

Round 6

First Half

(Tossup 1) **In 1707, Lha-bzang Khan falsely claimed that Lobsang Gyatso had undergone this process to become Yeshe Gyatso. After experiencing this phenomenon, the atman can achieve moksha, the release from the cycle of (*) samsara that sends the soul through this process again and again. Positive and negative karma determines, for ten points, what religious event central to Indian religion, in which a soul enters a new body?**

ANSWER: reincarnation (accept word forms like reincarnate; accept rebirth or being reborn; accept samsara until mentioned; prompt on “death” until mentioned)

(Bonus 1) This religion’s followers were led from Illinois to Utah by Brigham Young. For ten points each, [Part A] Name this American religion headquartered in Salt Lake City, whose members ended the practice of plural marriage in the early 1900s.

ANSWER: LDS Church (accept Church of Jesus Christ of Latter-Day Saints; accept Mormonism or Mormon Church)

[Part B] The Church of Latter-Day Saints was founded by this man, who translated the Book of Mormon from a set of golden plates he found in New York state.

ANSWER: Joseph Smith, Jr

[Part C] Smith was led to the golden plates by this angel, who is believed to be the angelic spirit of a prophetic warrior described in the Book of Mormon.

ANSWER: Moroni

(Tossup 2) **During this battle, 84 American POWs were killed in the Malmedy massacre. Otto Skorzeny used Allied uniforms and vehicles to cause confusion during this battle as part of Operation Greif. After being asked to surrender (*) Bastogne during this larger battle, Anthony McAuliffe responded “NUTS!” For ten points, name this last major German offensive of World War II, a 1944 battle in the Ardennes forest named for the shape of Allied lines.**

ANSWER: Battle of the Bulge (accept the Ardennes Counteroffensive before “Ardennes” is read)

(Bonus 2) This Emperor faced a rebellion led by Vindex. For ten points each,

[Part A] Name this Roman emperor who supposedly fiddled while a disaster raged in his capital

ANSWER: Nero Claudius Caesar Augustus Germanicus

[Part B] Nero supposedly fiddled while this type of disaster affected Rome. At the time, many people accused Nero of starting this type of disaster to make room for his Domus Aurea.

ANSWER: fire (accept the Great Fire of Rome)

[Part C] Nero's death led to this period of Roman history where multiple people seized the title of Emperor in 69 AD. This period ended with the ascension of Vespasian and the establishment of the Flavian dynasty.

ANSWER: Year of the Four Emperors

(Tossup 3) **Karl Fischer developed a form of this technique that is used to detect water. In the redox based form of this technique, a starch based compound will turn (*) blue in an interaction with iodine. When performed on acids and bases, phenolphthalein can be used as an indicator for this technique. For ten points, name this technique that uses a burette to determine a solution's concentration.**

ANSWER: titration

(Bonus 3) Strains of this virus are characterized by their hemagglutinin and neuraminidase. For ten points each,

[Part A] Name this virus which prominently is infectious during cold weather.

ANSWER: influenzavirus (accept flu)

[Part B] This extremely small virus is responsible for the common cold.

ANSWER: rhinovirus

[Part C] Both the influenza virus and the rhinovirus undergo this viral life cycle which is contrasted with the lysogenic cycle. This cycle causes the death of the cell and the release of duplicated viruses.

ANSWER: lytic cycle

(Tossup 4) **One of these animals takes the title 'Great Sage, Equal of Heaven' during a rebellion. One of these animals is trapped by the Buddha underneath a mountain for five hundred years until he is freed to assist with a pilgrimage. The "King" of these animals, (*) Sun Wukong, is a major character in the *Journey to the West*. For ten points, name these tailed primates.**

ANSWER: monkeys (accept Monkey King; accept Sun Wukong before read)

(Bonus 4) This play's title character cries "Blow, winds, and crack your cheeks!" as he wanders through a storm with the Earl of Kent and his Fool. For ten points each,

[Part A] Name this William Shakespeare play named for a legendary King of Britain who is betrayed by two of his three daughters.

ANSWER: The Tragedy of King Lear

[Part B] While Lear's daughters Regan and Goneril conspire to usurp the throne, this virtuous woman, their sister, is instead banished when she refuses to flatter her father with false promises.

