

Round 10

2015 Potatoville Varsity

Alston Boyd • B. Alan Smithee • Alec Krueger • Kevin Jiang • Kristin A. Strey
Franz Varga • Tyler Vaughan • Shreyas Vissapragada • Andrew Wang • Michael H. Wong

Tossups

1. **A cotransporter with iodide and this ion is used by the thyroid gland to begin making various hormones. The renin-angiotensin system regulates fluid levels and this ion through the kidney. Hyponatremia occurs when this element has an elevated concentration in the blood. This ion's concentration is maintained in the distal tubule of the nephron by (*) aldosterone. The depolarization stage during an action potential allows this ion to rush into the cell, but that signal can be balanced by a pump where three ions of this element are released for every two potassium ions taken in. A high intake of this element's ion results in high blood pressure. For 10 points, name this element with symbol Na [N-A].**

Answer: sodium cation (accept Na+ before it is read)

2. **This thinker contrasted sense-based properties and the imagination by noting that all the sensations of a ball of wax change as it is moved near fire. He corresponded with Elisabeth of Bohemia, who criticized his idea that interactions with the pineal gland bridged the separation between (*) mental and material states, a form of dualism. For 10 points, name this author of Meditations on First Philosophy and Discourse on the Method, who argued that the ability to think about existence proves one's own existence by stating "I think, therefore I am."**

Answer: Rene Descartes

3. **After one ruler of this empire won the Battle of Samugarh, he executed his brother Dara Shikoh. One ruler of this empire had a group of ministers known as the "Nine Jewels," which included the tutor Bairam Khan. Almagir II [the second] led this country when its capital was sacked. This empire's sixth ruler re-instigated the tax on non-Muslims, the (*) Jizya tax. This empire was founded following the defeat of the Lodis at the First Battle of Panipat, during which it was led by its founder Babur. The ruler Aurangzeb was the son of the man who ordered the construction of the Taj Mahal, Shah Jahan. Akbar the great was the ruler of, for 10 points, what Muslim Indian empire that ended in 1857?**

Answer: Mughal Empire

4. **This man fathered Melanippus by raping Perigune. This man killed the Pallantides to ensure his succession to the throne. He pushed Sciron off of a cliff during a voyage in which he also wrestled and killed Cercyon. His failure to change his sails caused his father to commit suicide, and a story about that same voyage in which he replaces planks of his boat names an identity paradox. Due to the murder of (*) Androgeus, he had to perform a task that involved using a ball of string to overcome one of Daedalus's constructions. For 10 points, name this hero who abandoned Ariadne and slayed the Minotaur.**

Answer: Theseus

5. In this play, the Officer delivers the king's message about the title character. Another character won't listen to Cleante. In this play, Madame Pernelle is not fond of Dorine's mistress Mariane, who gets engaged to Valere. Damis reveals the title character's (*) true nature after the title character attempted to seduce the host's wife Elmire. In this play, the title character attempts to acquire Orgon's land. For 10 points, name this play about the hypocritical title character pretending to be a holy man, a work of Moliere.

Answer: Tartuffe

6. Archimedes proved that the area of a segment of this curve is equal to four-thirds times the area of a particular triangle inscribed in that segment. To approximate a definite integral, these curves are created by Simpson's Rule, which improves on the lines used in the trapezoidal rule. These curves have uniform acceleration, as their second derivatives are strictly (*) constant. This conic section, formed when the plane intersects the cone parallel to the slant, has eccentricity of 1. For 10 points, name this curve, followed by projectiles under the influence of gravity and graphed by degree-two functions like y equals x squared.

Answer: parabola (prompt on any answer including the word "quadratic")

7. One opera by this name contains the second-act aria "Da quel son soavemente" [dah kwell sohn "suave"-eh-MEN-tay]. That treatment by Ruggiero Leoncavallo [roo-jee-ay-roh lay-ohn-cah-vye-oh] contains the innkeeper Gaudenzio, whose name is changed to Benoit [ben-wah] in the more famous opera of this name. In this opera, two characters sing the love duet "O soave fanciulla" [oh "suave"-ay fahn-chee-oo-lah], and earlier, one of those two notices the other's (*) cold hands in the aria "Che Gelida Manina," and." In this opera, the waltz "Quando me'n vo" [kwan-doh may-n voh] is sung by Musetta, who competes for Marcello's love with the consumptive Mimi. For ten points, name this opera about artists living in a Parisian garret, a Giacomo Puccini work used as the basis for Jonathan Larson's musical "Rent."

