Ladue Invitational Spring Tournament VI

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ROUND 3 – TOSSUPS

1. **One of these conflicts was caused in part by a Numidian invasion, and that conflict ended with one side taking over the other's possessions in Mauretania. An earlier one of these conflicts preceded the Mercenary War in the losing state. The most famous of these conflicts began after the siege of Saguntum, and featured major defeats for the eventual winner at** (*) the battles of Trebia, Lake Trasimene, and Cannae before Scipio Africanus defeated Hannibal's side at the Battle of Zama. For ten points, name this series of three Roman conflicts that ended with the destruction of the Carthaginian Empire.
ANSWER: **Punic War**s
<ES>

2. **One part of this poem was inspired by the author's vision of a hotel facade while he was under the influence of the cactus peyote. People dance barefoot on broken glass and smash German jazz records in one part of this poem, and in the next part, "the incomprehensible prison" is compared with** (*) Moloch. The third and final part of this poem features the refrain "I'm with you in Rockland", while the first line of the footnote to this poem consists solely of the word "Holy!" For ten points, name this poem that begins with the phrase "I saw the best minds of my generation destroyed by madness", by Allen Ginsberg.
ANSWER: *Howl*
<AG>

3. **In 2009, Entertainment Weekly described this person as "SNL's best host so far" after she starred in** *Valentine's Day***. In one of her songs, this artist says she would "dance in a storm in [her] best dress" after describing how she doesn't know "how it gets better than this." This person is "lying on the cold hard ground" in one song that attacks a guy who "Flew [her] to** (*) places [she'd] never been" and "Pretends he doesn't know that he's the reason why / [She's] drowning". In one song, this artist calls herself "a nightmare dressed like a daydream", while in another, despite the heartbreakers who are "gonna break, break, break, break, break", this singer repeats that she will "Shake It Off". For ten points, name this blonde pop-country singer who released her album *1984* in 2014.
ANSWER: Taylor Alison **Swift**
<RP+CL>

4. **This country's town of Mamasapano witnessed a police operation in January 2015 that targeted terrorists such as the Moro Islamic Liberation Front, while in September 2016 the group Abu Sayyaf killed 15 people in its Davao City. This country's leader claimed he would be "happy to slaughter" three million (*)** drug addicts, and likened himself to Hitler; that man is Rodrigo Duterte. Haiyan was the deadliest typhoon recorded in this nation, killing over ten thousand of its people. Luzon is the largest island making up this country and contains its capital. For ten points, identify this Southeast Asian island nation whose capital is Manila.
ANSWER: **Philippines**
<AG>

5. **The creation of the Union of the Crowns was influenced by an agreement settled between Scotland and a ruler of this name; that agreement was the Treaty of Perpetual Peace. That king of this name, who married off his son Arthur with the Treaty of Medina del Campo, also suppressed rebellions from the pretenders Perkin Warbeck and (*)** Lambert Simnel, who challenged his throne. A monarch with this name was advised by Thomas Cromwell and founded the Church of England to annul his marriage with Catherine of Aragon. For ten points, identify this name shared by several English kings, the eighth of which had six wives.
ANSWER: **Henry** [accept **Henry VII** or **Henry VIII**]
<RP>

6. **A novel from this country illustrates several snapshots of the life of an artist who is sold into a wealthy family, becomes the step-brother of the hunchbacked Rhoda, and falls in love with a musician named Kathy Volkov. That novel from this country about the painter Hurtle Duffield is** *The Vivisector.* **A mixed-race man marries a white woman and kills the Healy and** (*) Newby families in *The Chant of Jimmie Blacksmith*, a work by one of this country's most prominent novelists. That man wrote another novel based on the true story of a factory owner who employs several Polish jews, saving them from the Holocaust. Patrick White and the author of *Schindler's List*, Thomas Keneally, both originate from, for ten points, what Oceanic country?
ANSWER: Commonwealth of **Australia**
<RP>

7. **William Bertozzi found that an electron's value for this quantity after striking aluminum agreed closely with those predicted by special relativity. An object's value for this quantity is equal to linear momentum squared divided by twice the object's mass, and the rotational form of this quantity is proportional to the square of angular** (*) velocity. This quantity is conserved in elastic collisions, and escape velocity can be found by setting this quantity equal to the negative of potential energy. For ten points, name this quantity equal to one half mass times velocity squared, the energy of motion, symbolized K.
ANSWER: **kinetic energy** [prompt on "energy", do NOT accept "potential energy"]
<MS+AG>

