

Finals

Finals Phase 1

(Tossup 1) This organ is the primary site of the conversion of angiotensin 1 to angiotensin 2 in the renin-angiotensin-aldosterone system. Spirometers measure the performance of these organs, which are surrounded by pleural sac and whose functional units are the alveoli. The diaphragm contracts as this organ expands. The heart is found between, for the point, what respiratory organs that delivers oxygen to the bloodstream?

ANSWER: lungs

(Tossup 2) *Capitalism, Socialism, and this system* title a 1942 book by Joseph Schumpeter. Gustave Beaufort assisted on a foreign study of prison systems that became an Alexis de Tocqueville book about this system *in America*. This system arose as a popular alternative to aristocracy in ancient Athens, though only adult male citizens were allowed to vote. For the point, name this system of government currently employed by the United States.

ANSWER: democracy (accept Capitalism, Socialism and Democracy; accept Democracy in America; do not accept other terms like republic)

(Tossup 3) Birbal was a member of the “Nine Jewels” of this empire, an advisory group to the son of Humayun. This empire’s capital was sacked by Nadir Shah, who carried off the Peacock Throne used by its rulers. This empire was established after Ibrahim Lodi was defeated at the Battle of Panipat by this empire’s founder, Babur. Akbar ruled, for the point, what 16th century Indian empire that constructed the Taj Mahal?

ANSWER: Mughal Empire

(Tossup 4) In *Crime and Punishment*, this disease causes Marmeladov’s second wife, Katerina Ivanovna, constant suffering. Joachim Ziemssen suffers from this condition in a novel about Hans Castorp’s journey to the tile Swiss sanatorium. The dark nature of Edgar Allan Poe’s works may be attributed to this disease killing both his mother and wife. For the point, name this bacterial lung disease that was historically known as consumption.

ANSWER: tuberculosis (accept TB; accept consumption before it is read)

(Tossup 5) The most luminous and most massive star discovered, R136a1, is found in this galaxy. This galaxy is the namesake of galaxies that have only one spiral arm. This galaxy is the site of the Tarantula nebula, which is near where the supernova SN1987A occurred. For the point, name this this largest satellite galaxy of the Milky Way, a system that has a “small” companion also named for the Portuguese explorer who discovered them.

ANSWER: Large Magellanic Cloud (or LMC)

(Tossup 6) In one game, a legendary example of this weapon is named Thori'dal, the Stars Fury. In *Skyrim*, Karliah [kar-LYE-ah] gives the player one of these non-bladed weapons named for the Nightingales for completing the Thieves Guild quests. This is the primary weapon of Aloy [AY-loy] in *Horizon: Zero Dawn*. Oliver Queen uses this weapon, inspiring his superhero persona's name. Hawkeye also uses, for the point, what ranged weapon used by archers?

ANSWER: bow and arrow (accept longbow or warbow; do not accept crossbow)

(Tossup 7) Undeveloped products of this location include Spotty Powder and Warming Candy. A girl at this location is deemed a "bad nut" by trained squirrels, but manages to avoid this building's incinerator. A boy with "two greedy eyes peering out of his doughball of a body" falls into a river in this building and, after being sucked out by a tube, becomes extremely underweight. Veruca Salt, Augustus Gloop, and Charlie Bucket visit, for the point, what location owned by Willy Wonka?

ANSWER: Willy Wonka's Chocolate Factory

(Tossup 8) This colony claimed St. Simons Island after winning the Battle of Bloody Marsh. During the revolution, this colony was the only one to be reclaimed by its royalist governor, James Wright. Slavery was forbidden in this colony's original 1732 charter, although by 1749 this was changed due to financial hardship. The original boundaries of this colony were set between the Altamaha and Savannah Rivers. James Oglethorpe founded, for the point, what Southern colony, meant as a debtors haven, that later was home to Atlanta?