ANSWER: Cordelia

[Part C] After she is disinherited, Cordelia marries the king of this continental European country, whose forces invade Britain later in the play.

ANSWER: France

(Tossup 5) **George Polya and Evgraf Fedorov proved that only 17 distinct groups could perform this action; those groups are called the wallpaper group. "Kites" and "darts" designed by Robert Penrose may do this action in an aperiodic [a-periodic] manner. The only regular (*) polygons which can do this task are the hexagon, square, and equilateral triangle.** For ten points, name this task in which a shape or shapes cover a plane with no overlaps or gaps in a repeating pattern.

ANSWER: tessellation (accept word forms like tesselate; accept "tiling the plane" and word forms like tile)

(Bonus 5) For a curve, an osculating circle shares one of these lines at a specific point. For ten points each,

[Part A] Name this kind of line that touches a curve at exactly one point.

ANSWER: tangent line

[Part B] Give the expression for the trigonometric tangent function in terms of sine and cosine.

ANSWER: sine over cosine or sine divided by cosine accept "sin" and "cos" in place of sine and cosine respectively.

[Part C] Trigonometric functions such as tangent are sometimes named for repeating in these regular intervals. For tangent, this interval is equal to pi radians while for sine and cosine it is 2pi.

ANSWER: period

(Tossup 6) **These phenomena have zero amplitude at amphidromic points. These phenomena are called bores when they occur in rivers or bays. These phenomena are called "neap" when they are at their lowest and are called (*) "spring" when they are at their highest.** These phenomena are caused by the gravity of the sun and moon. For ten points, name this periodic rising and falling of ocean waters.

ANSWER: tides

(Bonus 6) The photograph “Pillars of Creation” shows one of these celestial objects. For ten points each, [Part A] Name these interstellar clouds of dust that be over 100 light-years in diameter.

ANSWER: nebulae

[Part B] This nebula, labeled M1 in the Messier catalog, is the result of a supernova in the constellation of Taurus.

ANSWER: Crab Nebula

[Part C] The Trapezium cluster is located in the heart of this extremely bright nebula which is located south of a namesake constellation.

ANSWER: Great Orion Nebula (accept Messier 42; accept M42)

(Tossup 7) **This composer’s *Liebesträume* are piano songs inspired by German love poetry. The *Transcendental Études* were written by this composer, who toured Europe throughout the 1840s. The *Mephisto Waltzes* and (*) *Hungarian Rhapsodies* were composed by, for ten points, what Hungarian composer and master pianist whose fame in the 19th century reached a level of frenzy described as his “mania?”**

ANSWER: Franz Liszt

(Bonus 7) In a film from this country, a girl’s parents are turned into pigs after eating food meant for the spirits. For ten points each,

[Part A] Name this country where Studio Ghibli created *Spirited Away*. Other films from Studio Ghibli include *Howl’s Moving Castle* and *My Neighbor Totoro*.

ANSWER: Japan (accept Nihon-koku; accept Nippon-koku)

[Part B] In a live-action Japanese film, seven members of this class attempt to defend a village a group of bandits. Japanese period films often focused on these soldiers known for their mastery of the katana.

ANSWER: samurai (accept ronin; prompt on soldier before it is read)

[Part C] The film *Seven Samurai* is the magnum opus of this director. This man often used Shakespeare as the basis for several of his films such as *Ran* and *Throne of Blood*.

ANSWER: Kurosawa Akira

(Tossup 8) **In one of this man’s novels, a woman from the Bowery becomes a prostitute after being led astray by her lover. In another novel by this author of *Maggie: A Girl of the Streets*, (*) Henry Fleming is ashamed to have fled from a Civil War battle without gaining the title wound. For ten points, name this American author of *The Red Badge of Courage*.**

ANSWER: Stephen Crane

(Bonus 8) Along with the Newbery Medal, this award is considered to be the most prestigious prize awarded for children's fiction in the United States. For ten points each,

[Part A] Name this award given to picture books.

ANSWER: Caldecott Medal

[Part B] This author's illustrated book about Max's journey to a fantastic jungle, *Where the Wild Things Are*, won the Caldecott Medal in 1964.

ANSWER: Maurice Sendak

[Part C] Australian illustrator and author Sophie Blackall has impressively won the Caldecott Medal twice in the last five years, for *Hello Lighthouse* and a book about *Finding* this animated stuffed animal created by A.A. Milne, described by the book as *The World's Most Famous Bear*.