8. **The Love River flows past Ape Hill in this country's Kaohsiung City. This country's Lanyu nuclear waste storage site was controversial because of the threats it posed to the aboriginal Tao people. Jade Mountain is the highest point in this country's Yushan Range, which makes it the fourth highest** (*) island in the world. This island's capital is home to a supertall energy efficient skyscraper said to resemble a stalk of bamboo, which held the title of world's tallest structure until 2009, when it was surpassed by the Burj Khalifa. For ten points, name this island to which Chiang Kai Shek fled, formerly known as Formosa.
ANSWER: **Taiwan** [accept **Republic of China**, accept **Formosa** before mentioned, do NOT accept or prompt on "China"]
<HR>

9. **After an ambassador sent by this man was executed, he invaded the Jin dynasty and won his largest victory at the Battle of Badger Mouth. The Uyghur script was adopted by this man as his people's official written system, and in an effort to urge absolute obedience, he implemented the Yassa Law Code. Before defeating the Kievan Rus at the Battle of Kalka River, this man demolished the** (*) Khwarezmian empire. This husband of Borte ruled over the largest contiguous land area of any ruler in history, and he was succeeded by his son Ogedei, who was succeeded by his grandson Kublai. For ten points, name this emperor alternatively known as Temujin, the founder of the Mongol Empire.
ANSWER: **Genghis Khan** [accept **Chinggis Khan**; accept **Temujin** before mention, prompt on "Khan"]
<GM+RP>

10. **A painting titled for this scene focuses on a figure who holds a red beverage while pointing upward, and mountains can be seen through the pentagonal windows in back of that work. Andrea del Castagno's depiction of this scene gives halos to many of the figures, and three giant arches dominate the background of a work by Paolo Veronese originally** (*) titled for this scene, which was renamed *The Feast in the House of Levi*. Tintoretto painted this scene on a diagonal axis, and in the best known version of this scene, Judas clutches a bag of silver and St. John sits next to the central figure. For ten points, name this religious scene that shows Jesus consuming his final meal, most famously painted by Leonardo da Vinci.
ANSWER: The **Last Supper**
<RP>

HALFTIME

11. **In some organisms, compounds like Rifampicin and Hydroxyquinoline inhibit this process, and factories for this process can be located by using fluorescence in situ hybridization. One promoter of this process in prokaryotes is the Pribnow box, and in eukaryotes a Goldberg-Hogness box or** (*) TATA box is a promoter of this process. Methylation decreases this process that occurs more frequently in Euchromatin than Heterochromatin. A 5' cap and poly A tail are added following this process in which Uracil is used instead of the more stable Thymine. For ten points, name this first step of gene expression in which an antisense DNA template is read to synthesize mRNA, often preceding translation.
ANSWER: **transcription**
<LP>

12. **He's not Elgar, but this composer's cello concerto in A minor was premiered by Jacqueline Du Pre. This man composed a work dedicated to Frederic Chopin, but he only liked the title page of that piano work, *Kreisleriana*. This man included "The Happy Farmer" in his *Album for the Young*, and he also included the dreamy Träumerei and the lullaby *Of Foreign Lands and Peoples* in his** (*) *Scenes from Childhood*. This composer used the cryptogram A-S-C-H for a piano suite with movements named after Florestan and Eusebius. This husband of Clara Wieck used the Cologne Cathedral as inspiration for his third symphony. For ten points, name this composer of *Carnaval* who also created the Rhenish and Spring symphonies.
ANSWER: Robert **Schumann**
<GM>

13. **William Leggett led an opposition group to this organization originally known as the Equal Rights Party, which acquired its nickname after this group attempted to disband one of its meetings by shutting off the gaslights. That faction was better known as the Locofocos. William Mooney was the first Grand (*)** Sachem of this group, that helped Al Smith secure the presidential nomination in 1928. This organization's power grew immensely after the arrival of Irish immigrants who escaped the Potato Famine, and its most famous leader was depicted with a sack of money in place of his head in a Thomas Nast cartoon. For ten points, name this 19th century political machine in New York, once led by Boss Tweed.
ANSWER: **Tammany Hall**
<RP>