Answer: La Bohème [boh-EM]

8. Hugh I ["the first"] participated in this conflict, but after being denied reinforcements, Hugh withdrew from the campaign. Raymond IV protected the rear of Tatikios during The Battle of Dorylaeum during this conflict. Walter Sans Avoir participated in a part of this conflict as the lieutenant to (*) Peter the Hermit. As a result of this conflict the County of Edessa was created. This conflict started when, due to Alexius I's repeated calls for aid, Pope Urban II gave a speech at the Council of Clermont. For 10 Point, name this first of eight wars aimed at reclaiming the holy land.

Answer: The First Crusade

9. In this work, Mrs Phelps decides not to worry when her third husband, Pete, is sent to a forty-eight-hour war, and Mrs Bowles defends her vote for President Winston Noble. This novel's protagonist is introduced to Mr Simmons as "Marcus Aurelius" by Granger, the leader of a group of hobos. That protagonist reads Matthew Arnold's "Dover Beach" to friends of his wife, (*) Mildred. In this novel, a speeding car kills Clarisse McClellan. With the help of Professor Faber, the protagonist kills Captain Beatty and escapes the Mechanical Hound. For 10 points, name this dystopian novel about the fireman Guy Montag, a novel by Ray Bradbury.

Answer: Fahrenheit 451

10. Main sequence lifetime is approximately this quantity over its solar value to the -2.5 power; a derivation of that fact requires a relation between this quantity and luminosity. A spherical body characterized only by this quantity is described by the Schwarzschild metric, and (*) Schwarzschild radius is equal to $2G$ times it over c squared. Unlike classical pendulums, physical pendulums depend on this quantity because moment of inertia is the rotational analogue of it. Two bodies with non-zero values for this quantity will experience a gravitational force. By Newton's Second Law, force and acceleration are related by it. For 10 points, name this property of matter measured in kilograms.

Answer: mass

11. After giving a commencement speech, this character got an honorary doctorate in fine arts from Knox College. While exciting a crowd, this character fell and broke his wrist, leading to his red wristband “Wrist Strong” campaign. This character claimed to be the “Original fan of *Star Wars*” since he saw the film two weeks before anyone else, and he explained the science behind a controversial (*) lightsaber. He became immortal after killing the Grim Reaper, and compared the Bush Presidency to the Hindenburg disaster at the 2006 White House Correspondents’ Dinner. He refers to Bill O’Reilly as “Papa Bear.” For 10 points, name this former host of a namesake “Report.”

Answer: Stephen Colbert (accept (Her Excellency, the Rev. Sir) Doctor Stephen Tyberius (Mos Def) Colbert, D.F.A., (Heavyweight Champion of the World, ** [asterisk asterisk], featuring Flo Rida, La Premiere Dame De France))

12. On this holiday, a gold chain was tied to Kohen Gadol's ankle as he entered the Kodesh Hakodashim, or Holy of Holies. On the day before this holiday, some will perform the kapparot ritual of swinging a chicken over their head. Also on the eve this holiday, participants renounce all (*) personal vows that they will make in the coming year. This holiday's 5 prohibitions forbid having sex or wearing leather shoes. It includes the Kol Nidre and Nei'la prayers, requires a 25 hour fast, and occurs on the 10th day of Tishrei. Occuring soon after Rosh Hashanah, for 10 points, name this Jewish day of atonement.

Answer: Yom Kippur (Prompt on “day of atonement” before mentioned)

13. This man's predecessor was forced to resign after he, William Burns, was implicated in the Teapot Dome scandal. Clyde Tolson was rumored to be in a homosexual relationship with this man. This man's subordinate, Melvin Purvis, created controversy after the bloody (*) Little Bohemia incident. This man authorized the Counter Intelligence Program which targeted, along with many others, Martin Luther King Jr. This man spearheaded the formation of a Technical Laboratory, which could be used to analyze fingerprints. For 10 points, name this longest serving head of the FBI.