ANSWER: Province of Georgia

(Tossup 9) This song is performed after Desdemona sings the "Willow Song" in Act IV of Giuseppe Verdi's opera *Otello*. Another version of this song was inspired by Walter Scott's *The Lady of the Lake*; that version by Franz Schubert describes a "maiden mild" who can "save amid despair." Songs of this name using the common Latin text describe a woman who is "gratia plena," or "full of grace." For the point, name this Catholic prayer dedicated to the mother of Jesus.

ANSWER: Ave Maria (accept Hail Mary)

(Tossup 10) In the movie *Vertigo*, Madeleine looks at this type of object and points to where she was born and where she died. A park named for this type of object is adjacent to Kings Canyon and contains California's highest point at Mount Whitney. The largest one of these objects in the US is nicknamed the General Sherman and is found in California. For the point, name this type of plant whose redwood type names Sequoia National Park.

ANSWER: trees (accept redwood and/or sequoia until each is mentioned)

(Tossup 11) This mathematical entity can be described by Binet's formula, a closed-form equation that involves the square root of 5, though it's more commonly expressed recursively. The common ratio between terms of this sequence approaches the golden ratio as its terms grow. The definition of this sequence, which was described in *Liber Abaci* by its Italian namesake, involves summing the "n minus 2"th and "n minus 1"th terms to find the "n"th term. For the point, name this sequence of numbers that begins 1, 1, 2, 3, 5, 8.

ANSWER: Fibonacci sequence (or Fibonacci numbers, etc.)

(Tossup 12) This layered rock is contrasted with non-layered mudstone, though they both are made up of flakes of clay, mud, and particles of other minerals. When this rock contains kerogen, as in the Bakken formation, it becomes somewhat viable to mine and process as fuel. Heat transforms this sedimentary rock into the metamorphic rocks schist and slate. For the point, name this rock that may be inefficiently processed into oil.

ANSWER: (oil) shale

(Tossup 13) In one of these works, a man at a wedding protests “my hour has not yet come” before helping cater the wine. One of these books describes the death of a man from Bethany, who is cured after four days in his tomb, and the first of these four books declares “blessed are the meek, for they shall inherit the Earth.” The wedding at Cana, the raising of Lazarus, the Beatitudes, and the crucifixion are described in these four accounts of the life of Jesus. For the point, Matthew, Mark, Luke, and John make up what set of books at the beginning of the New Testament?

ANSWER: gospels (accept Matthew, Mark, Luke, and John in any order before Matthew is read; prompt on Bible or New Testament before “four books” is read)

(Tossup 14) This empire conquered Hungary with a decisive 1526 victory at Mohacs [mo-hotch]. This empire’s conquests were fueled by Europe’s first modern standing army, an army of slaves called the Janissaries. Mehmed II, a leader of this empire, won a 1453 siege that allowed him to conquer the Byzantine Empire. Constantinople was renamed Istanbul by, for the point, what large Turkish empire that fell after World War I?

ANSWER: Ottoman Empire

(Tossup 15) One of this writer’s poems addresses a “Destroyer and Preserver” and ends by asking “If Winter comes, can Spring be far behind?” This author of “Ode to the West Wind” described “two vast and trunkless legs of stone” in a desert, which are all that remain to represent a man who commands “Look on my Works, ye Mighty, and despair.” For the point, name this English poet who wrote about a “King of Kings” in “Ozymandias.”

ANSWER: Percy Bysshe Shelley (prompt on Shelley)

(Tossup 16) This procedure detects the presence of a polymer of the monomers NAG and NAM, peptidoglycan. The material used for this procedure is the crystal violet dye. *S. aureus* and *E. coli* have different results after they go through this process, which studies the cell wall. For the point, name this procedure that splits bacteria into namesake positive and negative groups.

ANSWER: Gram staining (accept Gram’s method)

(Tossup 17) This team won Super Bowl XI under coach John Madden. This team traded its head coach, Jon Gruden, to Tampa Bay before losing the 2003 Super Bowl to Gruden’s Buccaneers. This team was forced to start Connor Cook in the 2017 playoffs after Derek Carr broke his fibula. This team’s fans gather in the “Black Hole,” but many are upset over its impending move to Las Vegas. For the point, name this NFL team from California.