14. **The author of this story commended his own discretion for referring to a fictional pope rather than a historical one. In this story, an Italian eunuch laments his lack of testicles after he is unable to rape that pope's illegitimate daughter. That Old Woman, who once ate one of her (*)** buttocks during a siege, meets the protagonist in the aftermath of an earthquake. That character and his servant, Cacambo, leave El Dorado with one hundred red sheep to track down Lady Cunégonde in this story. For ten points, name this novella that follows the title Leibnizian optimist turned garden cultivator, the magnum opus of Voltaire.
ANSWER: *Candide*
<PA>

15. **This constant is the length of a diagonal of a regular pentagon with side length 1, and a similarly named constant is equal to 1 plus the square root of 2. That constant is the limiting ratio of consecutive Pell numbers, while this constant is equal to the limiting ratio of consecutive (*)** Fibonacci numbers. This constant can be expressed as an infinite square root with only 1's, and its continued fraction also consists of only 1's. This is the only positive number which is equal to the sum of 1 and its reciprocal, and the square of this number is equal to this number plus one. For ten points, name this constant which is frequently used in architecture and art, equal to 1 plus the square root of 5 over 2, or 1.618.
ANSWER: **golden ratio** [accept **phi**, accept **1 plus the square root of 5 over 2** before mention]
<MS>

16. **A certain double eponymous law measures the rate of internal flow in these entities and models the relationship between stress and strain. Deep crevasses called bergschrunds can form when a moving one of these objects separates from the headwall, and masses of firn are precursors to these objects that gain mass in the Zone of (*)** Accumulation, and lose mass in the Zone of Ablation. The Piedmont variety of these objects create a valley and coalesce at the base of a mountain, and these objects deposit debris which forms moraines. Calving is a process in which icebergs break off of, for ten points, what large sheets of ice that come in Alpine and Continental forms?
ANSWER: **glacier**s [accept Alpine **Glacier**, Continental **Glacier**, Piedmont **Glacier**, or "**Ice Sheet**" before mention]
<RP>

17. **A waiter delivers oranges, banana figs, and hothouse grapes in a poem by this man that describes an "Apeneck" character with "zebra stripes along his jaw". Another poem includes a "yellow fog" and "yellow smoke" that rub against the window-panes, as well as character who measures out his life with coffee spoons. That character wonders if he (*)** dares to eat a peach or disturb the universe in a poem that includes women who "come and go / talking of Michelangelo". That poem begins, "Let us go then, you and I". For ten points, name this author of "Sweeney Among the Nightingales" and "The Lovesong of J. Alfred Prufrock", who claimed "April is the cruelest month" in *The Waste Land*.
ANSWER: **T**homas **S**tern **Eliot** [prompt on "Eliot"]
<RP>

18. **In one painting by this artist, a woman watches as three young satyrs blow a conch shell in her sleeping lover's ears. In another work, six angels holding books surround Mary while she carries Jesus, who holds the title fruit. In addition to *Venus and Mars* and *Madonna of the Pomegranate*, this artist painted a work in which Cupid flies above the three graces as Mercury stands to the far left, waving** (*) clouds away with his caduceus. That painting, set in an orange grove, is *La Primavera.* Chloris and Zephyr blow wind to push the title figure in another work, which shows the goddess of love standing on a shell. For ten points, name this Italian painter of *The Birth of Venus.*
ANSWER: Sandro **Botticelli**
<RP>

19. **One element in this family can form a Rollin film below a specific temperature. Albert Behnke demonstrated the use of one element in this group as an anesthetic; that element's hexafluoroplatinate was the first compound containing one of these elements to be synthesized. Lord Rayleigh and William** (*) Ramsay discovered many of these elements together. The symbols of these elements are often placed in brackets when writing electron configurations. This family contains the second most abundant in the universe and elements in it possess a filled outer electron shell. For ten points, name this group on the far right side of the periodic table, containing elements like neon, xenon and helium.
ANSWER: **noble gas** [accept row **8A** or other equivalents]
<AG/CL>

