

# Round 11

## 2015 Potatoville Varsity

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Tossups

1. **Reporter enzymes bind to these structures in western blotting. One method by which these proteins are produced is affinity maturation. The ELISA array can be used to detect the concentration of these proteins, which also have a namesake “titer” test for their concentration that may utilize agglutination. They undergo V(D)J recombination, and (\*) monoclonal ones can help fight cancer. Humans have five isotypes of them, and they consist of two heavy and two light chains. Epitopes connect to paratopes on, for 10 points, what Y-shaped proteins in the immune system that identify antigens?**

Answer: antibodies [or immunoglobulins]

2. **The Musician takes cues from characters like the Young Man to start and stop playing in this author’s play set in Mommy and Daddy’s living room. He wrote a play about Harry and Edna’s visit to Agnes and Tobias’s house in *A Delicate Balance*. This author wrote about a man who asks another character to move over on the bench. That play ends with Jerry impaling himself on the knife that Peter is holding. In another work, (\*) “Get the Guest!” is played during a dinner party attended by Nick and Honey. George’s wife Martha responds “I am!” to the title question in that play. For 10 points, name this author of *The Zoo Story* and *Who’s Afraid of Virginia Woolf*?**

Answer: Edward Albee

3. **The Eleven Years’ War was interrupted due to this conflict. An attempt to end this conflict failed when one side refused to sign the Treaty of Newport. That treaty was annulled after Pride’s Purge, which abolished the Long Parliament. This war ended after The Battle of Worcester, during which the (\*) Scottish forces of Charles II were defeated. During this war, Thomas Fairfax won the Battle of Naseby. For 10 points, name this war in which the Oliver Cromwell led New Model Army defeated the royalist forces of Charles I.**

Answer: English Civil War

4. **Raman spectroscopy typically uses these as sources, and these can be used in optical tweezing while cooling and trapping atoms. A common crystal used as a medium for a solid state example of these is yttrium aluminum garnet, in which Q-switching is used to generate pulses. A (\*) continuous-wave example of one uses helium and neon, and all of them start with more electrons in excited states than in ground states. That initial condition of population inversion allows for the stimulated emission of light of a single wavelength from, for 10 points, what device that emits highly coherent light, sometimes used in classrooms in namesake “pointers?”**

Answer: lasers

5. **This character once became so poor that he resorts to living in a box and eating his own paintings. While having a snowball fight with his neighbors, he builds a fort shaped like a volcano. This character receives a large tv after his neighbors bought the tv to play in a box. This character conducted the halftime show of the Bubble Bowl. He was asked “Is (\*) mayonnaise an instrument?”, and he explodes after eating too many Krabby Patties. This cashier of the Krusty Krab plays the clarinet. For 10 points, Gary, Patrick Star, and Spongebob Squarepants are the neighbors of what character?**

Answer: Squidward Q. Tentacles (accept either underlined name)

6. One character in this play minds the sheep with his brother, and refers to another character as “Mr. Albert.” Another character in this play becomes “dumb” in between acts, while his acquaintance becomes blind. That blind character respond to both “Abel” and “Cain” and instructs the other character to (\*) “think.” The set for this play contains a single tree, and Pozzo keeps his slave Lucky on a leash. Featuring the friends Vladimir and Estragon, For 10 points, identify this play where the title character never appears, a play written by Samuel Beckett.

Answer: Waiting for Godot or En attendant Godot

7. The Heldenplatz’ outer castle gates hosts one of these structures. The Brazilian one of these things is located in Metropolitan Cathedral. One of these structures is paired with an eternal flame and located under the Arc of Triumph. One structure with this name is located in Confederation Square and is part of the National (\*) War Memorial. Another of these structures is guarded by insignia-less military personnel, and is located in Arlington National Cemetery. For 10 points, name these structures which serve the final resting place of anonymous troops.

