

2015 OAC States – Round 2

Questions written by Ike Jose, Jasper Lee, and Steven Wellstead

Category Round

American Literature: Name these American authors who created imaginary cities.

Team A: What author's collection *Tales of the Grotesque and Arabesque* included the short story "Shadow", which featured an imaginary city named Ptolemais (TAHL-uh-may-iss) that is haunted by a frightening beast?

ANSWER: Edgar Allan **Poe**

Team B: What American author, who created the characters Tarzan and John Carter, wrote a series of novels about fictional cities in Pellucidar (PUH-loo-sih-dar), the name for the occupied interior of the earth?

ANSWER: Edgar Rice **Burroughs**

Tossup: This author created the fictional country of Noland, whose capital is Nole, in a novel in which Bud, Fluff, and Queen Zixi (ZIKS-ee) of Ix try to use a magic cloak to grant its user wishes. This author wrote a "sea fantasy" set in the land of Queen Aquarine, which is being terrorized by a giant octopus representative of the Standard Oil Company. This author of *The Sea Fairies* wrote a novel that satirizes monetary policy: the silver footwear given to its protagonist represents the free silver movement, while the yellow brick road represents the gold standard. Name this American author who wrote about a journey undertaken by Dorothy Gale in *The Wonderful Wizard of Oz*.

ANSWER: Lyman Frank **Baum**

Mathematics: Give the following related to distributions.

Team B: What measure of central tendency, which is synonymous with expected value, is the first moment of a distribution?

ANSWER: **mean**

Team A: The second moment of a distribution is what value, which is defined as the square of the standard deviation?

ANSWER: **variance**

Tossup: This distribution's mean is undefined if v is greater than 1; its variance is equal to " $v / v - 2$ " (" v over v minus 2") if v is greater than 2, infinity if v is between 1 and 2, and undefined if v is less than 1. This distribution was first developed by William Gosset (GOSS-it), who used it while examining the chemical properties of barley at the Guinness Brewery; Gosset published this distribution in an article under the pseudonym "Student." When n is less than 30, this distribution is typically used in a namesake test instead of the related z -test. Name this distribution that is used to test for the null hypothesis.

ANSWER: Student's **t** distribution

World History: Name these former European monarchs.

Team A: Upon its 1905 dissolution from Sweden, Norway was ruled by this monarch who reigned for nearly 52 years until his 1957 death.

ANSWER: **Haakon VII** (HAW-kun “the seventh”) [prompt on “Haakon”]

Team B: Geza was the father of this King of Hungary who was coronated in the year 1000 or 1001 and ultimately canonized as a saint in the Catholic Church.

ANSWER: **Stephen I** (the first) [prompt on “Stephen” or “Saint Stephen”]

Tossup: This ruler used a veto power known as *Jus Exclusivae* to prevent Cardinal Mariano Rampolla from becoming pope, thereby leading to the election of Pope Pius X (the tenth). This leader’s only son was presumed to have murdered his seventeen year old mistress before committing suicide in the Mayerling Incident. This father of Crown Prince Rudolf endured the death of his younger brother Maximilian, who was executed after his three year rule of Mexico. Two years before his own death, this king’s heir-presumptive was killed by Gavrilo Princip in Sarejevo, thereby inciting World War 1. Name this uncle of Franz Ferdinand who ruled Austria and Hungary for nearly 68 years, from 1848 to 1916?

ANSWER: **Franz Joseph I** or **Francis Joseph I** [prompt on partial answer]

Fine Arts: Answer the following questions about repeated notes in music.

Team B: This contemporary minimalist composer, who teamed with the Kronos Quartet on the album *Salome Dances for Peace*, is best known for the composition, *In C*, in which a piano plays the highest C key throughout the entire piece, with the other musicians playing a set of phrases in undefined intervals.

ANSWER: Terrance Mitchell “Terry” **Riley**

Team A: The pianist plays a repeated A flat through this piece, except for a brief section in C sharp minor where the repeated note is a B instead. It was composed in 1839 and is the longest of its composer’s twenty-four preludes.