ANSWER: Winnie the Pooh (accept Winnie-ther-Pooh or Pooh-bear)

Sixty-Second Rounds

The categories are ...

1. Brave New World
2. The Hundred Years War
3. Heavy Metals

BRAVE NEW WORLD

In relation to the novel *Brave New World*, name the...

(1) Real-life car manufacturer whose name is used for a calendar in which the abbreviation 'AF' stands for "after" this person.

ANSWER: Henry Ford

(2) Author of *Brave New World* and *The Island*.

ANSWER: Aldous Huxley

(3) William Shakespeare play, named after a storm, from which *Brave New World* takes its title.

ANSWER: The Tempest

(4) Highest social class in the novel, that is named after a letter, to which Bernard Marx belongs.

ANSWER: Alpha-Plus

(5) Happiness-causing drug that is consumed by much of the population.

ANSWER: Soma

(6) Character nicknamed "the Savage" who commits suicide to escape from society.

ANSWER: John

THE HUNDRED YEARS WAR

Name the...

(1) Arch rival of France, ruled by the House of Plantagenet, that started the war.

ANSWER: England

(2) French heroine who was executed for cross dressing.

ANSWER: Joan of Arc (accept Jeanne d'Arc)

(3) City where that woman lifted 7 month long siege in 1429.

ANSWER: Orléans

(4) Region in northern France, the home of William the Conqueror, that lost 75% of its population.

ANSWER: Normandy

(5) 1415 battle where archers decimated French knights on Saint Crispin's Day.

ANSWER: Battle of Agincourt (accept Battle of Azincourt)

(6) "Black Prince" that won the Battle of Crécy in 1346.

ANSWER: Edward of Woodstock (accept Edward the Black Prince)

HEAVY METALS

Name the chemical element that...

(1) Is a liquid at room temperature and is no longer commonly used in thermometers due to poison concerns.

ANSWER: mercury (accept **Hg**)

(2) Has atomic symbol Cu [spell it] and is a ductile conductor.

ANSWER: copper

(3) Is found in wolframite, a mineral whose name inspires its atomic symbol W.

ANSWER: tungsten

(4) Was removed from gasoline and many paints after its toxicity was recognized.

ANSWER: lead (accept **Pb**)

(5) Is the central atom of cisplatin, a chemotherapy drug, and is found in catalytic converters.

ANSWER: platinum (accept **Pt**)

(6) Is the densest stable element, slightly more dense than iridium.

ANSWER: osmium (accept **Os**)

Second Half

(Tossup 9) In *The New Jim Crow*, Michelle Alexander argued that the “mass” form of this action is perpetuating racial inequality. The principle of (*) habeas corpus allows someone to protest an unjust example of this action. Along with execution, the lifelong form of this action is the most severe punishment in the U.S. criminal justice system. For ten points, name this action of being held in a jail or prison.

ANSWER: incarceration (or imprisonment; accept descriptions like being put in jail or being put in prison before the last line)

(Bonus 9) One experiment using these animals involved ringing a buzzer to condition these animals to salivate, even in the absence of food. For ten points each,

[Part A] Name these animals. These animals were domesticated from wolves around 20,000 years ago.

ANSWER: dogs (or canis lupus familiaris)

[Part B] This psychologist performed the classical conditioning experiments on dogs. This Russian psychologist also discovered that dogs could be conditioned to produce digestive fluids with electric shocks.

ANSWER: Ivan Pavlov

[Part C] This other psychologist used electric shocks to develop his theory of learned helplessness. This psychologist wrote the book *Positive Psychology* and argued that anxiety and depression were “taught.”

ANSWER: Martin Seligman

(Tossup 10) This dynasty was interrupted by Wang Mang’s Xin dynasty. The Three Kingdoms period followed this dynasty which was severely weakened by the (*) Yellow Turban Rebellion. Liu Bang founded this dynasty after the death of Qin Shi Huangdi and the collapse of China’s first dynasty. For ten points, name this dynasty which lends its name to China’s largest ethnic group.

