2016 SCOP MS 7

Round 8

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Tossups

(1) **A reference angle of this size in standard position on the unit circle terminates at the point (0,1) [zero comma one] after starting at (1,0) [one comma zero]. Two angles of this size add together to be a (*)** straight angle, and any two angles that sum to this size are called complementary. For ten points, name this value that describes one-fourth of a circular rotation or the size of a right angle.

ANSWER: **90 degrees** (accept **pi over 2 radians** or **100 gradians**; prompt on "90" or "pi over 2" by asking "in what unit?")

(2) **The production of this form of energy is governed by the Shockley-Queisser limit, and can be concentrated with parabolic dishes or generated by the (*)** photoelectric effect in photovoltaic [photo-vohl-tay-ick] cells aligned in a large panel. For ten points, name this form of renewable energy that is harnessed from the light and heat radiated by the Sun.

ANSWER: **solar** energy (accept reasonable equivalents like **solar** power; do not accept or prompt on "renewable energy")

(3) **A poem by this man lists body parts like "upper-arm, armpit, elbow-socket," and he describes "drops of red / Where on the deck my Captain lies" in a poem for (*)** Abraham Lincoln. "I Sing the Body Electric" is by this poet, who said "I celebrate myself and sing myself." For ten points, name this American poet whose collection *Leaves of Grass* includes "O Captain! My Captain!" and "Song of Myself."

ANSWER: Walt(er) **Whitman**

(4) **This city is home to the Heinz food company headquarters, and tourists often eat sandwiches dressed with coleslaw and fries at this city's (*)** Primanti Brothers. Steelworkers traditionally ate pierogis in this city, which sits at the confluence of the Monongahela, Allegheny, and Ohio rivers. For ten points, name this western Pennsylvania city, the state's second largest city after Philadelphia?

ANSWER: **Pittsburgh**, Pennsylvania

(5) **Harold Brown promoted this object to display the danger of technology developed by Westinghouse and Tesla. William Kemmler was the first victim of this apparatus, which is often nicknamed "Old (*)** Sparky" but is now seldom used, having been replaced by a three-drug sequence. For ten points, name this object whose use in applying death sentences was phased out in the 20th century in favor of lethal injections?

ANSWER: **electric chair**

(6) **In this painting, a blue-clad servant woman steps in front of a grove of trees with gold-edged leaves to hold out a pink cloth to her mistress. Orange blossoms in this painting fall from the cloak of Zephyr as he blows the title (*)** goddess toward shore. For ten points, name this painting by Botticelli in which a seashell delivers the Roman goddess of love.

ANSWER: The **Birth of Venus** (accept **Nascita di Venere**)

(7) **Giovanni Giustiniani died from wounds he received while defending this city. This city used a giant chain connected to the Old Galata Tower to prevent ships from accessing the Golden (*)** Horn. Orban designed the giant "Basilica" cannon to target this city's Theodosian Walls in a 1453 siege led by Mehmed II. For ten points, name this city, the capital of the Byzantine Empire, which was renamed to Istanbul in 1930.

ANSWER: **Constantinople** (do not accept Istanbul or Byzantium)

(8) **In Amonton's Laws, the effect of this force is independent of surface area. This force's magnitude is equal to a namesake coefficient, symbolized mu, times the normal force. One type of this force prevents resting objects from (*)** sliding and can be overcome with lubricants. For ten points, name this force that opposes motion between bodies in contact.

ANSWER: **friction**

(9) **Lakoff and Johnson wrote about these literary devices that *We Live By*, including comparing the state to a father. Examples of this literary device include Dickinson's (*)** "hope is a thing with feathers" and Shakespeare's "all the world's a stage." For ten points, name this literary device that compares two things without using "like" or "as," unlike a simile.

ANSWER: **metaphor**

(10) **This holiday's seven principles are represented by a kinara holding seven black, red, and green candles that are lit throughout this holiday.This holiday was established in 1966 by Maulana Karenga, who named it for a (*)** Swahili phrase meaning "first fruits." For ten points, name this winter holiday celebrating African heritage, which takes place from December 26 to January 1.