ANSWER: **Raindrop prelude** [or **Opus 28, Number 15**]

Tossup: In the second movement of a piece by this composer, a B flat octave is played constantly by the pianist to imitate a bell that tolls over a scene depicting an executed man. A quote by Henri de Regnier (ren-YAY) is placed at the top of a piano piece by this composer that depicts “water games.” He wrote a piece for piano that includes “Le Gibet” (ZHEE-bay), which is followed by “Scarbo”, a movement intended to be more difficult than Mily Balakirev’s *Islamey*. In another piece by this composer of *Jeux d’eau* (zhuh doo) and *Gaspard de la Nuit* (nwee), two melodies are passed around the orchestra on top of an ostinato rhythm from the snare drum. Name this late 19th and early 20th century French composer who wrote *Bolero*.

ANSWER: Joseph-Maurice **Ravel**

Life Science: Name these things found in cells.

Team A: This organelle, which is found in pairs, contains nine triplets of microtubules and makes up the centrosome, which organizes spindles during mitosis.

ANSWER: centrioles

Team B: Some bacteria, such as those of genus *Bacillus*, have this structure, with which they can enter a dormant state if nutrients are lacking. These structures are notoriously difficult to eradicate.

ANSWER: endospores

Tossup: In a complex involving one type of this organelle, networks of tubules and vesicles called spongiomes empty material into it. Anthocyanins and other flower pigments are found within this organelle. Lysosomes can merge with the food type of these organelles to form a structure in which digestion occurs. A variety of this organelle in protists regulates turgor pressure by expelling water out of the cell; that variety is called the contractile type of this organelle. In plants, a membrane called the tonoplast surrounds this structure. The central type is often the largest body in plant cells. Name these organelles which are usually used as the cell's storage sites.

ANSWER: vacuoles [accept contractile vacuoles or food vacuoles]

English / World Literature: Name the following figures that are featured in William Shakespeare plays.

Team B: The love god Venus pursues a beautiful, mythical youth with what name in a long poem by William Shakespeare?

ANSWER: Adonis [accept *Venus and Adonis*]

Team A: What kind of bird is paired with the turtledove in a poem by William Shakespeare about the virtues of marriage? In a 1953 novel, this bird is compared to mankind during a discussion between Granger and Guy Montag.

ANSWER: phoenix [accept *The Phoenix and the Turtle*]

Tossup: A speech about this Shakespeare character notes that the “vilest things become themselves in [this character]” and “holy priests bless...when [this character] is riggish.” A George Bernard Shaw play named for this character features a scene in which this figure is rolled up into a carpet. In a Shakespeare play, the words “Age cannot wither her, nor custom stale her infinite variety” were delivered in a speech about this character given by Enobarbus. In that play, this title character commits suicide with an asp. What woman was the subject of a William Shakespeare play written about this Egyptian queen and her lover Mark Antony?

ANSWER: Cleopatra

American Government / Economics: Name the following related to economic goods.

Team A: Hot dogs and hamburgers are goods with what relation, which is characterized by a positive cross price elasticity of demand?

ANSWER: substitute goods

Team B: Hot dogs and hot dog buns are goods with what relation, which is characterized by a negative cross price elasticity of demand?

ANSWER: complementary goods

Tossup: Arnold Harberger was the first to graphically illustrate this economic quantity for a good. It is smaller for goods that have more inelastic supplies and demands. Graphically speaking, this quantity can be illustrated with a shape whose vertices are defined by the equilibrium point, the new willingness to pay, and the new willingness to supply; thus, this quantity is illustrated as a triangle in supply and demand charts. Name this micro-economic quantity which represents the amount of economic profit that is lost when an excess burden is placed on a good.

ANSWER: deadweight loss [accept excess burden; prompt on “allocative inefficiency”]

Physical Science: Name the following about chemistry lab techniques.

Team B: In filtration, the Buchner type of this piece of equipment is often used. A smaller variety of this equipment is the Hirsch type.

ANSWER: funnel

Team A: Samples for techniques involving light, such as in a spectrophotometer, are placed into containers with this name.