Answer: J(ohn) Edgar Hoover

14. At one point in this novel, the Soviet colonel Vaslav Tchitcherine chases the protagonist, and the behavioral scientist Pointsman trains an octopus to attack Katje. The protagonist of this novel is sent to a casino named after Hermann Goering. Blicero sacrifices the slave Gottfried inside number (*) 00000, and the statistician Roger Mexico realizes that the Poisson governs the protagonist's sexual encounters. This novel begins with the line, “A screaming comes across the sky”, V-2 rockets show up where Tyrone Slothrop has been. For 10 points, identify this long novel by Thomas Pynchon.

Answer: Gravity's Rainbow

15. An effect often used to determine reaction mechanisms occurs due to the difference in bond energy when one of these is in a reactant; that effect is this species' namesake “kinetic effect.” Tin has the more of these than any other element, and (*) Frederick Soddy was the first to propose them. Masses on the periodic table are reported as weighted averages due to the existence of these entities. Heavy water contains one of these for hydrogen. The fact that these entities radioactively decay makes them useful for determining the age of an object in carbon dating. For 10 points, identify these chemical species with varying numbers of neutrons, examples of which include deuterium and carbon-14.

Answer: isotopes

16. The Rozwi Empire fought off attempts to colonize this modern-day country. Those warriors of the Shona people, which currently reside in Mozambique and this country. The Lancaster House Agreement gave independence to this country when its ZAPU political party, led by (*) Joshua Nkomo, and its present day leader's ZANU party both ratified that agreement. Those parties of this country then merged as a part of the Gukurahundi event, allowing its current president to rise to authoritarian power. Formerly known as Rhodesia, hyperinflation currently plagues this country. For 10 points name this African country whose president is Robert Mugabe.

Answer: Republic of Zimbabwe

17. A cleaning brush and a paternoster hang in the background of this work, and a pair of ornate clogs rest under a table with three oranges on it. In the top of this painting, a chandelier holds a single lit candle above a (*) convex mirror that reflects the two subjects as well as the artist. A small, fluffy dog stands between the central figures in this work, and a red bed stands on the far right behind a woman in a veil and green dress, who is holding hands with a man in a fur coat. For ten points, name this marital painting by Jan van Eyck.

Answer: The Arnolfini Wedding (accept The Arnolfini Portrait; accept The Arnolfini Marriage or any reasonable answer that includes the name (Giovanni) Arnolfini and a suggestion of marriage, such as Giovanni Arnolfini and his Wife)

18. In one scene in this film, a man is questioned why he doesn't help a turtle flipped on its back as part of a Voight-Kampff test. At the end of this film, one character opens a monologue with "I have seen things you wouldn't believe" before concluding with "Time to die". That monologue, which states that "all those moments will be lost in time like tears in the rain," is given by (*) Roy Batty. This film, an adaptation of *Do Androids Dream of Electric Sheep*, focuses on Rick Deckard as he pursues four Tyrell Corporation produced Nexus-6s. For 10 points, Harrison Ford stars in what film that sees law breaking replicants hunted by the title figures.

Answer: Blade Runner

19. This judge lamented "Those who are bound by our decisions usually believe they can take us at our word [...] not so today" in a dissent on an injunction allowing Wheaton College exemption from providing contraception coverage. Earlier in her career, she was criticized for rejecting a racial discrimination claim by white (*) firefighters in New Haven, Connecticut, and ended the 1994 Major League Baseball strike. She replaced David Souter in 2009 as the first justice appointed by President Obama. For 10 points, name this Supreme Court justice, the first Hispanic justice in court history.

Answer: Sonia Maria Sotomayor

20. In one of this author's short stories, Gallaher's success makes Little Chandler question his marriage. This author of "A Little Cloud" wrote about a narrator's failing to buy a gift for Mangan's sister at the title bazaar. In another of his works, Michael Furey dies waiting outside Greta's window, which disturbs (*) Gabriel Conroy. He wrote a collection containing "Araby" and "The Dead" about residents of a title city, and wrote a stream-of-consciousness novel about a day in the life of Stephen Dedalus's friend, Leopold Bloom. For 10 points, name this author of *Dubliners* and *Ulysses*.

Answer: James Augustine Aloysius Joyce

Bonuses

1. This joint-stock company was founded in 1711, and led to the passing of an act that forbade joint-stock companies from forming without a royal charter. For 10 points each,

[10] Name this company whose namesake bubble led to an economic panic in England. Its name comes from its total control of South American trade.