ANSWER: Han dynasty (accept Hanchao)

(Bonus 10) This man was succeeded by his protege Clyde Tolson. For ten points each,

[Part A] Name this man who organized COINTELPRO to illegally spy on suspected dissidents. In 1971, Richard Nixon stated he would have fired this man but was afraid of retaliation.

ANSWER: J. Edgar Hoover (or John Edgar Hoover)

[Part B] J. Edgar Hoover was the first director of this federal law enforcement agency. This agency is still headquartered in a building that bears his name in Washington, D.C.

ANSWER: FBI (accept Federal Bureau of Investigation)

[Part C] In 1932 the FBI, then just the Bureau of Investigation, was instrumental in investigating the kidnapping of a member of this family. This family offered a staggering \$50,000 if their one-year-old son was returned to them.

ANSWER: Lindbergh

(Tossup 11) **This artist created a sculpture of *St John the Baptist Preaching* larger than life in response to accusations of casting *The Age of Bronze* from a live model. Another sculpture by this artist represents the poet (*) Dante, and was originally included near the top of artist's *Gates of Hell*, resting his head on his fist in contemplation. For ten points, name this sculptor of *The Burghers of Calais* and *The Thinker*.**

ANSWER: Auguste Rodin (accept Francois Auguste René Rodin)

(Bonus 11) This piece was left unfinished at its composer's death and finished by Franz Sussmayr. For ten points each,

[Part A] Name this work, labeled 626 in the Köchel catalogue. Its most famous section is probably its "Dies Irae" [dee-ace ee-ray].

ANSWER: Requiem Mass in D minor

[Part B] This Austrian child prodigy died while composing his *Requiem*, grimly convinced that he was writing it for his own funeral.

ANSWER: Wolfgang Amadeus Mozart

[Part C] Mozart's final illness came on gradually, but lifted briefly shortly after he conducted the premiere of this opera, which features the "Queen of the Night" aria.

ANSWER: The Magic Flute (accept Die Zauberflöte)

(Tossup 12) **This mountain is home to the Saddle Rib, which is often known as the Geneva Spur. This mountain is connected to Lhotse by the South Col. Routes to this mountain's peak can go past the (*) Valley of Silence and the Khumbu Icefall. Tenzing Norgay and Edmund Hillary were the first people to climb this mountain. The Tibetan-Nepal border is home to, for ten points, what Himalayan peak, the tallest mountain in the world?**

ANSWER: Mount Everest

(Bonus 12) This national park is located near the towns of Head Light and Schoodic Point. For ten points each,

[Part A] Name this national park, the first founded east of the Mississippi River. This national park is centered around Mount Desert Island.

ANSWER: Acadia National Park

[Part B] Acadia National Park is located in this New England state, whose major cities include Bangor, Augusta, and Portland.

ANSWER: Maine

[Part C] Along with Quebec, Maine borders this other Canadian province. This province, with capital Fredricton, is Canada's only official bilingual province.

ANSWER: New Brunswick

(Tossup 13) **This structure served as the home for the son of Queen Pasiphaë after she became obsessed with a white bull sent to Crete by Poseidon. Despite modern representations, this structure had a single (*) path in and out, allowing Ariadne to give Theseus a string to find his way through this structure while he tried to kill a monster inside it. For ten points, name this maze-like structure built by Daedalus to house the minotaur.**

ANSWER: labyrinth

(Bonus 13) The importance of proper preparation of a mummified ancient Egyptian is described by this ancient funerary document that outlines the path the dead took to reach the underworld. For ten points each,

[Part A] Name this ancient document recorded on papyrus that built on the traditions recorded in the Pyramid Texts and Coffin Texts.

ANSWER: The **Book of the Dead** (accept The **Book of Emerging Into the Light**; accept The **Book of Coming Forth By Day**)

[Part B] Preparation of the wealthy dead often included the use of these containers, whose lids were decorated with images of the sons of Horus. These containers held the lungs, stomach, liver, and intestines of mummified people.

ANSWER: canopic jars

[Part C] Wealthy Egyptians were often buried with amulets representing these shiny-shelled beetles, which protected the heart of the deceased.

