

## **2015 OAC Regionals – Round 5**

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

### **Category Round**

**American Literature: Name these American authors who wrote about butterflies.**

Team A: What author of “Dr. Heidegger’s Experiment” wrote about Owen Warland’s creation of a mechanical butterfly in “The Artist of the Beautiful”?

ANSWER: Nathaniel **Hawthorne** [accept Nathaniel **Hathorne**]

Team B: The young Jay Follett appreciates the nature of death as he sees a butterfly in what author’s novella *A Death in the Family*?

ANSWER: James Rufus **Agee**

Tossup: This author wrote about a character who sees a raindrop fall on a butterfly in “Two Minute Seduction.” This author wrote about the fashion model Jadine and her love interest Son, who begin a relationship, in her novel *Tar Baby*. She wrote about Pecola Breedlove in a book named for a body part that Pecola desires. Margaret Garner inspired another of this author’s novels, which opens “124 was spiteful.” In that book by this author, Sethe (seth-uh) murders her own daughter so that she does not go back into slavery. Name this African-American female author who wrote *The Bluest Eye* and *Beloved*.

ANSWER: Toni **Morrison** [or Chloe Ardelia **Wofford**]

**Mathematics: Answer some questions about prime numbers.**

Team B: What French scientist gives his name to numbers of the form  $2^{2^n} + 1$  (“two to the two to the n, plus one”), which he wrongly conjectured were all primes? Prime numbers also figure into his namesake “little theorem.”

ANSWER: Pierre de **Fermat** [accept **Fermat** number]

Team A: What French mathematician gives his name to primes of the form  $2^n - 1$  (“two to the n, minus one”)?

ANSWER: Marin **Mersenne** [or Marin **Mersennus**; accept **Mersenne** primes]

Tossup: A one-to-one correspondence exists between the Mersenne (MER-senn) primes and these numbers, all of which are hexagonal and triangular numbers. The Euclid-Euler (“YOU”-clid OY-lur) theorem governs the existence of these numbers, which are not deficient and not abundant, and which have aliquot (AL-ih-kwott) sums equal to themselves. All known examples of these numbers are even; it has not been established whether odd ones exist. Eight thousand one hundred twenty-eight, four hundred ninety-six, and twenty-eight are examples of these numbers, whose smallest member is six. Name these numbers that equal the sum of all of their proper divisors.

ANSWER: **perfect** numbers

**World History: Name these former African leaders.**

Team A: This 14th century ruler of the Mali Empire devalued gold in North Africa and the Middle East for around a decade because of the large amounts of gold that he distributed during a 1324 hajj.

ANSWER: Mansa **Musa** [accept **Musa I** (the first)]

Team B: Assassinated and succeeded by his brother Dingane (din-GAH-nay) in 1828, this man is the founder and best known leader of the Zulu Kingdom.

ANSWER: **Shaka** Zulu [or **Chaka** Zulu or **Shaka** kaSenzangakhona]

Tossup: This leader bestowed the title of “First Arab Citizen” upon Shukri al-Quwatli after their two polities were merged. This man was the target of a planned coup by his former chief military commander, Abdel Hakim Amer. He was one of the leaders of the July 23rd Revolution along with Muhammad Naguib (nah-GEEB), whom he succeeded as ruler four years later. This founder and lone leader of the United Arab Republic briefly resigned after being defeated by Israel in the Six-Day War. He oversaw construction of the Aswan High Dam and sparked the Suez Crisis by nationalizing the Suez Canal after coming to power in 1956. Name this Egyptian President who ruled until 1970, when he was succeeded by Anwar Sadat.

ANSWER: Gamal Abdel **Nasser** (NAH-sir)

**Fine Arts: Name these composers, all of whom wrote tone poems.**

Team B: This composer drew on mythology of his home country for pieces such as “The Swan of Tuonela” and also composed the nationalistic piece *Finlandia*.

ANSWER: Jean **Sibelius** (zhahn sih-BAY-lee-us) [or Johan Julius Christian **Sibelius**]

Team A: “The Moldau” (“MOLE”-dow) is one of six tone poems in this composer’s cycle *Ma Vlast*, which depicts his homeland of Bohemia in the modern-day Czech (“CHECK”) Republic.