Answer: Tomb of the Unknown Soldier (accept Tomb of the Unknowns and Unknown Soldier of the Independence)

8. One ship that attempted to reach this colony was the Sea Venture. The first people to populate this colony were the passengers of The Discovery, the Godspeed and the Susan Constant, Christopher Newport's ships. William Berkeley ruled this place after it was burned down during Bacon's Rebellion. One settler in this colony created a new form of (\*) tobacco. That was John Rolfe. It had a food shortage, known as the Starving Time, before improving relations with the Powhatan tribe. For 10 points, name this Virginia colony led by John Smith, the first permanent English colony in North America.

Answer: Jamestown

9. In the steady state approximation, this is the time derivative of the concentration of the intermediate. In proton NMR spectroscopy, peaks at this chemical shift are sometimes attributed to tetramethylsilane [tetramethyl-SIGH-lane]. This is the maximum number of phenyl groups in aliphatic compounds. The half life of a reaction with this order is equal to initial concentration over two times the rate constant; in that case, the rate constant is (\*) constant with time. This is the standard reduction potential in volts for the half reaction producing hydrogen gas. This is the volume that each molecule takes up in a perfect ideal gas. For 10 points, name this number, whose “absolute” variety is the coldest possible temperature on the Kelvin scale.

Answer: zero (or 0)

10. At the top of this painting, a priest’s face can be seen from under a yellow church with a red roof. Below that church is a glowing tree held by one of the larger central figures. In this painting, an upside-down-blue-skirted girl is playing a violin, with a man with a (\*) scythe on the left of her. On the left side of this painting, a woman is milking a goat. The artist painted it to depict his hometown of Vitebsk, Belarus, and its central figures are a green skinned man, and a lamb that man is looking at. For 10 points, name this painting by Marc Chagall.

Answer: I and the Village

11. The speaker of one of this author’s poems speaks about a woman whose “days were spent/in ignorant good-will” in a poem about the historical figures “MacDonagh and MacBride/And Connolly and Pearse” “A terrible beauty is born” in this author’s poem (\*) “Easter, 1916.” A poem by him notes “Mere anarchy is loosed upon the world/The blood-dimmed tide is loosed.” That poem by this author begins “Turning and turning in the widening gyre/The Falcon cannot hear the falconer/Things fall apart; the centre cannot hold.” For 10 points, identify this Irish poet of a poem that asks “what rough beast...slouches towards Bethlehem to be born?” in “The Second Coming.”

Answer: William Butler Yeats

12. This figure regained his father's possessions when he killed Liath Luachra and reclaimed the crane bag. Fear Doirich was rebuffed by this figure's future wife, and turned his future wife into a deer. Sadhbh was not killed by this figure because his dogs Brand and Sceolan realized she was human. High King Cormac mac Airt promised Grainne to this figure, but Grainne choose Diarmuid instead. This figure gained the world's (\*) knowledge when he sucked his thumb after he burned his thumb on the Salmon of Knowledge. The father of Ossian, for 10 points, name this Irish hero who led the Fianna in the Fenian Cycle.

Answer: Finn MacCool (accept either or both names. Accept either or both of Fionn mac Cumhaill or Deimne)

13. The United Mine Workers of America wore bandanas of this color. Southern Democrats once employed a terror squad named for this color of shirts. Phrygian Caps of this color became a symbol of the French Revolution. During the Years of Lead, a brigade of this color plagued (\*) Italy. A star of this color hovers above an AK-47 in the Mozambique Coat of Arms. A collection of saying by Mao Zedong were published in a little book of this color. For 10 points, name this color often associated with communism.

Answer: Red

14. Robert Mundell and James Tobin argued that public investment behavior would cause this quantity to rise faster than nominal interest rates. This concept is "built-in" by the very nature of the wage spiral. A 1970s oil crisis caused a stagnation in the economic growth rate with an unusual combination of (\*) high unemployment and a high value of this quantity, which rises when unemployment falls according to the Phillips Curve. One measurement of this quantity is done by tracking a market basket of goods, and calculating the Consumer Price Index. For 10 points, name this economic concept in which the price of goods increases.