ANSWER: Oakland Raiders (accept either or both)

(Tossup 18) The Army of the Potomac was created in the aftermath of this battle, which ended with a hasty retreat by Irwin McDowell. At this battle, the resilience of troops under Thomas Jackson earned him the nickname “Stonewall.” A crowd of DC socialites observed this battle, believing it would be an easy victory for Union forces. For the point, name this 1861 battle, a failed Union attempt to march on Richmond, the first major Civil War battle.

ANSWER: **First** Battle of **Bull Run** (accept Battle of **First Manassas**; prompt on Bull Run; prompt on Manassas)

(Tossup 19) Theophanes the Confessor notes how, roughly 800 years after the destruction of this structure, its remains were melted and sold to a Jewish merchant. Some scholars believe this structure was not actually in port, but rather in its city’s Acropolis. This sculpture, which commemorates a defeat of Antigonus the One Eyed, was damaged when a 226 BC earthquake broke it at the knees. For the point, name this ancient Greek wonder that was thought to represent Helios and stood above Rhodes.

ANSWER: **Colossus** of Rhodes

(Tossup 20) Four families of this type of solid are divided into five Bravais [bra-vay] lattices; one of those families is monoclinic. Bragg’s law describes the effects of X-rays reflecting off of these materials, which can take on a hexagonal close packed or face-centered structure. Electronic screens employ a “liquid” display using this material, a system abbreviated LCD. Diamond is structured as, for the point, what type of solid with a natural, geometric set of planes, also seen in snowflakes?

ANSWER: **crystals** (accept liquid **crystal** display after “liquid” is read)

(Tossup 21) One of these events required a battle in which Iolas was called on to cauterize the enemy’s wounds. As a result of that battle, the central figure of these events was able to kill Geryon using poisoned arrows. A hide taken during the first of these events was used as armor for the remaining tasks ordered by Eurystheus. The Nemean Lion was slain as part of, for the point, what series of twelve tasks completed by a Greek demigod?

ANSWER: twelve **labors** of **Hercules**

(Tossup 22) In this story Old Man Warner compares wanting to give up the title event to “wanting to go back to living in caves” in a rant that includes a proverb about an event in June causing the growth of corn. The Hutchinson family participates in the title event of this work, in which they draw slips of paper with black dots on them. Tessie is stoned to death by her fellow villagers in, for the point, what Shirley Jackson story about the title game of chance?

ANSWER: The **Lottery**

(Tossup 23) One element in this group can react with an alkyl halide to form a Grignard [grin-yar] reagent. The hydroxide of one element in this group is an antacid sometimes called milk of magnesia. Emerald is a mineral made up of aluminum, a silicon oxide, and a member of this group; that mineral is called beryl. Barium and beryllium are members of, for the point, what group found on the Periodic Table to the right of the alkali metals?

ANSWER: **alkaline earth** metals (accept group **2**; do not accept or prompt on alkali (metals))

(Tossup 24) With Candido Rondon, this man led a 1913 expedition that caused the River of Doubt to be renamed after him. This man wrote “the light has gone out of my life” after both his mother and wife died on the same day. John Schrank shot this in Milwaukee, but that did not deter this man from finishing a campaign speech and declaring himself as “fit as a bull moose.” For the point, name this man who became president after the assassination of McKinley and is the most recent president featured on Mount Rushmore.

ANSWER: Theodore “Teddy” Roosevelt (prompt on Roosevelt)

(Tossup 25) A poem about someone with this occupation says the laurel “withers quicker than the rose,” and was written by A.E. Houseman [**HOOSE-man**] to one of these people “Dying Young.” In novels by John Updike, Harry Angstrom is nicknamed “Rabbit” because of his skill as one of these people. In *Death of a Salesman*, Happy pretends that Biff is one of these people by claiming he plays for the New York Giants. For the point, name this profession held by runners, basketball players, and football players.