ANSWER: cuvette

Tossup: An equation used to measure the strength of this technique takes into account multiple paths, diffusion, and mass transfer in order to calculate the height of a theoretical plate. The Van Deemter equation is used to calculate the resolving power of this technique. A version of this technique uses poly-histidine tags to obtain specific proteins. Nin-hydrin is used in some types to detect amino acids. The effectiveness of this technique can be measured with the retention factor. This technique always contains a stationary phase and a mobile phase. Name this lab technique which is used to separate components of a mixture and comes in affinity, thin-layer, and column types.

ANSWER: chromatography [accept affinity chromatography or thin-layer chromatography or column chromatography or paper chromatography]

Geography: Name these North American bodies of water.

Team A: The Alamo, New, and Whitewater Rivers feed what saline lake that is found within California's Imperial Valley near the Mexican border?

ANSWER: Salton Sea

Team B: The Truckee River, which discharges from Lake Tahoe, is the primary feeder of what Nevada lake near Reno whose name derives from the shape of the tufa formations found in and around the lake?

ANSWER: Pyramid Lake

Tossup: This body of water borders an abandoned lighthouse at a location known as Fourteen Mile Point. The Misquah Hills run along the west end of this body of water, which receives the discharge from Lake Nipigon. It surrounds the Keweenaw Peninsula, which is just east of the Apostle Islands. One island in this body of water is the site of predator-prey studies involving its native wolf and moose population. The St. Marys River flows past the city of Sault Ste. Marie (soo "saint" muh-REE) while draining this lake, which is the site of Isle Royale National Park. Found to the north of Michigan's Upper Peninsula is what lake that is the largest of the Great Lakes?

ANSWER: Lake Superior

American History: Name these minor conflicts.

Team B: A disagreement over the border between New Brunswick and Maine resulted in this bloodless dispute which was settled in 1842 by the Webster-Ashburton Treaty.

ANSWER: Aroostook War [or Pork and Beans War]

Team A: The Battle of Bad Axe was the last skirmish in this 1832 conflict that was fought by the U.S. primarily against members of the Sauk tribe in modern day Illinois.

ANSWER: Black Hawk War

Tossup: George Clymer donned various disguises while collecting information for the federal government during this conflict. One side in this conflict tried to gather support by publishing letters under the alias "Tom the Tinker." David Bradford helped incite this conflict, which saw fighting at the Battle of Bower Hill that ended with the burning of John Neville's house. "Light-Horse Harry" Lee led troops that were raised by the U.S. government to end this conflict, which was in response to a federal bill pushed by Alexander Hamilton to help pay off debts from the Revolutionary War. Name this Pennsylvania conflict of the 1790s that occurred in response to an excise tax on alcohol.

ANSWER: Whiskey Rebellion [or Whiskey Insurrection]

Alphabet Round – Letter E

1. **(TWO WORD ANSWER)** – Six day conflict in 1916 in which Ireland fought to secede from the United Kingdom.
2. This literary term refers to a poetic line that runs from one line into the next line, without a syntactical break.
3. **(ACRONYM OR HYPHENATED ANSWER)** – Bell’s inequality supposedly resolves what “paradox” of quantum mechanics, in which faster than light travel seems possible since information appears to move at a speed of $2c$?
4. German Surrealist artist who painted *The Elephant Celebes*.
5. The Faber-Jackson relation is a mathematical formula for giving the brightness of what kind of galaxies, which are contrasted with spiral galaxies?
6. There exists “Prose” and “Poetic” versions of these Icelandic texts compiled by Snorri, which are the primary source material for Norse mythology.
7. Upper New York Bay island which was used for the processing of American immigrants during the late 19th and early 20th centuries.
8. This term, which was coined by William Graham Sumner, refers to the act of making judgments about another culture using only one’s own culture as a standard.
9. Book of the Bible which follows Genesis.
10. This fictional country, which is “over the range”, has laws in which it is a crime to be mentally ill and criminality is treated as a mental illness. It was created by Samuel Butler.
11. **(TWO WORD ANSWER)** – Nation which was a participant in the 1969 Football War.
12. Process in which a plant grows while in the absence of light.
13. Wild man who becomes the companion of Gilgamesh.
14. Composer whose orchestral output includes the *Enigma Variations* and *Pomp and Circumstance* marches.
15. **(TWO WORD ANSWER)** – Spanish-speaking nation which controls the islands of Annobon and Bioko.
16. A poem by Friedrich Holderlin dramatizes the final days of this philosopher, who legendarily jumped into a volcano to prove that the soul is immortal.
17. 10th and 11th century Viking explorer who established the colony of Vinland in present day Newfoundland.
18. This virus, named for a river in Africa, has recently killed thousands in West Africa; Eric Duncan was the first to die on U.S. soil due to the most recent outbreak of it.
19. Adjective describing a reaction that consumes energy.
20. This is the last name of couple Charles and Ray, renowned for their designs of modern furniture, as well as the movie *Toccata for Toy Trains*. They also created the book and film *Powers of Ten*, which starts with a picture of a universe and gradually zooms into a couple in a park.