20. **When Amphitryon sends one of these animals to obtain the Teumessian fox, Zeus turns them to stone because it creates a paradox. One of these animals is married off to a princess after bringing one man an enemy's head in Chinese mythology, and that animal is known as Panhu. One of these animals with two** (*) heads belongs to Geryon and is named Orthrus, and the first being to recognize Odysseus when he returns to Ithaca is Argos, one of these animals. Hercules' 12th labor is to bring a three-headed one of these animals back from the underworld. For ten points, name these canines, one of which guards the underworld and is named Cerberus.
ANSWER: **dog**s [accept hounds, prompt on "canine", do NOT accept or prompt on "wolf"]
<MS>

End of regulation, only proceed if tied

21. **Bertrand Russell describes two types of this concept as "plain" and "fancy" in a book titled *The Conquest of* this concept, and in his study of this phenomena, Mihály Csíkszentmihályi [Cheek-sent-me-ha-yee] proposed that people are most subject to it if they are in a mental state of "flow". In Freudian psychoanalysis, the id is driven by a (*)** "principle" named for this state of being, which seeks to avoid pain to satisfy one's needs. For ten points, name this emotional state of being which the Declaration of Independence states the pursuit of is an unalienable right, along with Life and Liberty.
ANSWER: **happiness** [accept pleasure, accept word forms, accept reasonable equivalents]
<RP>

22. **The Anderson Report was an investigation into this organization in Victoria, Australia, and led to an attempt to ban it in that state. David Miscavige is the current leader of this group, which, in the 1970s, aimed to get rid of certain documents concerning it in Operation Snow White. This group commonly uses the E-meter in its practice of auditing and believes the Greek letter** (*) theta is the source of life, giving rise to the concept of the thetan. This organization asserts that Xenu killed his people by detonating hydrogen bombs on volcanoes. For ten points, identify this modern religion, many of whose ideas originate in L. Ron Hubbard's concept of *Dianetics.*
ANSWER: Church of **Scientology**
<AG>

BONUSES

1. Bonus: A quantity with this name for a vertex on a graph is defined as the maximum possible distance between that vertex and some other vertex on the graph. For ten points each:

[10] Name this quantity that determines how distorted a conic section is relative to a circle. Naturally, a circle has a value of 0 for this quantity.

ANSWER: **eccentricity**

[10] This conic section is formed when a plane intersects both sides of a double cone. These curves have eccentricities greater than one, and Apollonius proved that it was possible to trisect an angle given one of these curves.

ANSWER: **hyperbola**

[10] This conic section is the set of points whose distance sum to two foci are equal. These curves have eccentricities between zero and one, and their area is equal to pi times the length of their minor axis times the length of their major axis.

ANSWER: **ellipse**

<MS>

2. Bonus: Are we alone in the universe? Answer some questions about humanity's attempt to find alien life, for ten points each:

[10] This not-profit research organization utilizes instruments like the Allen Telescope Array and the Very Large Telescopes. Active [this organization] is an initiative to send messages to alien life.

ANSWER: **SETI** Institute

[10] This equation estimates the number of existing extraterrestrial civilizations which would be able to communicate with humans. Factors in this equation include the time over which civilizations release signals and the rate of star formation.

ANSWER: **Drake** equation

[10] The "Golden Records", containing information about Earth's culture and life, were sent on these two probes of a NASA program. In 2013, the first of these crafts became the first man-made object to exit the solar system. Name either.

ANSWER: **Voyager** I or II [accept both, accept **Voyager Program**]

<AG>

3. Bonus: In the first story from this text, Lehi sails to the western hemisphere with his sons after he has a vision of the tree of life. For ten points each:

[10] Name this sacred text of the Latter Day Saints that was originally engraved onto golden plates.

ANSWER: **Book of Mormon**

[10] This man, the founder of Mormonism, translated the golden plates from "Reformed Egyptian" to English after discovering it.

ANSWER: Joseph **Smith** Jr.

[10] This son of Mormon was the only remaining Nephite, and after his death, he became an angel. He is perhaps better known as the angel who delivered the golden plates to Joseph Smith.