ANSWER: athlete (accept runners before Updike is read; anti-prompt on runners, basketball players, or football players by asking “can you be less specific?”)

(Tossup 26) This city elected C.Y. Leung as Chief Executive in 2012; two years later, proposed electoral reform triggered a massive backlash of umbrella-wielding protesters. This city became a “Special Administrative Region” after it was transferred in 1997 from British rule into a “one country, two systems” agreement. For the point, name this city that, like its neighbor across the Pearl River delta, Macau, is a territory of China.

ANSWER: Hong Kong

(Tossup 27) If 16 people are in a room, this many distinct handshakes can take place; equivalently, starting with 1, this is the 15th triangular number. This value is the smallest three-digit number that is divisible by 5, 4, 3, and 2. A sector that takes up one-third of a circle has a central angle of this many degrees, and an isosceles triangle with base angles each of 30 degrees has a vertex angle of this many degrees. Five factorial is equal to, for the point, what value, the number of seconds in two minutes?

ANSWER: 120

(Tossup 28) This man was the father of Nebaioth, Qedar, and ten other sons, and his daughter Mahalath married her cousin, Esau. This man was born when his father was 85 years old at the urging of his stepmother, Sarah, and was exiled to the wilderness of Paran with his mother, Hagar. For the point, name this half-brother of Isaac, the son of Abraham and patriarch of Islam.

ANSWER: Ishmael (accept Ismail)

(Tossup 29) The impact of fishing industry on communities around this body of water is the subject of the documentary *Darwin’s Nightmare*. The industrial area of Port Bell operates a ferry over this body of water, whose northwest contains the Ssesse islands. Jinja lies along this body of water, which is fed by the Kagera River. John Speke is credited with discovering this lake and determining it to be the source of the Nile. For the point, name this largest African lake, named for a European queen.

ANSWER: Lake Victoria (or Nam Lolwe, Nalubaale, or Nyanza)

(Tossup 30) This author credits Mateo Ximenes for guiding him during the writing of this man's *Tales of the Alhambra*. This author attributed many of his works to the fictional writers Dietrich Knickerbocker and Geoffrey Crayon, including a short story in which Ichabod Crane meets his doom in Sleepy Hollow. For the point, name this American author who wrote stories about Rip van Winkle and the Headless Horseman.

ANSWER: Washington Irving

Finals Phase 2

(Tossup 31) In two works by this author, a Sara Teasdale poem is read aloud by an automatic house in the aftermath of nuclear war, and Eckels discovers the consequences of stepping on a butterfly while on a Time Safari. "A Sound of Thunder" is by this author, whose story "There Will Come Soft Rains" appears in the collection *The Martian Chronicles*. In a novel by this man, Clarisse McClellan persuades fireman Guy Montag to stop burning books. For the point, name this author who described dystopian futures in works like *Fahrenheit 451*.

ANSWER: Ray Douglas Bradbury

(Tossup 32) This territory was broken up into West and East portions after it was exchanged for Havana and was ceded to the British at the end of the Seven Years' War. The Adams-Onís Treaty resulted in the purchase of this territory, whose original capital, St. Augustine, is the oldest occupied European settlement in the United States. The explorer who discovered this territory was likely looking for gold, not the mythical Fountain of Youth. Ponce de León discovered, for the point, what Spanish colony that evolved into a modern-day state containing Miami?

ANSWER: Spanish Florida (prompt on New Spain)

(Tossup 33) In March, Satao II became the victim of this action. In April 2016, millions of dollars of products gained by this illicit activity were burned in Kenya. In Zimbabwe this month, Theunis Botha died while legally performing this action, when he was picked up by a trunk and was crushed underneath his fallen target. For the point, name this controversial action, often done so that poachers can harvest ivory tusks.