Alphabet Round – Letter E Answers

1. Easter Rising or Easter Uprising or Easter Rebellion (TWO WORD ANSWER)
2. enjambment
3. EPR Paradox or Einstein-Podolsky-Rosen Paradox (ACRONYM OR HYPHENATED ANSWER)
4. Max Ernst
5. elliptical galaxies
6. Eddas
7. Ellis Island
8. ethnocentrism [accept word forms]
9. Book of Exodus
10. Erewhon (“AIR”-uh-wahn)
11. Republic of El Salvador [or Republica de El Salvador] (TWO WORD ANSWER)
12. etiolation [accept word forms]
13. Enkidu
14. Sir Edward William Elgar
15. Republic of Equatorial Guinea (TWO WORD ANSWER)
16. Empedocles
17. Leif Ericson or Leif Erikson
18. ebola
19. endergonic [do not accept “exergonic”]
20. Charles Ormond and Berenice Raymond “Ray” Kaiser Eames

Lightning Round

1. In one film made by this man, the protagonist uses camera flashbulbs to blind the killer Thorwald, whom he had been observing while recovering in a Greenwich Village apartment. Chocolate syrup was used to film a bathroom scene by this director in which Janet Leigh's (leez) character is murdered at a motel. This director depicted Cary Grant climbing atop Mount Rushmore in *North by Northwest*. Name this British master of suspense who directed the films *Rear Window* and *Psycho*.

ANSWER: Sir Alfred Joseph Hitchcock

2. Both Isaac Newton and Joseph-Louis Lagrange give their name to interpolation schemes making use of these expressions. The Abel-Ruffini theorem illustrates that there is no general root-finding scheme for these kinds of mathematical expressions. Synthetic division is used to divide one of these expressions by another. Name these mathematical expressions which contain sums of variables raised to non-negative integer exponents, multiplied by coefficients.

ANSWER: polynomials

3. During the U.S. Civil War, this location was captured by Union troops at the beginning of the Burnside Expedition. Ralph Lane led a group that attempted to settle at this location, which was under the leadership of John White when Virginia Dare was born here. Its settlers carved the word "CROATOAN" onto a tree before mysteriously disappearing from this island. Sir Walter Raleigh oversaw the settlement of what North Carolina island that was the site of a "Lost Colony"?

ANSWER: Roanoke Island [accept Roanoke Colony]

4. This theorist argued that the rhetoric of the Cold War would induce the U.S.S.R. and U.S.A. to war in *The Causes of World War III*. He rejected the structural functionalist approach to his discipline in his book *The Sociological Imagination*. In another book, he included middle managers and those who attended Ivy League universities as potential members of the title group. Name this 20th century American sociologist who wrote *The Power Elite*.

ANSWER: Charles Wright Mills

5. This author wrote about Rosamond Vivian, who mistakenly marries the libertine Philip Tempest, in *A Long Fatal Love Chase*. While in New York City, one character created by this author falls in love with the German professor Friedrich Bhaer (BAY-er). In that same novel by this author, one of the title characters dies young after contracting scarlet fever. Name this author who wrote about Marmee and her four daughters, Meg, Jo, Beth, and Amy March, in her book *Little Women*.