ANSWER: **Moroni**

<RP>

4. Bonus: Edgar Varese's *Density 21.5* is written for a platinum version of this instrument. For ten points each:
[10] Name this non-reed woodwind instrument famously played by James Galway and Jean-Pierre Rampal.
ANSWER: **flute** [do not prompt on woodwind, accept specific types, including **piccolo**, alto, or bass **flute**]
[10] A flute depicts a bird in this educational composition, in which a duck, depicted by an oboe, is swallowed whole by one of the title characters, while a cat, depicted by a clarinet, is saved by the protagonist of this work.
ANSWER: *Peter and the Wolf*
[10] Peter and the Wolf is a composition by this Russian, who also composed the opera *Love for Three Oranges* and a version of Romeo and Juliet that includes a famous "Dance of the Knights".
ANSWER: Sergei **Prokofiev**
<GM>

5. Bonus: Towards the end of this play, Poncia cries out after discovering that Adela has hanged herself because she believed her love interest Pepe el Romano was shot. For ten points each:
[10] Name that play, which is included in its author's Rural Trilogy.
ANSWER: The **House of Bernarda Alba**
[10] This author wrote *The House of Bernarda Alba*. Other works in his *Rural Trilogy* include *Yerma* and a play in which Leonardo and the Bridegroom kill each other over the love of the Bride, *Blood Wedding*.
ANSWER: Federico **Garcia Lorca**
[10] Federico Garcia Lorca is an iconic author from this European nation. Lope de Vega was a key figure in the "Golden Age" of this Iberian country.
ANSWER: **Spain**
<RP>

6. Bonus: The Battle of Ipsus was fought between members of this group. For ten points each:
[10] Name this group of generals who were the namesake of several wars fought over the empire of a certain Macedonian king.
ANSWER: **Diadochi** [prompt on "successors to Alexander the Great" or similar answers]
[10] The Diadochi was mostly composed of the rival generals and relatives of this king. This Macedonian king conquered much of the ancient world and defeated Darius III at the Battle of Issus and the Battle of Gaugamela.
ANSWER: **Alexander** the **Great**
[10] Alexander the Great succeeded this man, his father, to the throne of the Macedonian Empire.
ANSWER: **Philip II** of Macedon
<RP>

7. Bonus: This event is the most watched annual sporting event. For ten points each:
[10] Name this terminating match of a certain soccer tournament that is organized by UEFA.
ANSWER: UEFA **Champions League Final** [do NOT accept or prompt on Europa League Final or UEFA Super Cup]
[10] In the 2016 Champions League Final, this Spanish team defeated Atletico Madrid 2-1. Current players on this team include Sergio Ramos, Gareth Bale, and Cristiano Ronaldo.
ANSWER: **Real Madrid**
[10] In the 47th minute of the 2016 Final, this French star for Atletico Madrid had an opportunity to level the score on a crucial penalty, but he hit the crossbar and missed.
ANSWER: Antoine **Griezmann**
<RP>

8. Bonus: Identify these American economists, for ten points each:
[10] This man instructed the "Chicago Boys", a group of economists who reorganized the Chilean economy, but he is perhaps better known for his book on free market policies, published by UChicago, *Capitalism and Freedom*.
ANSWER: Milton **Friedman**
[10] This other American economist, who was also half-Norwegian, wrote *The Theory of the Leisure Class*, a treatise that introduced the concept of excessive spending on luxuries to impress others or, "conspicuous consumption".
ANSWER: Thorstein **Veblen**
[10] This former professor of economics at Princeton was awarded the 2008 Nobel Prize for his contributions to New trade theory. A current columnist for the New York Times, this man predicts an economic fallout in the Trump presidency.
ANSWER: Paul Robin **Krugman**
<RP>

9. Bonus: Standing waves are a result of this phenomenon and it can be constructive or destructive. For ten points each:
[10] Name this result of two waves colliding shown in Young's double slit experiment, where it was represented by dark and light areas.
ANSWER: **interference**
[10] This phenomenon results from waves bending around an obstacle. Airy disks describe the patterns formed by this phenomenon
ANSWER: **diffraction**
[10] This law states that mathematically the maximum scattering peaks will occur when two times the spacing of the lattice times the sine of the incident angle equals an integer times the wavelength.
ANSWER: **Bragg's** law
<AG>