ANSWER: killing (or poaching, hunting, etc.) an elephant (prompt on partial answers)

(Tossup 34) Functions are described as having this property if their second derivative is always positive, though that can also be phrased as [this property's opposite] "upward." If a polyhedron has this property, then Euler's characteristic will equal two. This property is held by polygons with internal angles less than 180 degrees, as that will allow line segments with endpoints in the shape to stay entirely within the shape. For the point, name this geometric property, the opposite of concavity.

ANSWER: convexity (accept word forms; accept convex function, convex polyhedron, convex polygon, etc.; accept concave upward before "upward" is read, and prompt on it after, but do not accept or prompt on concave alone)

(Tossup 35) This theory was tested in an experiment involving photons fired from Harvard's Jefferson Tower, the Pound-Rebka experiment. The equivalence principle of this theory equates inertial mass to gravitational mass. The cosmological constant was removed from this theory after Edwin Hubble found that the universe was expanding. This idea combines aspects of Newton's law of universal gravitation with a related, earlier theory discovered by the same physicist. Albert Einstein proposed, for the point, what theory that contrasts with special relativity?

ANSWER: **general relativity** (accept **general** after relativity is read; prompt on theory of relativity; do not accept or prompt on special relativity)

(Tossup 36) This man told his successor "don't let them promote you" because "while you're on the bridge, you can make a difference." This man altered the system to beat the impossible *Kobayashi Maru* simulation, meant to test an officer's ability under pressure. This character screams "KHAAAAAN!" in a film that ends with the death of his second-in-command, Spock. For the point, name this captain of the USS *Enterprise* on the original series of *Star Trek*.

ANSWER: James Tiberius **Kirk**

(Tossup 37) In 1580, this country was annexed after the disappearance of the young King Sebastian. One of this country's 20th century colonies faced a civil war between the MPLA and UNITA shortly after Antonin Salazar's regime in this country was overthrown in the Carnation Revolution. In the 15th century, this country developed the caravel and established a naval school at Sagres under the direction of prince Henry the Navigator. For the point, name this Iberian country where a 1755 earthquake devastated Lisbon.

ANSWER: **Portugal**

(Tossup 38) A poem named for this place asks whether a particular burden "just sags / like a heavy load / Or does it explode?" In a poem named for this place, the question "Does it dry up / like a raisin in the sun?" follows a question posed by Lanston Hughes, who asks "What happens to a dream deferred?" An African-American cultural "Renaissance" is named after, for the point, what New York City neighborhood?

ANSWER: **Harlem**

(Tossup 39) To improve its function as this type of chemical, Raney nickel is very finely powdered, increasing its surface area. A common example of this type of chemical is the iron used in the Haber-Bosch reaction to create ammonia, since the iron lowers the reaction's activation energy. Biological examples of this type of chemical are called enzymes. For the point, give this term for a chemical that accelerates a reaction without being consumed in it.

ANSWER: **catalyst**

(Tossup 40) This god destroyed his palace when his future son-in-law, Okuninushi, tied his hair to the rafters and fled with his daughter. In a competition with his sister, this god declared he had won because the sword he had given her had produced three goddesses. That sword was found by this god after slaying the dragon Orochi and was named after its ability cut grass. In a fit of rage, this god killed his sister's attendant and threw a flayed horse at her loom. For the point, name this sister of Amaterasu and sea god of Shintoism.

ANSWER: Susano'o (accept Susanowo)

(Tossup 41) In this opera, Parpignol sells toys outside the Cafe Momus, where Alcindoro is stuck with a bill after Marcello wins back Musetta. In an earlier scene in this opera, the male lead acknowledges the coldness of a woman's hands in the aria "Che gelida manina," sung after their candles go out. For the point, name this opera set in the Latin Quarter of Paris about the love of Mimi and Rodolfo, composed by Giacomo Puccini.