ANSWER: Louisa May Alcott

6. The setting for this painting is near the location where its artist depicted a gate being opened for a canal boat in the painting *The Lock*. On its right side, an empty rowboat is next to a figure who stands in the water while holding a fishing pole. This painting depicts Willy Lott's cottage, which is near Flatford Mill. The focus of this work is three black horses that pull the title object through the River Stour. Name this John Constable painting that depicts a cart used to carry the title crop.

ANSWER: *The* Hay Wain

7. A form of this element is used in many purification methods due to its high amounts of pores leading to high surface area. That is the "activated" type of this element. One-atom layer thick sheets of this element can be rolled up into nanotubes. An allotrope of this element was named after an architect who liked building geodesic domes. Name this element whose allotropes include buckminsterfullerene, graphene, and diamond.

ANSWER: carbon

8. One battle in this conflict took place along the Nebel River and saw Camille de Tallard captured while marching his troops towards Vienna. Following this war, Gibraltar was ceded to Great Britain. Queen Anne's War was the North American phase of this conflict, which saw John Churchill, Duke of Marlborough, win the Battle of Blenheim. The death of Hapsburg ruler Charles II (the second) in 1700 triggered what war that was ended by the 1714 Treaty of Utrecht?

ANSWER: War of the Spanish Succession

9. One of this author's novels features the chapter "The Massacre of the Innocents", in which Sissy Jupe is reprimanded for not memorizing the "facts" of Thomas Gradgrind. In addition to that novel set in Coketown, this author wrote a novel in which Mr. Bumble employs the title character in a workhouse. That book by this author features the criminal Fagin and sees the title child request more gruel with the words "Please, sir, I want some more." Name this author of *Hard Times* and *Oliver Twist*.

ANSWER: Charles John Huffam **Dickens**

10. According to one myth, the autumn crocus flower sprang from the blood of this figure, who made use of a fennel stalk during his most notable action. As part of the "trick at Mecone", he fooled Zeus into eating animal bones. He ensured the survival of his son, Deucalion, by warning him of an impending flood. Following his most notable action, he was chained to a rock so that an eagle would eat his liver every day. Name this Titan from Greek myth who stole fire from the gods and gave it to man.

ANSWER: **Prometheus**

11. One work by this philosopher is written as a series of six daily inquiries into the nature of knowledge and asks if a human can imagine a "chiliagon"; one of those inquiries by this philosopher posits an "evil genius" who is trying to deceive the author into believing that everything he has ever known is an illusion. His formal philosophical system is outlined in his book *Discourse on Method*. Name this French philosopher linked with the statement "cogito ergo sum", translated as "I think, therefore I am."

ANSWER: Rene **Descartes** (day-KART)

12. To begin this battle, a structure now known as Pegasus Bridge was captured as part of Operation Deadstick. Operation Bodyguard involved various deception techniques prior to this battle, which saw the capture of Pointe du Hoc (pawn du hawk). Gerd von Rundstedt led the defenders in this battle, which was code named Operation (*) Overlord. This battle targeted Juno, Omaha, and three other beaches as part of history's largest amphibious assault. Name this World War 2 battle of 1944 in which the Allies invaded Normandy.

ANSWER: **D-Day** [or Operation **Neptune**; accept Operation **Overlord** before (*); accept **Normandy landings** or similar answers including **Normandy** and the notion of an **attack** before "Normandy"]

13. This experiment followed one that demonstrated bacterial transformation; that prior experiment was carried out by Avery, MacLeod (muh-"CLOUD"), and McCarty. In this experiment, bacteria were grown on media containing radioactive isotopes of sulfur and phosphorus. This experiment looked at whether those isotopes were present when T2 phages infected nonradioactive bacteria. Name this doubly eponymous 1952 experiment which determined that genetic material is found in DNA.