ANSWER: **Kwanzaa**

(11) **After learning of Christine Stuart's engagement, this woman accepts the proposal of her classmate at Queen's College, where she studies to be a teacher in (*)** Avonlea. This woman becomes close friends with Diana Barry, and marries Gilbert Blythe after she goes to live with Marilla and Matthew Cuthbert on Prince Edward Island. For ten points, name this orphan who lives at Green Gables.

ANSWER: **Anne** **Shirley** Blythe (accept either underlined name; accept **Anne of Green Gables** or **Anne of Avonlea**; prompt on "Blythe")

(12) **The "Power Nine" of this game includes the Moxen and Black Lotus. In January 2017, this game announced the banning of Smuggler's Copter, an Artifact vehicle, from Standard play. A player may lose this game by being (*)** "decked" or if their life total falls from 20 to 0, due to spells or creature attacks. For ten points, name this trading card game in which planeswalkers tap lands to produce mana.

ANSWER: **Magic**: the Gathering (accept **MtG**; do not accept Magic the Gathering Online or MtGO)

(13) **Workers in this industry were led by Arthur Scargill in a 1984 strike that was defeated by Margaret Thatcher, leading to a decline in this industry, which unofficially ceased in the UK in 2015. The production of this good and (*)** steel normalized competition for resources within Europe and inspired the creation of the European Union. For ten points, name this black sedimentary rock that is commonly mined as a fuel source.

ANSWER: **coal** (accept **coal** mining; accept European **Coal** and Steel Community; prompt on "mining;" prompt on "ECSC")

(14) **In this country in September 2015, a camerawoman tripped migrants fleeing from a refugee camp in Roszke [roos-keh]. In 2015, Viktor Orban, this country's Prime Minister, ordered fences on its borders with Serbia and Croatia to stop (*)** Syrian refugees from entering this country. For ten points, name this European country that, as critics ironically note, is seeking guest workers to work in Budapest.

ANSWER: **Hungary**

(15) **This man helped Atlas steal apples from the Hesperides and rerouted two rivers to clean the Augean stables. This man killed Hippolyta and stole her girdle, and at the request of Eurystheus, he used the (*)** hydra's own venom to kill it. As a baby, this hero defeated a pair of snakes sent by hera. For ten points, identify this Greek who slew the Nemean lion as one of his twelve labors.

ANSWER: **Heracles** (accept **Hercules** until "Greek" is read)

(16) **During an experiment named for this material, Hans Geiger counted flashes of light on a zinc sulfide screen, generated after an alpha particle was shot at a foil of this metal; that experiment was overseen by Ernest (*)** Rutherford. This highly malleable metal dissolves in aqua regia and is used in electrical connectors to prevent corrosion. For ten points, name this precious metal whose purity is measured on a scale up to 24 karats.

ANSWER: **gold** (accept Rutherford **gold** foil experiment)

(17) **A character in this novel gets a piece of parmesan cheese from Dr Livesey's snuff box in exchange for his help. In this novel, Dick Johnson tears a page from a Bible to make a (*)** "black spot," and Billy Bones tells Jim Hawkins to look out for the cook aboard the *Hispaniola*. For ten points, name this novel about Long John Silver's search for Captain Kidd's treasure, written by Robert Louis Stevenson?

ANSWER: **Treasure Island**, or the Mutiny of the Hispaniola

(18) **One work by this composer includes a "limping waltz" and a dynamic marking of 6 p's for the bassoon; that sixth symphony was premiered just a week before this man's death. A popular work by this composer of the *Pathetique* symphony quotes the French (*)** national anthem and includes cannonfire in its depiction of Napoleon's failed invasion. For ten points, name this Russian composer of the *1812 Overture*.