Answer: **South Sea** Company

[10] At the time of the South Sea Bubbles, its governor was this King of England. He was targeted in the Jacobite rising of 1715.

Answer: **George I** [the first] (prompt on just “George”)

[10] The South Sea Bubbles was dealt with by this first Prime Minister of England. After the War of Jenkins’ Ear, this Prime Minister lost his influence and chose to resign.

Answer: Robert **Walpole**

2. This porcelain “work of art” was signed “R. Mutt.” For 10 points each,

[10] Identify this 1917 porcelain piece. Alfred Stieglitz displayed this controversial sculpture in Stieglitz’s studio.

Answer: **Fountain**

[10] Marcel Duchamp’s *Fountain* was one of his readymades. In Duchamp’s *L.H.O.O.Q.*, Duchamp drew a mustache on a postcard of this Leonardo da Vinci painting of a woman smiling.

Answer: The **Mona Lisa** (or La Gioconda)

[10] This Duchamp work was accidentally shattered after it took Duchamp eight years to make. It consists of two panels, each titled after a domain of one of the title figures.

Answer: The **Bride Stripped Bare by Her Bachelors, Even** (accept The **Large Glass**)

3. The Great Dividing Range contains this country’s highest peak at Mount Kosciuszko. For 10 points each,

[10] Name this country that is home to the Great Victoria Desert and Ayers Rock.

Answer: **Australia**

[10] This naturally-maintained structure off the coast of Eastern Australia has been threatened in recent years due to human pollution and over fishing.

Answer: **Great Barrier Reef**

[10] The Great Barrier Reef is located in this sea off of Eastern Queensland. The reef is made out of this living organism.

Answer: **Coral** Sea

4. This compound is known for its solid being denser than its liquid form. For 10 points each,

[10] Name this compound that is known as the universal solvent. Its electrolysis produces hydrogen and oxygen gas, and its maximum density is at about 4 degrees Celsius.

Answer: **water**

[10] According to VSEPR [“vesper”] theory, a water molecule has this molecular geometry orientation. This orientation causes the bond angle to be less than the 109.5 degrees found in tetrahedral molecules.

Answer: **bent** geometry

[10] These hygroscopic compounds remove water from a system. Silica gel is an important example of one that keeps things dry.

Answer: **desiccants**

5. This novel is subtitled “A Novel Without a Hero” For 10 points each,

[10] Identify this novel about Amelia Sedley and Becky Sharp. George Osborne dies at the battle of Waterloo in this novel.

Answer: **Vanity Fair**

[10] Vanity Fair was written by this American author. This author took the title for *Vanity Fair* from John Bunyan’s *The Pilgrim’s Progress*.

Answer: William Makepeace **Thackeray**

[10] Thackeray wrote a “history” of this character, a colonel in the British army. This character marries his foster mother Rachel, Lady Castlewood, after rejecting his cousin Beatrix. Thackeray’s novel *The Virginians*, centers on this character’s two grandsons.

Answer: **Henry Esmond** (accept either or both names, or this title: The History of **Henry Esmond**, Esq)

6. The *in vitro* type of this process takes place without the need for a womb, and parthenogenesis doesn’t include this process. For 10 points each:

[10] Name this event that occurs when sperm joins with egg.

Answer: **fertilization**

[10] The fertilization of sperm and egg results in this diploid structure. Afterwards, this structure becomes a morula, and after that, it becomes a blastocyst.

Answer: **zygote**

[10] In order to prevent multiple sperm joining with a single egg, this ion with a charge of positive two is released as a part of the cortical reaction. Osteoclasts break down bone to release this ion into the blood.

Answer: **calcium** [or **Ca²⁺**]

7. Stephen King has had many of his works made into movies. Name some, for 10 points each.

[10] A novella from King’s collection *Different Seasons* was made into this film. In this film, Andy Dufresne bonds with Red while imprisoned at the namesake penitentiary

Answer: The **Shawshank Redemption**

[10] This adaptation of King’s first novel follows the harassment of a high school girl and the development of her supernatural powers.

Answer: **Carrie**

[10] This film, based on King’s *The Body*, focuses on four children as they attempt to find body in the woods. In one scene in this film, two kids are forced to jump off a bridge to avoid a pursuing train.