ANSWER: heart scarab (accept dung beetle)

(Tossup 14) **This leader was targeted in the Brighton Hotel bombing by the IRA. As Education Secretary under Edward Heath, this politician was labeled (*) “milk snatcher” for removing free milk from schools. This woman ordered a strong retaliation after Argentina invaded the Falkland Islands. For ten points, name this Prime Minister who led the United Kingdom throughout the 1980s, a woman nicknamed the “Iron Lady.”**

ANSWER: Margaret Thatcher (accept Margaret Roberts)

(Bonus 14) 15 ships trapped in this structure became known as the Yellow Fleet. For ten points each,
[Part A] Name this structure that connects the Mediterranean and the Red seas. In a namesake crisis, a British-French-Israeli alliance invaded Egypt after an attempt to nationalize this structure.

ANSWER: Suez Canal

[Part B] The nationalization of the Suez Canal was carried out by this President. This man, despite earlier participating in the Egyptian Revolution of 1952, ordered the imprisonment of Mohamed Naguib.

ANSWER: Gamal Abdel Nasser Hussein

[Part C] Gamal Abdel Nasser was succeeded by this man who was assassinated in 1981. This politician had previously signed the Camp David Accords with Menachem Begin in an attempt to improve Egyptian-Israeli relations.

ANSWER: Muhammad Anwar el-Sadat

(Tossup 15) **The foramen of Panizza is a hole that moves blood between these animals two aorta. The “cog valve” is used to regulate this animal’s blood flow. In 2014, a study at UC Davis revealed that these animals are the closest living relatives to (*) birds. This animal’s largest species are the Nile and saltwater varieties. The gharial and caiman are close relatives of, for ten points, what large predatory reptiles often confused for alligators?**

ANSWER: crocodiles (accept crocodilians; do not accept or prompt on alligators)

(Bonus 15) This phenomenon may be either induced by torque or torque-free. For ten points each,

[Part A] Name this phenomenon in which a rotational axis changes its orientation.

ANSWER: precession

[Part B] Precession may be prominently seen in one of these devices consisting of several gimbals and a wheel. They are regularly used for systems to determine orientations.

ANSWER: gyroscopes

[Part C] In torque-free precession, the rotational analogue of this quantity is preserved. Classically this quantity equals the product of mass and velocity.

ANSWER: linear momentum (accept angular momentum)

(Tossup 16) **This poet wrote that “the sword outwears its sheath, / and the soul wears out the breast” in his poem “So, we’ll go no more a roving.” This poet wrote about the travels of a young (*) knight-in-training, and satirized a legendary womanizer who is repeatedly seduced by women before he died fighting in the Greek War of Independence. For ten points, name this British Romantic poet of *Childe Harold’s Pilgrimage* and *Don Juan* [don JOO-an].**

ANSWER: Lord Byron (or George Gordon, Lord Byron)

(Bonus 16) A man in this novel veers his truck to run over a turtle, knocking it off a dusty road. For ten points each,

[Part A] Name this novel in which Tom Joad travels with Jim Casy to his father's farm after leaving prison, only to find that his family member are about to leave Oklahoma during the Dust Bowl.

ANSWER: The Grapes of Wrath

[Part B] This American author used the Great Depression and the Dust Bowl as the backdrop of his novel *The Grapes of Wrath*. He also wrote *Of Mice and Men*.

ANSWER: John Steinbeck

[Part C] In *The Grapes of Wrath*, the Joad family travels on Route 66 to leave Oklahoma to find work in this western state.

ANSWER: California

Tiebreakers

(Tossup 17) **Isochoric processes hold this quantity constant, as do bomb calorimeters. In the van der Waals equation, this quantity is corrected with the b term. In the ideal gas law, this quantity is proportional to (*)** temperature and particle number and inversely proportional to pressure. For ten points, name this quantity that measures the amount of space that a substance occupies.

ANSWER: volume

(Bonus 17) This novel follows the Bolkonskys, Rostovs, and Bezhukovs, among others. For ten points each,

[Part A] Name this extremely long Russian novel that follows the lives of aristocratic families while Napoleon invades Russia.

ANSWER: War and Peace (accept Voyna i Mir)

[Part B] *War and Peace* is by this Russian author of *The Death of Ivan Ilyich*.

ANSWER: Leo Tolstoy (accept Lev Nikolayevich Tolstoi)

[Part C] In *The Death of Ivan Ilyich*, the title judge begins a long, terminal illness after he falls from a ladder while trying to perform this household task.

ANSWER: hanging curtains (accept clear equivalents)