ANSWER: Bedrich **Smetana** (BED-rik SMEH-tah-nah)

Tossup: In a tone poem by this composer, the end of night is signaled by an E flat, B flat, B flat, E flat, G, from the oboe. In that piece, this composer has the solo violinist tune the E string down to an E flat to create a triton with the A string. In another piece, he depicts two pianists practicing their scales. This composer used the xylophone to depict dancing skeletons in a tone poem in which Death summons the dead, as well as in the “Fossils” movement of a different piece. This composer used a cello with piano accompaniment to depict a swan. Name the French composer of *Danse Macabre* (dawnss muh-KAHB-ruh) and *Carnival of the Animals*.

ANSWER: Charles-Camille **Saint-Saens** (caa-meel san-sahnss)

**Life Science: Name these parts of the human body.**

Team A: This gland produces calcitonin, and it is affected in Grave's disease and goiter, the latter of which occurs with an iodine deficiency.

ANSWER: thyroid gland

Team B: This organ, in which old red blood cells are destroyed, consists of red pulp and white pulp.

ANSWER: spleen

Tossup: Problems in this organ can be detected if high amounts of transaminases are found within it. A process that occurs primarily in this organ converts two lactate molecules into one glucose molecule, then sends the glucose back to muscle cells. The falciform ligament divides this organ into two parts. Macrophages named Kupffer cells are located here. The Cori cycle, gluconeogenesis, and the urea cycle occur primarily in this organ. This organ converts bilirubin to a more water-soluble form. This organ secretes bile, which can be stored in the nearby gallbladder. It is damaged by cirrhosis (sir-ROH-sis) and hepatitis. Name this largest internal organ of the body.

ANSWER: liver

**English / World Literature: Name the following related to East Asian literature.**

Team B: What work by Lady Murasaki (MUR-uh-sah-kee), sometimes considered to be the first novel, is a depiction of classical Japanese court life?

ANSWER: *The Tale of Genji* or [*Genji monogatari*]

Team A: Zeami (zay-AHM-ee) is considered to be a practitioner of what medieval Japanese art form, which emphasizes a slow, stylized performance and actors with masks?

ANSWER: noh [or nogaku or noh drama or noh play or noh theater]

Tossup: In this work, a character causes fiery bricks to fall from heaven, leading to the creation of Flaming Mountain. A group of characters in this work make a pilgrimage to Vulture Peak. This novel's main character was born from a magic stone infused with the power of heaven on top of a mountain. This novel's characters include Pigsy, Sandy, and Sun Wukong, who sometimes provides the alternate name of this novel, (\*) *Monkey*. Name this novel, one of the four Chinese classics, which is named for a voyage to India.

ANSWER: Journey to the West [or Xi You Ji or Hsi-yu chi; prompt on "Adventures of the Monkey God" or "Monkey to the West" or "The Adventures of Monkey"; prompt on "Monkey" before (\*)]

**American Government / Economics: Name these current U.S. governors.**

Team A: Raised as Sikh, this Indian-American woman and youngest current governor has served as South Carolina's Governor since succeeding Mark Sanford in 2011.

ANSWER: Nimrata Nikki Randhawa Haley

Team B: This other Indian-American, who has served as the Governor of Louisiana since 2008, made headlines in January 2015 for criticizing Western European governments for allegedly allowing Muslim-controlled "no-go zones."

ANSWER: Piyush "Bobby" Jindal (JIN-dul)

Tossup: In 2011 this governor pulled his state out of the environmental organization Regional Greenhouse Gas Initiative. Shortly before being re-elected as governor over Barbara Buono, he authorized over ten million dollars to be spent on a special election to fill the seat left by deceased U.S. Senator Frank Lautenberg, which was won by Cory Booker. In January 2015 he was criticized for accepting all-expense paid trips to several Dallas Cowboys football games. This governor was embroiled in a 2013 scandal in which members of his staff were involved in the closure of traffic lanes that provided residents of Fort Lee access to the George Washington Bridge. Name this current Governor of New Jersey.

ANSWER: Christopher James Christie

**Physics: This set of questions will deal with the nature of light.**

Team B: Since light behaves like a wave at times, it will often exhibit what phenomenon, in which waves superpose to create a new wave with a different amplitude?