Answer: Inflation

15. This piece calls for soprano and sopranino saxophones in F, despite neither instrument being pitched in that key. This work was originally commissioned as an adaptation of six of Isaac Albéniz's piano pieces, and Arturo Toscanini drew criticism for conducting this piece at too fast a tempo. Described by its composer as (\*) "orchestral tissue without music," this piece's end is marked *fortissimo possibile*, or "as loud as possible," after a gradual crescendo from a *pianissimo* beginning featuring a flute solo over a snare drum ostinato in 3/4 time. For ten points, identify this highly repetitive piece based on a Spanish folk dance, easily the best-known work of Maurice Ravel.

Answer: Boléro

16. In one of this author's novels, Frederick Williams marries Pauliana, who adopts Aurora. That novel is a sequel to her novel about Joaquin, Tao, and Eliza Sommers. One of her characters is conceived when Conseulo sleeps with an Indian Gardener, and rejects Huberto Naranjo to marry Rolf Carle. This author of *Daughter of Fortune* and *Eva Luna* wrote about the (\*) green-haired Rosa in a novel that takes place at Las Tres Marias. In that novel by this author, Clara Valle breaks her vow of silence to announce her marriage to Esteban Trueba. For 10 points, name this Chilean author of *Eva Luna* and *House of the Spirits*.

Answer: Isabel Allende

17. For a set of vectors, a new set of normalized vectors with this property can be created using the Gram-Schmidt process. The sine and tangent graphs have this property at pi radians, while sine has this property with negative sine at all of their intersection points. Any two vectors will have this property if their (\*) dot product is zero. Two lines have this property if their slopes multiply to negative 1; that is, their slopes are opposite reciprocals of each other. For 10 points, name this property possessed by two lines that meet at a right angle.

Answer: orthogonality (accept perpendicularity; accept reasonable descriptions like "meeting at a right angle" before those words are read)

18. This river begins at the base of the San Juan Mountains. The Amistad Dam joins the Devils River to this major river while another tributary is from the Pecos River. This river's largest tributary begins in the Sierra Madre Occidental range and is known as the Conchos River. This river flows through (\*) Big Bend National Park, while a decommissioned swing bridge connects Matamoros across this river to Brownsville. This un-navigable river eventually empties into the Gulf of Mexico. For 10 points, name this river that forms a portion of the Mexican-American border.

Answer: Rio Grande (accept Río Bravo del Norte)

19. One invasion of this country occurred over one hundred ships clashed at Hansan Island. That invasion, named for a Sexagenary Cycle month, was the Imjin War. This country's navy made use of Geobukseon whose design allowed it to ram ships. During the Battle of (\*) Noryang, this country's Admiral Yi-Sun-sin defeated the forces of Toyotomi Hideyoshi. Those invasions by Japan were defended by forces of the Joseon dynasty. For 10 points, name this Asian Peninsula currently split between two countries.

Answer: Korean Peninsula

20. This deity rescued the Earth from the bottom of the sea by killing Hiranyaksha. He appeared as a fish to warn Manu of a flood. This deity holds the mace Kaumodaki, lace, and a conch shell. He will appear on a white (\*) horse and end the Kali Yuga as Kalki. The dashavatara are the ten avatars of this deity, including Rama and Krishna. This husband of Lakshmi forms the Trimurti with Brahma and Shiva. For 10 points, identify this preserver god of Hinduism.

Answer: Vishnu (accept Narayana, accept Varaha before "as a fish")

## Bonuses

1. After some controversy, a statue of three soldiers was added near one work by this architect, who opposed a plan to place that statue at the center of her work. For 10 points each,

[10] Name this American architect.

Answer: Maya **Lin**

[10] Maya Lin gained fame by winning a competition to design a memorial for American soldiers lost in this war; her design is of a black wall engraved with over 50,000 names of those lost.