Answer: **Stand by Me**

8. In this game, each team has 12 players on the field at a time, and it is played on a 110 yard long field. For 10 points each,

[10] Identify this variant of football played with only three downs.

Answer: **Canadian Football** (League) (accept **CFL**; do not accept or prompt partial answers)

[10] This trophy is awarded to the winner of the CFL’s championship game, which is also named after this trophy. The Toronto Argonauts have won this trophy 16 times.

Answer: **Grey Cup**

[10] This team has won the Grey Cup most recently in 2009 and 2010, under then-coach Marc Trestman. Anthony Calvillo, the CFL’s all-time leader in passing, played for this time.

Answer: **Montreal Alouettes** (accept either or both names)

9. One character in this novel drowns in pig’s blood. For 10 points each,

[10] Name this novel in which William of Baskerville realizes that Jorge of Burgos has been poisoning book pages. Adso of Melk serves as William’s scribe in this novel.

Answer: The **Name of the Rose**

[10] This Italian author wrote *The Name of the Rose*. He also wrote about Jacopo using Abulafia to create “The Plan” in *Foucault’s Pendulum*.

Answer: Umberto **Eco**

[10] The name of Eco’s character William of Baskerville may have come from this author’s novel *The Hound of the Baskervilles*. This author also created Doctor John Watson and Sherlock Holmes.

Answer: Arthur Conan **Doyle**

10. This 444 day event ended soon after Ronald Reagan became President of the United States. For 10 points each,
[10] Name this event in which members of an American embassy were captured by students from the University of Tehran.

Answer: **Iran Hostage Crisis**

[10] The Iran Hostage Crisis took place mostly during the Presidency of this 39th President of the United States. He had previously been a peanut farmer and Governor of the state of Georgia.

Answer: James Earl "Jimmy" **Carter**

[10] During Carter's Presidency, a nuclear power plant at this location in Pennsylvania had a partial meltdown.

Answer: **Three Mile Island** accident

11. This poem begins "the buzz-saw snarled and rattled in the yard." For 10 points each,

[10] Identify this poem whose speaker witnesses a boy's hand being cut off as the buzz-saw "leaped out at the boy's hand."

Answer: **Out, Out--**

[10] The speaker of this poem by the author of "Out, Out--" notes that "here there are no cows" and that "good fences make good neighbors."

Answer: **Mending wall**

[10] This poet wrote "Mending wall" and "Out, Out--." He wrote about "Two roads" that "diverged in a yellow wood" in his poem "The Road Not Taken."

Answer: Robert **Frost**

12. Violinist Ben Lee holds the Guinness World Record for quickly playing this piece, finishing in 54.24 seconds. For 10 points each,

[10] Name this piece, famous for its challenging runs of sixteenth notes. It depicts Prince Guidon's transformation into the title insect in Act 3 of Nikolai Rimsky-Korsakoff's opera *The Tale of Tsar Saltan*.

Answer: The **Flight of the Bumblebee**

[10] In 2012, a British orchestra claimed a record by playing this Frederic Chopin piece in just 52 seconds -- even though its nickname does not refer to its duration.

Answer: **Minute Waltz** (or Waltz in D-flat major, **Op. 64, No. 1**)

[10] This Soviet composer wrote "Sabre Dance" as a movement in his ballet *Gayane*. It's not a particularly fast song, but its frantic rhythm makes for common background music for circus acts like plate spinning.

Answer: Aram **Khachaturian**

13. For 10 points each, answer the following about the exponential function e to the x .

[10] Within 0.01, this is the value of e to the first power.

Answer: **2.718**... [accept any answer between 2.7081 and 2.7281, inclusive]

[10] In calculus, e to the x is its own derivative. As a result, this is the slope of f of x equals e to the x when x equals 5. Give an exact answer, not a decimal approximation.

Answer: **e to the 5th power**

[10] The exponential function can be extended into complex domains; e raised to the i times x power is equal to this trigonometrically-written quantity, according to DeMoivre's Theorem.

Answer: **cosine x plus i times sine x** (written as **$\cos(x)+i*\sin(x)$** ; do not prompt on partial answer)

14. The Office of War Intelligence requested this work during World War II; it was completed "at a distance," as its subject country was at war with the United States. For 10 points each,

[10] Identify this anthropological work that studied Japan's "shame" and "guilt" cultures.