ANSWER: interference [accept word forms]

Team A: What physicist used a "grating" to conduct the double-slit experiment, in which he showed that light behaves like a wave and a particle?

ANSWER: Thomas Young

Tossup: Mantis shrimp are one of the few species that can detect light with this property. Dichroism (DYE-cro-ism) induced by light with this property is commonly used in a form of spectroscopy that examines the secondary structure of proteins. Light with a related planar property can be turned into light with this property by using a quarter wave-plate. Like its "linear" counterpart, the intensity of light that has this property is given by Malus' (MAL-iss-iz) law. Name this property of light, in which its electric field oscillates in a corkscrew fashion.

ANSWER: circular polarization [accept word forms, prompt on "polarization"]

**Geography: Name these mountain ranges.**

Team A: The Novaya Zemlya (NOH-vuh-yuh zem-lee-YAH) archipelago is a northern extension of this mountain range that lies along the continental border that splits Russia into European and Asian sides.

ANSWER: Ural Mountains [or Urals or Uralsky Khrebet]

Team B: Mont Blanc is the highest peak in this European mountain range that dominates the geography of Switzerland and western Austria.

ANSWER: Alps [accept Alpine Mountains]

Tossup: Longs Peak is one of most notable features within this mountain range's namesake national park. This range is at the west end of the Laurentian Divide, and one part of this range is traversed by the Icefields Parkway, which runs north from Lake Louise into Jasper National Park. The Sawatch [suh-"WATCH"] and Bitterroot Ranges are sub-ranges of these mountains, which include both Mount Elbert and Pikes Peak. These mountains contain the world's largest concentration of geysers within Yellowstone National Park. Name this North American mountain range which runs from British Columbia to New Mexico.

ANSWER: Rocky Mountains or Rockies [accept Canadian Rocky Mountains or Canadian Rockies]

**American History: Name these battles of the Civil War.**

Team B: Joseph Hooker was defeated by Robert E. Lee at this May 1863 battle best remembered as the battle at which "Stonewall" Jackson was wounded by friendly fire, ultimately leading to his death.

ANSWER: Battle of Chancellorsville

Team A: The Union Army regained control of the Mississippi River with Ulysses Grant's victory at this nearly two month long battle, which was ended when John Pemberton surrendered on July 4th, 1863.

ANSWER: Battle of Vicksburg or Siege of Vicksburg

Tossup: One commander at this battle located his headquarters at the Philip Pry House. This skirmish was preceded by the Battle of South Mountain, and A.P. Hill arrived at this battle with reinforcements following the Confederate victory two days earlier at the Battle of Harpers Ferry. Prior to this skirmish, Union soldier Barton Mitchell discovered the Confederate battle plans, known as Special Order 191, wrapped around three cigars. Fighting locations at this battle included the "Bloody Lane" and "Burnside's Bridge." The result of this battle prompted Abraham Lincoln to announce the Emancipation Proclamation. Name this single-day bloodiest battle of the Civil War in which George McClellan halted Robert E. Lee's advance into Maryland.

ANSWER: Battle of Antietam (an-"TEE"-tum) [or Battle of Sharpsburg]