Answer: **Vietnam** War (accept **Vietnam** (Veterans) Memorial)

[10] Lin created the Vietnam Veterans Memorial while an undergrad at this university. After her graduation, Lin would design a "Woman's Table" outside of this university's Sterling Memorial Library.

Answer: **Yale** University

2. This piece includes movements titled "Tortoises" and "Fossils." For 10 points each,

[10] Name this fourteen movement suite, whose cello solo, "The Swan," was the only excerpt that its composer allowed to be published during his lifetime.

Answer: The **Carnival of the Animals** (or Le **carnaval des animaux**)

[10] This Frenchman composed *The Carnival of the Animals*.

Answer: Camille **Saint-Saens**

[10] *The Carnival of the Animals* is scored for pianos, strings, woodwinds, a xylophone that references Saint-Saens' earlier *Danse Macabre*, and this unusual instrument, a series of glass bowls to be rubbed.

Answer: **glass harmonica**

3. This city was officially renamed Istanbul in 1923. For 10 points each,

[10] Name this former capital of the Byzantine Empire, which fell to the Ottoman Empire.

Answer: **Constantinople**

[10] Constantinople was conquered by this sultan. After the fall of Constantinople, he conquered Wallachia despite a night attack by Vlad the Impaler.

Answer: **Mehmed II** [the second] (accept **Mehmed the Conqueror**, Prompt on Mehmed)

[10] Mehmed II had his ships transported overland to circumvent a blockade at this inlet. This inlet was guarded by a massive chain, and served as the headquarters of the Byzantine navy.

Answer: The **Golden Horn**

4. In this novel, Manuel the gardener kidnaps the protagonist from Judge Miller's garden. For 10 points each,

[10] Identify this novel about the dog Buck.

Answer: **Call of the Wild**

[10] This American author of *Call of the Wild* also wrote *The Sea Wolf* and *White Fang*.

Answer: Jack **London**

[10] In this Jack London short story, the "old-timer from Sulphur Creek" warns "The man" not to go out in the cold, but dies in the cold in his sleep.

Answer: **To Build a Fire**

5. This problem questions whether a walking path through the namesake city could take you over the Pregel River without a certain re-tracing of one's steps. For 10 points each,

[10] Name this classic problem, whose proof of impossibility in 1735 led to the development of graph theory.

Answer: **Seven Bridges of Konigsberg** problem (this isn't a "title," so accept descriptions and equivalents; prompt on partial answers)

[10] This Swiss mathematician proved the Seven Bridges of Konigsberg problem impossible. He did not discover  $e$ , approximately equal to 2.71828, as the base of the natural logarithm, but the symbol is named for this mathematician anyway.

Answer: Leonhard **Euler**

[10] The Seven Bridges of Konigsberg problem is impossible because the graph in question has four vertices with this property; a graph has an "Eulerian path" if and only if exactly zero or two vertices have this property.

Answer: **Odd degree** (accept answers describing "the vertex has an odd number of edges;" prompt on "odd")

6. Killing Fields litter the landscape of this country. For 10 points each,  
[10] Name this country that was bombed by the United States during the Vietnam War and, after its civil war, was lead by the Khmer Rouge.

Answer: **Cambodia**

[10] Cambodia was lead by this man until 1979. This man was ousted from power after the Vietnamese army established the People's Republic Kampuchea

Answer: **Pol Pot**

[10] Pol Pot used a high school, known as S-21. as one of these things.

Answer: **Prison**

7. President Barack Obama called this nation's leader with the intention of reestablishing diplomatic ties. For 10 points each,

[10] Identify this country with capital at Havana. The U.S. has had an embargo on this nation for over 50 years.

Answer: **Cuba**

[10] This politician is the current President of Cuba. He took over for his brother in 2008, and announced that he will not run for a third term as President in the 2018 elections.

Answer: **Raul Modesto Castro Ruz**

[10] This 7-year-old was returned to Cuba by the U.S. federal agents in June, 2000. His mother drowned in the trip to the U.S. from Cuba, and a custody battle between relatives and his father was won by his father.