ANSWER: Peter Ilyich **Tchaikovsky**

(19) **Prions are examples of these molecules that have been misfolded into the wrong 3-D shape. Actin and myosin are muscle-based examples of these molecules, which are formed from long chains of amino acids. In nutrition, these molecules provide (*)** 4 Calories per gram, the same as carbohydrates and less than fats. For ten points, name this type of molecule, provided in foods like nuts, dairy, and meat.

ANSWER: **protein**s (prompt on (poly)peptide)

(20) **This man served as U.S. President during the XYZ Affair. As President, this man suppressed criticism and immigration via the Alien and Sedition Acts. This member of the Federalist Party and first official resident of the (*)** White House died on July 4, 1826, the same day as his rival, Thomas Jefferson. For ten points, name this second President of the United States and father of another President, John Quincy.

ANSWER: **J**ohn **Adams** (prompt on "Adams;" do not accept "John Quincy Adams")

Bonuses

(1) In 2016, a 2,300 square mile region deeper and farther from the coast than this region was discovered to have donut-shaped structures formed by the *Halimeda* algae. For ten points each,

Name this largest coral reef system in the world.

ANSWER: **Great Barrier** Reef

The Great Barrier Reef lies off the coast of Queensland, a northeastern state of this island country with capital Canberra.

ANSWER: **Australia**

The reef extends all the way to this strait, which separates Australia from New Guinea to its north.

ANSWER: **Torres** Strait

(2) The Grimm brothers removed this story from the last few editions of their *Children's and Household Tales* when they discovered that it was a Danish tale, rather than a German one. For ten points each,

Name this fairytale in which a dainty girl proves that she is royal by complaining that she slept on something hard, even though it was cushioned by twenty mattresses and twenty quilts.

ANSWER: The **Princess and the Pea** (accept **Prinsessen paa Aerten**; accept Die **Prinzessin auf der Erbse**)

In this Grimm brothers story, the title woman's stepsisters cut off their toes and heels to force their feet to fit into a slipper in an attempt to trick a prince into marrying them.

ANSWER: **Cinderella** (accept **Aschenputtel**)

In one version of this story, the title imp viciously tears himself in half after being foiled, but in the first edition of Grimm's tales, he flies away after the queen discovers this creature's true name and stops him from stealing her baby.

ANSWER: **Rumplestiltskin**

(3) Alfred Eisenstadt's picture of a sailor kissing a stranger in Times Square was taken in 1945 on what would shortly be known as this holiday. For ten points each,

Name this holiday that commemorates the end of the Pacific theater of World War II.

ANSWER: **V-J** Day (accept **Victory over Japan** Day; accept equivalent descriptions; prompt on descriptions of the end of World War II; do not accept V-E Day or Victory in Europe day)

Though the *V-J Day in Times Square* photograph was taken on August 14th, the actual date of the Japanese surrender, V-J Day is celebrated in the U.S. on September 2nd, the anniversary of the official signing of surrender papers onboard this U.S. battleship.

ANSWER: USS **Missouri**

The *Missouri* is now a naval museum in this Hawaiian harbor, where it "keeps watch" over the USS *Arizona* memorial.

ANSWER: **Pearl** Harbor

(4) These substances can be "poisoned" by blocking access to active sites, making them inefficient. For ten points each,

Give this term for a substance that assists in a chemical reaction by increasing the rate at which it progresses, without being consumed as a reactant. Enzymes are biological examples of these substances.

ANSWER: **catalyst**s

Catalysts work by lowering this quantity, the amount of energy required to start a reaction.

ANSWER: **activation** energy

Cars employ catalytic converters to de-toxify exhaust. This transition metal, an expensive precious metal with chemical symbol Pt, is commonly used in catalytic converters.

ANSWER: **platinum**

(5) In *The Good Place*, every action during one's life is rated on a point system, and the very top scorers spend afterlife in a utopia. For ten points each,

This voice of Anna in *Frozen* and former star of *Veronica Mars* stars as Eleanor, a horrible person accidentally sent to the Good Place.