ANSWER: La Bohème

(Tossup 42) In this novel, Lucy is rescued by Mormons and is forced to separate from Jefferson Hope, who murders Enoch Drebbler and Joseph Stangerson while working as a cab driver. A character in this novel reveals that the word "RACHE," scrawled in blood on a wall, is German for "revenge," disproving Inspector Lestrade's theory. For the point, Dr John Watson moves into 221B Baker Street in what Sir Arthur Conan Doyle novel that introduced Sherlock Holmes?

ANSWER: A Study in Scarlet

(Tossup 43) In this region, chimney-shaped "black smokers" are hydrothermal vents that emit superheated water; the first of those to be discovered was found on the East Pacific Rise, a ridge midway between South America and New Zealand. This benthic region is mostly made up of abyssal plains, which form via "spreading." For the point, name this type of location that is home to ecosystems based around "whale falls," as it is the ultimate resting place of dead ocean creatures.

ANSWER: ocean floor (accept equivalents, like seafloor, sea bed, the bottom of the ocean, etc.; accept seafloor spreading after "spreading" is read; prompt on ocean, sea, etc. until ocean is read)

(Tossup 44) With Franklin Pierce, this man created the Kansas-Nebraska Act. When challenged for his opinion on the Dred Scott decision, this man endorsed popular sovereignty as part of his Freeport Doctrine. This man came in fourth in the election of 1860, which included a Southern candidate from his party, John Breckenridge. For the point, name this Illinois Democrat who, in 1858, participated in a set of debates with Abraham Lincoln.

ANSWER: Stephen Arnold Douglas

(Tossup 45) In a work by this author, the people of Titlipur go on a journey with Ayesha across the parted Arabian Sea, and a hijacked plane flying above the English Channel blows up, transforming Gibreel Farishta and Saladin Chamcha. In another of this man's novels, the large-nosed Saleem Sinai becomes a member of the title group after being born at the moment of India's independence. For the point, name this author of *The Satanic Verses* and *Midnight's Children*.

ANSWER: Sir (Ahmad) Salman Rushdie

(Tossup 46) This city's 808 bridges were used as an ancient idiom for uncountability. This city contains the Den-Den Town shopping district and the Umeda Sky Building, and an artificial island holds its Kansai International Airport. Bunraku puppet theater was developed in the 17th century in this city, which is home to a massive castle built by Toyotomi Hideyoshi [toh-yoh-toh-mee hee-day-yoh-shee]. For the point, name this second most populous city in Japan.

ANSWER: Osaka

(Tossup 47) This figure was criticized for accepting a Legion of Honour from Haitian strongman Jean-Claude Duvalier. This figure described the wish to return to "the comfort of Loreto" after receiving the "call within the call" on a train in Darjeeling. This Albanian-born figure established the Kalighat home for the dying and helped treat lepers with her "Missionaries of Charity" in Calcutta. For the point, name this Catholic nun renowned for her humanitarian work in India.

ANSWER: Mother Teresa (accept Anjezë Gonxhe Bojaxhiu)

(Tossup 48) One composer from this country used 53 musical phrases of varying lengths in his work *In C*. Another composer from this country wrote a set of 20 prepared piano pieces and the *Imaginary Landscape* series, but is best known for a piece in which instrumentalists follow the instruction *tacet* for 4 minutes and 33 seconds. For the point, name this country, the home of John Cage and setting of Steve Reich's *New York Counterpoint*.

ANSWER: United States of America (accept USA; accept America)

(Tossup 49) Eclipsing binary star systems can be mistaken for these stars because they are observed as one source of light. RR Lyrae examples of these stars can be used as standard candles. Polaris is an example of the Cepheid type of these stars, whose luminosities and periods are strongly correlated. For the point, name these stars whose brightness changes over time.

ANSWER: variable stars

(Tossup 50) This student of Francis Hutcheson developed his views of ethics based on sympathy and propriety in his book *The Theory of Moral Sentiments*. This scholar argued that free markets create hidden beneficial conditions to all participants, a concept he described as an invisible hand. For the point, name this Scottish economist who wrote *The Wealth of Nations*.

ANSWER: Adam Smith