed sound, like "resting"; accept on "ambient sound" and equivalents that describe non-performed sound)

[10] One of the most recognizable minimalist works is a Philip Glass opera about this 20th century scientist *on the Beach*; that opera includes five "Knee Plays" separating its plotless acts.

Answer: Albert Einstein (accept Einstein on the Beach)

10. This Union general used scorched earth tactics, such as uprooting railroad ties and twisting them around trees, in his most notable campaign. For 10 points each,

[10] Name this leader of the 1864 "March to the Sea."

Answer: William Tecumseh Sherman

[10] Sherman's March to the Sea followed a campaign that caused the firing of Joseph Johnston and the capture of this largest city in Georgia.

Answer: Atlanta

[10] At the end of the March to the Sea, Sherman presented Lincoln with this Georgian city, along with its stores of guns, ammunition, and cotton, as a "Christmas gift."

Answer: Savannah

11. Nathan was an advisor to this man and told him to "do all that [was] in [his] heart." For 10 points each,

[10] Name this man who, despite Nathan's encouragement, was forbidden by God to build a temple because of his warlike ways.

Answer: King David

[10] Among David's first acts of war was the slaying of this enormous Philistine, whom David killed armed only with a slingshot.

Answer: Goliath of Gath

[10] The temple was eventually built by Solomon, David's son by this woman. David sent her husband, Uriah, to be killed in battle so he could marry this woman.

Answer: Bathsheba

12. Einstein's explanation of this phenomenon helped spark the development of quantum mechanics. For 10 points each,

[10] Name this phenomenon in which shining light on a surface causes it to emit electrons.

Answer: photoelectric effect

[10] In his explanation, Einstein proposed that light consist of small quanta of energy. Those quanta are these massless elementary particles.

Answer: photons

[10] The energy of a photon equals Planck's constant times this quantity. In general, this quantity is the reciprocal of the period and is measured in hertz.

Answer: frequency (prompt on f)

13. A small boy waves two pistols in this painting, which focuses on the title bare-breasted woman carrying a French flag standing atop a pile of bodies. For 10 points each,
[10] Name this painting commemorating the July Revolution. The man in the top hat to the left is said to be a portrait of the artist.

Answer: Liberty Leading the People (or La Liberté guidant le peuple)

[10] This French artist of *Death of Sardanapalus* and *Massacre at Chios* [kee-ohss] painted *Liberty Leading the People*.

Answer: Eugene Delacroix

[10] *Massacre at Chios* was initially disliked for its unheroic treatment of the victims, but it is now proudly displayed in this Parisian art museum, which also exhibits the *Mona Lisa*.

Answer: The Louvre

14. One chapter of this novel, narrated by Vardaman, consists solely of the sentence “My mother is a fish.” For 10 points each,

[10] Identify this novel, in which Darl Bundren and his family members travel to Jefferson, Mississippi to bury their mother, Addie.

Answer: As I Lay Dying

[10] *As I Lay Dying* is a work by this Southern Gothic author, whose other works include “A Rose for Emily” and *The Sound and the Fury*.

Answer: William Cuthbert Faulkner

[10] Faulkner set *As I Lay Dying* and many of his other works in this fictional Mississippi county, whose county seat is Jefferson.

Answer: Yoknapatawpha [yawk-nah-pah-taw-fah] County

15. This man was captured at Cajamarca by conquistadors and ransomed for rooms of gold and silver, but the Spanish killed him anyway. For 10 points each,

[10] Name this son of Huayna Capac, who fought his brother Huascar for control of a South American empire.

Answer: Atahualpa

[10] Atahualpa led this Peruvian empire, which was conquered by Pizarro's forces in 1533. This empire was formed from the Kingdom of Cuzco by Pachacuti.

Answer: Inca(n) Empire

[10] This Incan "lost city" is believed to have been built for Pachacuti. It was re-discovered in 1911 by Hiram Bingham.

Answer: Machu Picchu

16. In Norse mythology, Gullinbursti [GOO-lin-boor-stee] is a gold-maned one of these creatures. For 10 points each,

[10] Name this animal. In Greek myth, a Caledonian one of these wounds Atalanta during a hunt, and Heracles is tasked with capturing an Erymanthean [ay-rih-MAN-thee-an] one of these porcine [“poor”-”sign”] creatures.

Answer: boar (prompt on “pig” or “swine”)

[10] This Norse goddess of love and beauty briefly disguises her disciple, Óttar, as her pet boar Hildesvini [HEEL-dess-vee-nee] in the Lay of Hyndla [HIND-lah]. This fertility goddess possesses a cloak that allows her to change into a falcon.

Answer: Freyja (do not accept “Freyr” or “Frey”)

[10] Freyja’s chariot is pulled by two of this other type of animal. One of these animals terrorizes Anglesey in Welsh myth, and the Egyptian goddess Bast is sometimes represented in this form.

Answer: cats (prompt on “felines”)

17. For 10 points each, give the following about techniques in the biology laboratory:

[10] In PCR, this enzyme is used to amplify DNA.

Answer: DNA or Taq polymerase

[10] This chemical can be used as an indicator for starch, in whose presence it changes from light brown to deep violet.

Answer: iodine (prompt on I₂)

[10] A karyotype [“CARE”-ee-oh-“type”] displays these objects, usually for humans as 23 pairs ordered by size.

Answer: chromosomes

18. This author wrote “how soon ‘t may be thy lot to lose thy friend” in a poem written “Before the Birth of One of Her Children.” For 10 points each,

[10] Name this colonial woman, whose poetry was collected in *The Tenth Muse Lately Sprung up in America*.

Answer: Anne (Dudley) Bradstreet (accept either underlined surname)

[10] Bradstreet wrote “If ever two were one, then surely we” in a poem addressed to this man, whom she called “Dear and Loving.”

Answer: her husband (accept Mr. Bradstreet; accept Simon Bradstreet)

[10] In 1666, Bradstreet’s house was destroyed by this phenomenon. In the same year, Samuel Pepys recorded the destruction caused by the “Great” one of these in London.

Answer: fire (accept logical equivalents, such as flame and burning)

19. George Pólya used a faulty application of this concept to show that all horses are the same color, starting with the base case that any single horse is the same color as itself. For 10 points each,

[10] Name this method of mathematical proof in which one proves a “base case” and shows that each case implies the next case.

Answer: proof by induction (or inductive proof)

[10] Proof by induction relies on the fact that this set is well-ordered. This set is also called the counting numbers, and consists of either the positive integers, or the positive integers as well as zero, depending on which textbook you use.

Answer: natural numbers (prompt on N; accept whole numbers)

[10] Mathematical induction can be used to prove that the n th one of these numbers is equal to the sum of the first n odd numbers. The sequence of these numbers begins 1, 4, 9, 16, 25, etc.

Answer: perfect squares or square numbers (accept similar answers mentioning the square of an integer)

20. The region around the city of Aomori on this island is known for its Obokoi apples. For 10 points each,

[10] Name this island, whose central region contains the Kanto Plain. This island’s cities of Osaka and Kobe are ports on the Inland Sea.

Answer: Honshu

[10] Honshu is home to Tokyo, the capital and most populous city in this country.

Answer: Japan (accept Nihon-koku or Nippon-koku)

[10] Honshu is also home to this stratovolcano and UNESCO World Heritage Site. Hokusai painted thirty-six views of this tallest Japanese mountain.

Answer: Mount Fuji (or Fujisan; or Fujiyama; or Fuji No Yama)