ANSWER: Kristen **Bell**

In the pilot episode, Eleanor fails to correctly pronounce the name of her soulmate, Chidi Anagonye [chee-dee an-ah-GON-yay]; instead, she settles on the name of this singer. Shortly thereafter, the Good Place "glitches," chaos ensues, and this singer's "Break Free" is heard bellowing throughout the city.

ANSWER: Ariana **Grande**

During orientation, it is shown that the afterlife's point system rates following this dietary code as worth roughly 425 points, while "never discussing this dietary code unprompted" is worth some 9800 points.

ANSWER: **vegan**ism (do not accept or prompt any other answers)

(6) This author wrote about Peter, Martin, and Jack, who represent different factions of Christianity in *A Tale of a Tub*. For ten points each,

Name this satirist, who also wrote a novel in which a sailor visits the nations of Lilliput, Blefuscu, and Laputa.

ANSWER: Jonathan **Swift**

Jonathan Swift also wrote this novel, in which the title character goes on fantastical journeys to Lilliput, where he is a giant, and Brobdingnag, where he is tiny.

ANSWER: **Gulliver's Travels** (accept **Travels into Several Remote Nations of the World**, in Four Parts. By Lemuel Gulliver, First a Surgeon, and then a Captain of several Ships)

Swift's satirical essay *A Modest Proposal* suggests that the people of this nation, his home country, should sell their children as meat to help them survive the Potato Famine.

ANSWER: **Ireland** (accept **Éire**)

(7) With James Hartle, this man described a model in which the beginning of the Universe is a singularity of space and time. For ten points each,

Name this Cambridge physicist whose popular science work, *A Brief History of Time*, describes black holes and other cosmological ideas to the non-scientist.

ANSWER: Stephen **Hawking**

Hartle and Hawking's singularity existed prior to this event, in which the universe quickly and greatly expanded out of a high-density state. The steady-state model competes with this theory, claiming that the universe is eternal.

ANSWER: **Big Bang**

The steady state theory was largely discarded after the 1964 discovery of this phenomenon, the faint "glow" of radiation left over from the aftermath of the Big Bang. This phenomenon's spectrum has a temperature of 2.7 Kelvin.

ANSWER: **cosmic microwave background** radiation (accept **CMB**R; prompt on partial answers)

(8) Peter the Great hated this complex and built a new capital city at St. Petersburg in part to avoid it. For ten points each,

Name this heavily fortified complex, which includes numerous cathedrals and the current residence of Vladimir Putin. It is part of a UNESCO Heritage Site with the nearby Red Square.

ANSWER: the **Kremlin**

Though "kremlin" is a generic term for Russian fortress complexes, "the Kremlin" is found in this Russian capital city.

ANSWER: **Moscow**

According to popular culture, a red telephone was installed to provide a "hotline" between the Kremlin and the White House. In reality, it's not a red phone, nor is it in either official residence, but the hotline was created in the wake of poor communication in this October 1962 event.

ANSWER: **Cuban missile crisis**

(9) Many of the short stories in this collection had first been published in *The Token*, an annual literature book published in Boston in the early 1800s. For ten points each,

Name this collection by the author of *Mosses from an Old Manse*. This collection includes the stories "The Ambitious Guest" and "Dr Heidegger's Experiment."

ANSWER: **Twice-Told Tales**

Name this American author of *Twice-Told Tales*, who included the story "Young Goodman Brown" in the collection *Mosses from an Old Manse* and wrote the novel *The House of the Seven Gables*.

ANSWER: Nathaniel **Hawthorne**

Twice-Told Tales contains this short story in which Mr Hooper, the title clergyman, hides his face to reflect the sorrow of a broken heart.

ANSWER: The **Minister's Black Veil**

(10) In one of this composer's works, a playwright pleads with a seamstress "What a frozen little hand, let me warm it for you." in the song "Che gelida manina." For ten points each,

Name this Italian composer of the operas *Madame Butterfly*, *Turandot*, and the aforementioned *La Bohème*.