Answer: Elian **Gonzalez**

8. This MLB pitcher signed a \$155 million deal with the Chicago Cubs. For 10 points each,

[10] Identify this former Boston Red Sox pitcher, who was traded to another AL team during the 2014 season.

Answer: Jon **Lester**

[10] This team traded for Jon Lester during the 2014 season. It also acquired Adam Dunn from the White Sox.

Answer: **Oakland Athletics** (accept either or both names)

[10] Along with Jeff Sarmadzija, this pitcher was traded from the Cubs to the Athletics during the 2014 season. He resigned with the Cubs during the 2014 offseason.

Answer: Jason **Hammel**

9. In this novel, Squire Thornhill disguises himself as Mr. Burchell. For 10 points each,

[10] Arabella Wilmot and George Primrose marry at the end of this novel. In this novel, one of the title character's daughters, Sophia, weds Squire Thornhill.

Answer: The **Vicar of Wakefield**

[10] This Irish author of *She Stoops to Conquer* wrote *The Vicar of Wakefield*.

Answer: Oliver **Goldsmith**

[10] *The Vicar of Wakefield* is mentioned in this Charles Dickens novel about Charles Darnay and Sydney Carton. This novel begins, "It was the best of times, it was the worst of times."

Answer: A **Tale of Two Cities**

10. Zeus used this woman to punish mankind for their use of fire. For 10 points each,

[10] Name this woman who, after her curiosity got the best of her, opened a jar releasing all of humanity's evils.

Answer: **Pandora**

[10] Pandora was married to this Titan. This Titan who failed to give man a positive trait was the brother of Prometheus.

Answer: **Epimetheus**

[10] Pandora was adorned with flowers by these goddesses of the seasons, who were also responsible for clothing Aphrodite as she rose from the sea.

Answer: **Horae** (accept **Horai**)

11. In Christianity, this woman gave birth to Jesus Christ. For 10 points each,

[10] Identify this wife of Saint Joseph, who began pregnant with Jesus via the immaculate conception.

Answer: Saint **Mary** (accept **Virgin Mary**)

[10] During this gospel, two other Marys find the tomb of Jesus Christ. This gospel is the first book of the New Testament.

Answer: Gospel According to **Matthew**

[10] This letter denotes the hypothetical source of sayings by Jesus. It hypothesized that this source was the second source, besides the Gospel of Mark, for the Gospels of Matthew and Luke

Answer: **Q** Source

12. The Sommerfeld Model was an improvement on this man's namesake model of the atom. For 10 points each:

[10] Name this Danish physicist, whose namesake model of the atom modified Rutherford's and has electrons orbiting a positively charged nucleus. He formulated the Copenhagen interpretation with Werner Heisenberg.

Answer: Niels **Bohr**

[10] Unfortunately, Bohr's model only works for this kind of atom. This simplest atom is also the only quantum chemical system for which a wavefunction is analytically obtainable because it has one proton and one electron.

Answer: **hydrogen** like atom

[10] Bohr's model explained this formula that predicts the wavelengths of spectral lines. "n" values in it correspond to orbital number in the model, and taking  $n_1$  to be 2 and letting  $n_2$  go from 3 to infinity gives the Balmer series.

Answer: **Rydberg** formula

13 The piano player Mademoiselle Reisz appears in this novel. For 10 points each,

[10] Identify this novel where Edna Pontellier drowns herself after being rejected by Robert Lebrun. Edna was married to Leon Dupuis in this novel.

Answer: The **Awakening**

[10] This American author wrote *The Awakening*. She also created Louise Mallard, who dies upon realizing that her husband is still alive in "The Story of an Hour."

Answer: Kate **Chopin**

[10] In this Chopin short story, Armand Aubigny shuns his wife the title character because he thinks his wife is part black. This short story ends with Armand reading a letter revealing his true lineage.

Answer: **Desiree's Baby**

14. This man came to power after the March on Rome. For 10 points each,

[10] Name this Italian dictator who led his country through World War II.