### Alphabet Round – Letter A

1. **(HYPHENATED ANSWER)** – This former eye doctor and leader of the Ba’ath Party is the current President of Syria.
2. In classical mechanics, this vector quantity is defined as the time derivative of velocity.
3. This historian wrote the novels *Esther* and *Democracy*, but he is best known for a Pulitzer Prize-winning account of his own “Education.”
4. **(TWO WORD ANSWER)** – Term used to describe singing without accompaniment.
5. Distinguished from comparative advantage, this term refers to the ability of an agent to produce more of a good than a competitor. Unlike comparative advantage, it does not explain why international trade is mutually beneficial.
6. **(MULTI-WORD ANSWER)** – Document which outlined the way the U.S. government was run before the ratification of the U.S. Constitution.
7. Neurodegenerative disease that causes dementia and is characterized by beta-amyloid plaques that accumulate in the brain.
8. This evil magician, who repeatedly deceives the Red Crosse Knight, is the villain of most of book one of Edmund Spenser’s *The Faerie Queene*.
9. Christian season which ends on Christmas Eve.
10. **(TWO WORD ANSWER)** – 1260 battle in which the Mongol Empire was defeated by the Mamluks in present day Israel.
11. **(TWO WORD ANSWER)** – This film, which was directed by Francis Ford Coppola, is a Vietnam War adaptation of Joseph Conrad’s *Heart of Darkness*. It contains the line “I love the smell of napalm in the morning.”
12. This type of computer language usually involves manipulating registers directly. Compilers typically turn a high-level language into this kind of lower-level one.
13. This novelist wrote a novel about Okonkwo, whose village undergoes Westernization, titled *Things Fall Apart*. This man also wrote a sequel to *Things Fall Apart* entitled *No Longer at Ease*.
14. Spanish slave ship that was at the center of an 1841 Supreme Court case after it landed in the U.S. following a successful slave mutiny.
15. Evil Egyptian deity who attacks Ra and the solar barge each day, but ultimately fails.
16. **(ONE OR TWO WORD ANSWER)** – American artistic movement associated with a group called “The Eight”, whose members included Robert Henri and Everett Shinn.
17. Peninsula on which Baku, the capital of Azerbaijan, is located.
18. **(NAME AND REGNAL NUMBER REQUIRED)** – Papal name used by Nicholas Breakspear, the only Englishman to serve as Pope.
19. This literary term refers to the repeated use of a phrase at the beginning of multiple clauses, such as “it was the best of times, it was the worst of times...”
20. Element that is extracted and refined through the Bayer and Hall-Heroult processes.

### Alphabet Round – Letter A Answers

1. Bashar Hafez al-Assad (HYPHENATED ANSWER)
2. acceleration
3. Henry Brooks Adams
4. a cappella (TWO WORD ANSWER)
5. absolute advantage
6. Articles of Confederation and Perpetual Union (MULTI-WORD ANSWER)
7. Alzheimer's disease
8. Archimago
9. Advent
10. Battle of Ain Jalut or Battle of Ayn Jalut (TWO WORD ANSWER)
11. Apocalypse Now (TWO WORD ANSWER)
12. assembly language [accept assembler]
13. Chinua Achebe [or Albert Chinualumogu Achebe]
14. *La* Amistad
15. Apep or Apophis
16. Ashcan School or Ash Can School (ONE OR TWO WORD ANSWER)
17. Absheron Peninsula
18. Adrian IV (the fourth) (NAME AND REGNAL NUMBER REQUIRED)
19. anaphora
20. aluminum or aluminium

### Lightning Round

1. This poem was written as a series of stanzas that each end with a “bob and wheel”. One of its title characters is given a kiss one day, two kisses the next, and three kisses on a third day, and they’re all from a lady who gives him a magic girdle. Earlier, that man had beheaded a visitor to King Arthur’s court with the agreement that he is beheaded a year later. The “Pearl Poet” is thought to have authored what medieval poem centering on the two, title knights?

ANSWER: Sir Gawain and the Green Knight

2. This artist depicted a procession of men in suits and top hats behind a girl in an orange cap in the painting *Anxiety*. A red-headed woman is shown sinking her mouth into the neck of a man in his painting *Vampire*. This artist of the *Frieze of Life* series is best known for a painting with a body of water and red sky behind the primary figure, who stands next to a roadway railing with his hands on the side of his head and his mouth agape. Name this Norwegian painter of *The Scream*.

ANSWER: Edvard Munch (ED-var-d MOONK)

3. Securin (suh-KYOO-rin) is not cleaved until after this stage of the cell cycle, since separase (SEP-uh-“race”) and the APC are inhibited until the cell advances past its namesake checkpoint. Right before this phase begins, the mitotic spindle binds to kinetochores (kih-NET-oh-“cores”). In this stage, the centromeres of each chromosome line up on a namesake plate. Name this stage of (\*) mitosis that follows prophase.

ANSWER: metaphase [prompt on “mitosis” before (\*)]

4. During one military campaign, this leader transferred power to Jean Kleber (zhahn CLAY-“bear”) after his victory at the Battle of Abukir (AH-boo-keer). This leader’s victory at the Battle of Friedland ended the War of the Fourth Coalition and resulted in the favorable Treaties of Tilsit. He won the Battle of Borodino during his failed invasion of Russia, and he lost all power when the Duke of Wellington defeated him at the 1815 Battle of Waterloo. Name this diminutive leader of early 19th century France.