ANSWER: Giacomo **Puccini**

La Bohème inspired this Jonathan Larson musical, in which Mimi's tuberculosis is replaced with HIV.

ANSWER: **Rent**

In *La Bohème*, "Che gelida manina" is sung by Rodolfo to Mimi as they try to light one of these objects and find her dropped room key. *Rent's* analog of the song is more explicitly titled for this object.

ANSWER: **candle** (accept "Light My **Candle**")

(11) You can lead this animal to water, and then you can create a mythology around that happening. For ten points each,

Name this hoofed animal, often used for riding, that was sacred to Poseidon in Greek mythology.

ANSWER: **horse**

These mythical Scottish creatures lure unsuspecting humans into bodies of water and drown them. These creatures appear as gorgeous humans or beautiful black horses, and only reveal their true nature when it is too late.

ANSWER: water **kelpie**

These Greek mythological "sea-horses" had the bodies of winged horses and the hindquarters of fish.

ANSWER: **Hippocamp**us

(12) A 1986 state law in Virginia forbids many schools from beginning the school year until after this date; that law is often called the "Kings Dominion" Law, for a theme park that benefits from it. For ten points each,

Name this federal holiday, celebrated on the first Monday in September, which unofficially marks the end of "summer" and officially recognizes workers.

ANSWER: **Labor** Day

Labor Day became a federal holiday mere days after the end of this 1894 labor dispute involving railroad workers, which was led by Eugene V. Debs in Chicago.

ANSWER: **Pullman** strike

Earlier Labor Day celebrations had been held on May 1st, for International Workers' Day, but this U.S. President in 1894 was worried that socialist protests would be stronger with a federal holiday on that date. Three years later, this President was defeated for re-election by Benjamin Harrison.

ANSWER: Grover **Cleveland**

(13) If Portugal spends one dollar to produce a unit of cloth while England has to spend $1.50, it still could make financial sense for Portugal to buy English cloth. Answer the following for ten points each.

This economic behavior is the exchange of goods and services between two or more entities - people, countries, etc.

ANSWER: **trade** (accept elaborations, like free **trade**, international **trade**, etc.)

Portugal would want to trade for English cloth if England held the comparative form of this economic concept, as they did in a famous 1817 example. In that example, Portugal was absolutely better than England in production of wine and cloth.

ANSWER: comparative **advantage** (accept absolute **advantage**)

This English economist devised that example to show how free trade can benefit countries, even in situations where a country has absolute advantage in all goods, in his *Principles of Political Economy and Taxation*. He also devised the Iron Law of Wages.

ANSWER: David **Ricardo**

(14) This substance helps promote cell membrane structure and fluidity, helping explain how animal cells exist without cell walls. For ten points each,

Name this essential modified steroid that, in excess, can clog and block arteries.

ANSWER: **cholesterol**

Sterols, fats, and fat-soluble vitamins are all this type of molecule. A bilayer of some of these molecules, with hydrophilic heads and hydrophobic tails, serves as a barrier against ion transfer in cells.

ANSWER: **lipid** (accept (phospho)**lipid** bilayer)

Cholesterol content in the blood is often measured in terms of "good" and "bad" cholesterol; give either the three-letter acronym or three-word name for either of those quantities.

ANSWER: **HDL** or **LDL** (accept **high-density lipoprotein**s or **low-density lipoprotein**s)

(15) According to legend, the modern form of this set of prayers was popularized by St Dominic. For ten points each,

Name this set of prayers, whose "Luminous" Mysteries were added by Pope John Paul II, and which is prayed with the use of a namesake strand of prayer beads.

ANSWER: Dominican **Rosary** (accept **rosarium**)

Each of the small beads strung in sets of ten on a rosary signifies this short prayer, which asks a holy woman to "pray for us sinners / now and at the hour of our death."