Answer: The **Chrysanthemum and the Sword**

[10] *The Chrysanthemum and the Sword* was written by this American anthropologist and author of *Patterns of Culture*. Like her friend, Margaret Mead, this anthropologist studied under Franz Boas.

Answer: Ruth **Benedict**

[10] The thesis of Benedict's *Patterns of Culture* is that culture is a form of this psychological concept "writ large."

Answer: **personality**

15. This man was king of Uruk. For 10 points each,

[10] Name this figure of Mesopotamian myth who fought the Bull of Heaven as a part of his namesake "epic."

Answer: **Gilgamesh**

[10] After the death of the Bull of Heaven, the gods killed this friend of Gilgamesh. He was born a wildman meant to counter Gilgamesh, though Gilgamesh and this man became friends.

Answer: **Enkidu** (accept **Enkimdu**; accept **Eabani**; accept **Enkita**)

[10] While grieving over Enkidu, Gilgamesh found this figure to ask for immortality. This figure advises Gilgamesh to return to Uruk, but tells him about an immortality granting plant nonetheless.

Answer: **Utnapishtim** (accept **Atrahasis**; accept **Ziusudra**; accept **Zi-ud-sura**; accept **Zin-Suddu**)

16. [Note to moderator: do not read the alternate answer for the second part if the team does not answer with it] Special relativity is full of paradoxes. Answer some questions about them, for 10 points each:

[10] This paradox has one participant stay on Earth and one go off into space. The spaceman returns to see the participant on Earth has aged significantly more than he has, due to time dilation.

Answer: **twin paradox**

[10] This special relativistic concept resolves the pole-in-the-barn paradox, where its namesake quantity decreases as speeds approach the speed of light. It also can help resolve the Ehrenfest paradox for the circumference of a rigid disk.

Answer: **length contraction** [or **Lorentz contraction**]

[10] Length is contracted by this factor in length contraction, and time is dilated by a factor of it in time dilation. Rest mass times this factor is equal to the relativistic mass.

Answer: **Lorentz** factor [or **gamma** factor]

17. The Hagia Sophia became one of these places after Mehmet II took Constantinople, and the first of these places, the Masjid al-Haram, is home to the Kaaba. For 10 points each,

[10] Give this term for Islamic places of worship.

Answer: **mosque**

[10] The adhan, or call to prayer, is traditionally called from one of these towers or spires at the mosque. In 2009, a national amendment in Switzerland banned new construction of these features.

Answer: **minaret**

[10] The call to prayer is performed by this religious official.

Answer: **muezzin**

18. This man was tutored by Aristotle. For 10 points each,

[10] Name this Macedonian conqueror who served under his father Philip II, and defeated the Sacred Band of Thebes at the Battle of Chaeronea

Answer: **Alexander the Great**

[10] Alexander the Great built a causeway to end the siege of this city. After the defeat of this Persian city, over 30,000 of its citizens were sold into slavery

Answer: Siege of **Tyre**

[10] Alexander the Great captured Tyre while waging war against this Persian king. After Alexander captured his capital this man fled only to be killed by one of his governors.

Answer: **Darius III** (do not accept Darius the Great)

19. This set of four novels contains *The Temple of Dawn*, *The Decay of the Angel*, *Spring Snow*, and *Runaway Horses*. For 10 points each,

[10] Identify this set of novels about the lawyer and judge Shigekuni Honda.

Answer: The **Sea of Fertility**

[10] This Japanese author wrote *The Temple of the Golden Pavilion* and *The Sea of Fertility*.

Answer: Yukio **Mishima**

[10] Mishima performed seppuku on live television. Seppuku is a Japanese form of this process, which Richard Cory performs in an Edwin Arlington Robinson poem.

Answer: **Suicide** (accept obvious equivalents like "**ending own life**")

20. Operation Condor removed this man's predecessor, Salvador Allende. For 10 points each,

[10] Name this dictator, who oversaw an economic "miracle" of privatization and liberalization that continued even after this military leader was removed in a 1988 referendum.

Answer: Augusto **Pinochet**

[10] Pinochet led this South American country, whose capital city is Santiago.

Answer: **Chile**

[10] Augusto Pinochet created this roaming helicopter squad, which was tasked with executing military prisoners following the 1973 coup.

Answer: **Caravan of Death**