Answer: Benito **Mussolini**

[10] Before World War II, Mussolini's Italy invaded this African nation. After this country was defeated, it was annexed and became a part of Italian East Africa.

Answer: **Ethiopia**

[10] Mussolini also invaded this European country in 1939. After the invasion, its ruler, King Zog, was forced to flee.

Answer: **Albania**

15. Alloys are mixtures of this class of elements. For 10 points each,

[10] Name this category of elements, the “transition” type of which have high conductivity and luster. “Precious” ones include gold and silver.

Answer: **metals**

[10] Metal complexes form coordinate bonds under this process. Porphyrins promote this process, and in it, ligands like ethylenediamine or EDTA can attach more than once to a central metal atom. Ligands in it are described by denticity.

Answer: **chelation** [or **chelate**]

[10] The complexometric form of this process sometimes uses EDTA to form chelates. A simpler form of this process uses acids and bases, and in it, equivalence points are indicated by compounds like phenolphthalein.

Answer: **titration** [or **volumetric analysis**]

16. Joe Rosenthal used this art medium to depict four American soldiers raising an American flag at Iwo Jima. For 10 points each,

[10] Identify this medium that Alfred Stieglitz used in *The Steerage*, and Ansel Adams used to depict Yosemite National Park.

Answer: **Photography** (accept word forms)

[10] This American photographer depicted Florence Owens Thompson in *Migrant Mother*.

Answer: Dorothea **Lange**

[10] Richard Drew took this photograph of a man who jumped or fell off the North Tower of the World Trade Center on September 11, 2001.

Answer: **Falling Man**

17. A buildup of lysine, isoleucine, and valine can cause this waste product to smell like maple syrup. For 10 points each,

[10] Name this liquid that is processed by the kidneys and excreted through the urethra.

Answer: **urine** (accept informal names)

[10] This functional unit of the kidney reabsorbs essential nutrients and excretes the rest as urine. The glomerulus is one part of this unit in which initial filtration takes place.

Answer: **nephron**

[10] This structure surrounding the glomerulus dumps the filtrate into the proximal convoluted tubule. Along with the glomerulus, it makes up a renal corpuscle.

Answer: **Bowman's capsule**

18. This work opens, unfortunately, with the complaint that the middle section was lost. For 10 points each,

[10] Name this 1689 work of political theory, whose second half re-iterates the argument that Adam had no natural right to dominion over the world, and no modern kings could claim descent from Adam. This work, instead, offers social contract theory as a basis for society.

Answer: **Two Treatises of Government**

[10] This English philosopher and author of *Two Treatises of Government* argued that the human mind is "tabula rasa," or a blank slate, at birth in his *Essay Concerning Human Understanding*.

Answer: John **Locke**

[10] The first of Locke's *Two Treatises of Government* is a vicious attack of this Englishman's defense of the divine right of kings by descent from Adam, which he put forth in the book *Patriarcha*.

Answer: Robert **Filmer**



19. This group was lead by Walter Waters. For 10 points each,

[10] Name this group, composed of World War I soldiers, which marched on Washington in an attempt to receive their namesake certificates early.

Answer: **Bonus Army**

[10] The Bonus Army was broken up by this general, who at the time was Chief of Staff of the US Army.

Answer: Douglas **MacArthur**

[10] The Bonus Army camped out on Anacostia Flats in one of these settlements. These settlements were named for the president at the time.

Answer: **Hoovervilles**

20. In this novel, the Doctor's Wife is the only one not affected by the title condition. For 10 points each,

[10] Identify this novel in which the Doctor's Wife stabs the King of Ward 3 in the neck with a pair of scissors.

Answer: **Blindness**

[10] This Portuguese author of *The Stone Raft* wrote the novel *Blindness*.

Answer: Jose **Saramago**

[10] In this Saramago novel, the title character works as an apprentice to a shepard. The title character later works on the Sea of Galilee, where God and the Devil appear to him.

Answer: The **Gospel According to Jesus Christ**