ANSWER: **Hail Mary** (accept **Ave Maria**; accept **Angelic Salutation**)

One of the first steps in praying the Rosary is this declaration of belief, which is recited on the crucifix. The Roman Catholic Church divides this statement into twelve articles that declare a belief in "the communion of saints, the forgiveness of sins, the resurrection of the body, and the life everlasting."

ANSWER: **Apostles' Creed** (accept **Symbolum Apostolorum** or **Symbolum Apostolicum**; accept **Symbol of the Apostles**; prompt on "Creed")

(16) Answer some questions about what some writers thought the future was going to look like, for ten points each.

Ray Bradbury wrote about a future in which humans colonize a nearby planet and build automated houses in this collection, which includes the short stories "Rocket Summer" and "There Will Come Soft Rains."

ANSWER: The **Martian Chronicles**

In this futuristic novel by Orson Scott Card, aliens nicknamed "buggers" attack Earth, causing Andrew Wiggin to attend Battle School while his siblings Peter and Valentine create a global war.

ANSWER: **Ender's Game**

This novel by Aldous Huxley, set in the year 632 After Ford, details Bernard Marx's life in the World State, a society that has eradicated natural birth and raises children grown to fit into society's five castes.

ANSWER: **Brave New World**

(17) For ten points each, answer the following about the list of numbers one, one-half, one-fourth, one-eighth, and so on.

This mathematical term describes any ordered list of numbers. They can be finite or infinite – this one happens to be infinite. If the terms of one of these are added together, it is then called a series.

ANSWER: **sequence**

The sequence has this property, because the terms get closer and closer to a single value - in this case, zero. Sequences without this property are called divergent instead.

ANSWER: **converge**nt sequence (accept word forms)

The infinite *series* one, one-half, one-fourth, one-eighth, and so on will also converge. Even though there are an infinite number of terms, it all adds up to this finite value.

ANSWER: **two**

(18) For ten points each, answer the following about the original American colonies.

James Oglethorpe founded this southern colony as a debtors' prison. In its early years, it served as a buffer between more "upstanding" English colonies and Spanish Florida.

ANSWER: **Georgia**

This middle colony was considered the "Lower Counties" of another colony, with which it shared a governor. This colony was the first to agree to the Declaration of Independence and is therefore considered the "first state."

ANSWER: **Delaware**

John Winthrop's Massachusetts Bay Colony eventually split into two states: Massachusetts and this other New England state.

ANSWER: **Maine**

(19) This painting was protected by sandbags during the World War II bombing of the Santa Maria della Grazie convent, but the unique painting techniques used in its creation led to its rapid decay. For ten points each,

Name this wall painting in which twelve men, including a feminine-looking Peter, react in shock to an announcement by their leader.

ANSWER: The **Last Supper** (accept L'**Ultima Cena**; accept Il **Cenacolo**)

The Last Supper is by this brilliant Renaissance painter whose *The Virgin of the Rocks* paintings show Mary with John the Baptist and Jesus as babies.

ANSWER: **Leonardo** di ser Piero **da Vinci** (accept either underlined portion)

In another Leonardo painting, Mary perches on this woman's lap while reaching to stop an infant Jesus from struggling with a lamb. This saint conceived Mary immaculately so she could become the mother of Jesus.

ANSWER: Saint **Anne** (accept The **Virgin and Child with Saint Anne**)

(20) Fluorescence is an example of this phenomenon, as generated by the absorption of photons. For ten points each,

Give this term for any form of light generated from a non-heat-based source.

ANSWER: **luminescence** (accept word forms, like **luminescent**; do not accept more specific terms, like bioluminescent)

Piezoluminescence is generated by the application of this type of force; similarly, piezoelectricity is the charge that accumulates in response to this force.

ANSWER: **pressure** (accept **stress**)

When a charged particle passes through a medium at speeds faster than this quantity for the medium, a faint luminescence, called Cherenkov radiation, will be emitted. While this quantity differs in different media, it is equal to nearly 300 million meters per second in a vacuum.

ANSWER: **speed of light** (accept **c**)