ANSWER: Napoleon Bonaparte [or Napoleone Buonaparte; accept any underlined name; accept Napoleon I]

5. This religion’s eschatology (ess-kuh-TAHL-uh-jee) includes the Chinvat (CHEEN-vat) Bridge, which separates the world of the living from the world of the dead. A now-extinct branch of this religion venerated its purely neutral god Zurvan. It venerates its dead in so-called “Towers of Silence” and imagines that six Amesha Spentas (uh-MESH-uh SPEN-tuhz) are opposed by the evil god Ahriman (AH-ree-mawn), who is continuously fighting with Ahura Mazda (uh-HUR-uh MAHZ-duh). Name this Persian dualistic religion that was founded by Zarathustra (zair-uh-THEW-struh).

ANSWER: Zoroastrianism (zoh-roh-AST-ree-un-izm) [accept Magianism or Parsiism; accept Mazdaism before “Mazda”; accept Zarathustraism before “Zarathustra”; accept word forms of all acceptable answers]

6. One character in this play is the subject of a novel by Marsye Conde (MAR-cee-yay CON-day), in which that character falls in love with John Indian. Another character in this play is unable to remember the commandment that forbids adultery. Its characters include Judge Hathorne and Rebecca Nurse, the latter of whom is sentenced to be hanged. Other characters include the slave Tituba (teh-TOO-bah) and John Proctor. Name this play by Arthur Miller about the Salem Witchcraft Trials.

ANSWER: *The* Crucible

7. A piece by this composer begins with two violas and four cellos playing the tune to a troparion. A tone poem by him was written for wounded soldiers from the Turko-Serbian War. That piece contains the anthem “God Save the Tsar,” which, with “La Marseillaise” (lah mar-SAY-ez), is found within another composition by him that includes cannons. Name the Russian composer of *Marche Slave* and the *1812 Overture*.

ANSWER: Peter Ilich Tchaikovsky (chy-KOFF-skee) [or Pyotr Ilyich Tchaikovsky]

8. Followers of this mathematician did not believe in the existence of irrational numbers, which is why they supposedly drowned Hippasus (hi-PAH-sus) for proving that the square root of two was irrational. His belief that music and planetary motion were linked is a doctrine called the music of the spheres. Before becoming president, James Garfield proved the theorem named for this man. Identify this mathematician who names a theorem about right triangles which states that the square of the hypotenuse is equal to the sum of the squares of the other two sides.

ANSWER: Pythagoras [accept Pythagorean theorem]



9. This ruler sent one of his generals, Arnaldo Ochoa, to lead troops during the Ethio-Somali War. Operation Mongoose was an attempt to overthrow this leader. The Moncada (mohn-KAH-dah) Barracks were the target of an attack by this man, who came to power after the 26th of July Movement overthrew Fulgencio (fool-HAYN-see-oh) Batista. The Bay of Pigs invasion tried to topple this leader, who was succeeded in 2008 by his brother Raul. Name this man who, from 1959 to 2008, ruled Communist Cuba.

ANSWER: Fidel Alejandro **Castro** Ruz

10. The normal form representation of these scenarios include listing out all possibilities in a payoff matrix, as well as listing all conceivable strategies. Some of these situations, such as nim and Kuhn poker, are of the “zero-sum” type. Another one of these situations, known as the stag hunt, is similar to one of these scenarios in which two people must choose to cooperate or defect. Name these hypothetical situations that give their name to a field of study and include the prisoner’s dilemma.

ANSWER: game theory **games**

11. This nation contains an “east” and “west” area settled by and named after the Griqua (GREE-khuw) people. The Highveld is a large plateau area within this nation, which has part of its northern border formed by the Limpopo River. This is the largest nation that contains part of the Drakensberg Mountains, and its southernmost point is near the Cape of Good Hope. Lesotho is surrounded by what African nation whose three capitals are Bloemfontein, Pretoria, and Cape Town?