ANSWER: **Hershey-Chase** experiment

14. One religious text from this region, the *Bardo Thodol*, lists various states of "intermediate consciousness" and is known as this place's *Book of the Dead*. The Bon religion in this region was superseded by a Buddhist tradition that is split into Yellow Hat and Red Hat sects. A religious role in this region has a name that literally means "ocean teacher" and is held by Tenzin Gyatso. Name this Asian region near the Himalayan mountains whose spiritual leader is the Dalai Lama.

ANSWER: **Tibet** [or **Bod** or **Xizang** (she-zahng) Autonomous Region; prompt on "China" or "People's Republic of China" or "PRC" or "Zhongguo" or "Zhonghua Renmin Gongheguo"; do not prompt on "Republic of China"]

15. One story in this collection features travellers visiting the City of Brass to find a lamp that used to belong to King Solomon. This collection features a story in which Morgiana dances with a dagger to save her master. The frame story of this collection, which was translated by Sir Richard Burton, involves King Shahryar (SHAH-ree-ar) being told a story every night by Queen Scheherazade (shuh-HER-uh-zad). Name this collection of stories that includes "Aladdin's Lamp" and "Ali Baba and the Forty Thieves."

ANSWER: *The* **Thousand and One Nights** or *Arabian Nights* [or *Alf layla wa-layla*; accept **One Thousand and One Nights** or A **Thousand and One Nights** or *The Book of the* **Thousand Nights and a Night** or *The* **Thousand and One Arabian Nights**]

16. Near the end of his rule, this leader ordered the creation of a Quran written in his own blood. Shortly after succeeding Ahmed Hassan al-Bakr, he was the target of an assassination attempt which prompted reprisals in the Dujail (doo-ZHAIL) Massacre. This leader's al-Anfal Campaign involved a chemical attack against Halabja, a Kurdish city, during a war he waged against Iran from 1980 to 1988. His 1990 invasion of Kuwait triggered the Gulf War. Name this Iraqi leader deposed by the U.S. in 2003.

ANSWER: **Saddam Hussein** (suh-DAHM hoo-SAYN) Abd al-Majid al-Tikriti [accept either underlined name]

17. Composer and genre required. The seventeenth of these pieces opens with a one and a half-measure Largo section consisting of a single A major chord. The twenty-ninth of these pieces contains an extremely long adagio sostenuto ("SAUCE"-tih-noo-toh) third movement in F sharp minor. Another adagio sostenuto opens the fourteenth of these pieces, which was originally named "Quasi una fantasia." Name these pieces which include ones nicknamed "Tempest", "Hammerklavier", and "Moonlight."

ANSWER: **piano sonatas** by Ludwig van **Beethoven** [prompt on partial answer]

18. For a magnet, this quantity is given by the cross product of the magnetic moment with the magnetic field. This quantity, which is measured in joules per radian, or Newton-meters, is also given by the time derivative of angular momentum. Classically speaking, this quantity is given by the cross product of the position and the net force. Name this quantity which is sometimes called the rotational analogue of force.

ANSWER: **torque** [prompt on "moment of force"]

19. Near its source, this river has part of its flow diverted into the Segura River watershed. The mouth of this river is just north of the Bay of Setubal. This river flows under the 25th of April Bridge, whose name commemorates the Carnation Revolution that occurred in the most populous city along its banks. That city along this river was devastated in a 1755 earthquake and contains Europe's longest bridge, named after Vasco da Gama. Name this longest river on the Iberian Peninsula, which meets the Atlantic Ocean at Lisbon, Portugal.

ANSWER: **Tagus** River (TAY-gus) [or Rio **Tajo** or Rio **Tejo**]

20. The second section of this poem compares eyes to "sunlight on a broken column." This poem's fifth part states "Between the desire, and the spasm, between the potency and the existence ... falls the shadow." Its title figures have headpieces filled with straw and are leaning together, "shape without form, shade without color." This poem ends by asserting that "this is the way the world ends, not with a bang but a whimper." Name this poem by T.S. Eliot.

ANSWER: "The **Hollow Men**"