ANSWER: Republic of **South Africa** [prompt on “RSA”]

12. One character in this novel lied about the disappearance of Sarah Dunkirk so that he could acquire her family fortune. John Raffles appears in this book to reveal the devious nature of Nicholas Bulstrode. Another character in this work was writing the book *The Key to All Mythologies*. The will of that man, Edward Casaubon (CAH-suh-bon), forbids Dorothea Brooke from marrying Will Ladislaw. Name this “study of provincial life,” a novel by George Eliot.

ANSWER: **Middlemarch**: *A Study of Provincial Life*

13. This scientist built the first homopolar (ho-MAH-puh-lur) motor, which generates a certain force in one direction. This scientist gives his name to a protective enclosure of metal that is designed to shield objects from electromagnetic radiation. Lenz’s law gives the direction of the induced EMF that is given by his namesake law, which describes the behavior of a magnetic field when it interacts with an electric circuit. Name this scientist known for his law of induction.

ANSWER: Michael **Faraday**

14. This politician was elected governor three times as the successor to Culbert Olson. This man was the running mate of Thomas Dewey in the Election of 1948. He succeeded Fred Vinson in his highest position, which saw him issue decisions in such cases as *Baker v. Carr* and *Gideon v. Wainwright*; in that same position, he headed a namesake commission that investigated the assassination of John F. Kennedy. Name this Chief Justice of the Supreme Court from 1953 to 1969.

ANSWER: Earl **Warren**

15. One religious structure designed by this architect is in Garden Grove, California and is where the weekly *Hour of Power* show is produced. This non-German architect of the Crystal Cathedral designed the building in New York City which contains the Four Seasons Restaurant. A housing structure in New Canaan designed by this architect was inspired by Mies’s (MEEZ-iz) Farnsworth House. Name this American architect who designed the Seagram Building and the Glass House.

ANSWER: Philip Cortelyou **Johnson**

16. While folding a sheet, one member of this family ascends to heaven. Another member of this family named Rebecca is known for eating whitewash from walls. While facing the firing squad, another member of this family recalls the afternoon that his father took him to discover ice. This family includes many members named Aureliano (or-“ale”-ee-AN-oh). Name this family that is at the center of the Gabriel Garcia Marquez novel *100 Hundred Years of Solitude*.

ANSWER: **Buendia** family

17. According to one myth, late in life this figure married Astymedusa. Prior to his birth, this figure's father kidnapped and raped Chrysippus (cry-SIP-iss). King Polybus was the adoptive father of this figure, who determined that "man" was the answer to the riddle of the sphinx. He was succeeded as king by his uncle, Creon, after he blinded himself upon learning that his parents were Laius (LAY-us) and Jocasta. Name this mythical King of Thebes who fulfilled a prophecy that he would kill his father and marry his mother.

ANSWER: Oedipus (ED-ih-puss) [or Oidipous; accept Oedipus Rex or Oidipous Tyrannos or Oedipus the King]

18. In lyo·phili·zation, this phenomenon is used to remove water from the desired material. Either this process or recrystallization is used in the final step of purifying caffeine. This process is the opposite of deposition, which, along with this process, occurs at temperatures and pressures below the triple point. At STP, dry ice undergoes what type of phase change in which a solid changes directly into a gas?

ANSWER: sublimation [accept word forms]

19. This philosopher attacked the bizarre mysticism of Emmanuel Swedenborg in *Dreams of a Spirit Seer*. He distinguished between the phenomenon and the noumenon ("NEW"-muh-non) in a work that proposes humanity has innate categories of knowledge; that work argues that synthetic *a priori* truths are possible, using the example of seven plus five equals twelve. Name this German philosopher who wrote the *Critique of Pure Reason*.

ANSWER: Immanuel Kant

20. One contributing cause to this event was Henry Wilde's replacement of David Blair. Senator William Alden Smith chaired an inquiry into this event, survivors of which were rescued by the RMS *Carpathia*. J. Bruce Ismay was criticized for his actions during this event, which was the subject of the book *A Night To Remember*. Millionaire Molly Brown was given the nickname "unsinkable" following what 1912 event in which the world's largest ship hit an iceberg and sank?

ANSWER: sinking of the RMS Titanic [accept equivalents that mention the RMS Titanic]