10. Bonus: One account of this ruler's death claims that his own people pelted him to death after he told them to flee. For ten points each:
[10] Name this last notable ruler of the Aztecs, who supposedly assumed a certain conquistador to be Quetzalcoatl.
ANSWER: **Montezuma II** [accept **Moctezuma II**, **Motecuhzoma II**, **Motecuhzoma II**, prompt on any of them without the "II" accept **Motecuhzoma Xocoyotzin**]
[10] Montezuma was killed by this Spanish conquistador who conquered the Aztecs.
ANSWER: Hernán **Cortés** de Monroy y Pizarro
[10] Cortes' rearguard of his army was slaughtered on a causeway across Lake Texcoco on this night, when the Spaniards escaped from Tenochtitlan after Montezuma died.
ANSWER: "La **Noche Triste**" [or "The **Night of Sorrows**"]
<GM>

11. Bonus: This poem notes that poverty "numbs the soul with icy hand / and slow-consuming Age." For ten points each:
[10] Name this poem that describes "distant spires" and "antique towers" that crown the title institution, which lies along the Thames. It ends by noting "where ignorance is bliss/'tis folly to be wise."
ANSWER: "**Ode on a Distant Prospect of Eton College**"
[10] This English author of "Ode on a Distant Prospect of Eton College" wrote about a subject that "mewed to every watery god/some speedy aid to send" in "Ode on the Death of a Favorite Cat, Drowned in a Tub of Fishes."
ANSWER: Thomas **Gray**
[10] This other Gray poem which begins "the curfew tolls the knell of parting day." It also famously states that "the paths of glory lead but to the grave."
ANSWER: *Elegy Written in a Country Churchyard* [or *Stanzas Wrote in a Country Church-Yard*]
<MS>

12. Bonus: The ravens Hugin and Munin report everything that they see and hear in the world to this god. For ten points each:
[10] Name this Norse God who, according to myth, gave up one of his eyes in order to gain wisdom. He also managed to obtain and drink part of the mead of poetry.
ANSWER: **Odin**
[10] Some sources claim that the thing Odin once hung himself from for nine days was this Norse world tree. The dragon Nidhogg constantly gnaws at a root of this tree.
ANSWER: **Yggdrasil**
[10] These female beings are responsible for the destiny of men and gods in Norse mythology. They are often depicted while weaving near the Well of Fate under Yggdrasil.
ANSWER: the **Norns**
<MS>

13. Bonus: If the change in this value for a reaction is greater than 0, then the reaction is endothermic. For ten points each:
[10] Name this quantity, symbolized H, it is the total heat content of a system. It is equal to the system's internal energy plus the product of its volume and temperature.
ANSWER: **enthalpy**
[10] This quantity is equal to enthalpy minus the product of a system's temperature and entropy, and is the amount of useful work that can be done by a system.
ANSWER: **Gibbs free energy** [prompt on "free energy" or "G"]
[10] When the change in Gibbs free energy of a reaction is negative, this type of reaction occurs. This type of reaction does not require an outside source of energy.
ANSWER: **spontaneous** reaction
<AG>

14. Bonus: After a defeat at the Battle of Gravelines, a speech at Tilbury was given to inspire this force. For ten points each:
[10] Name this formerly "invincible" naval force that was defeated with the help of "Protestant winds". It failed to conquer England in 1588.
ANSWER: **Spanish Armada**
[10] A claim to English throne was made by this king, who organized the Spanish Armada. He also notably failed in putting down the Dutch Revolt.
ANSWER: King **Philip II**
[10] King Philip II used this building as both a palace and a monastery. Designed by Juan Bautista de Toledo, this palace houses the remains of many rulers of Spain.
ANSWER: San Lorenzo de **El Escorial**
<GM>

15. Bonus: Name some things about a certain type of poem, for ten points each:
[10] Name this type of Japanese poem which consists of three phrases, having 5, 7, and 5 syllables each. The topics they can be about are called kigo, most of which are about nature.
ANSWER: **Haiku**
[10] This poet was most famous for his haikus, including the one "an ancient pond/a frog jumps in/the splash of water."
ANSWER: Matsuo **Basho** [or Matsuo Chuemon **Munefusa**]
[10] Basho is also well known for this diary written in prose and poetry, which he wrote while he traveled to Oku, following the path that the poet Saigyo took so he could "renew his own art."
ANSWER: *The **Narrow Road to the Deep North*** [or *The **Narrow Road to the Interior***, or ***Oku no Hosomichi***]
<MS>

16. Bonus: The Taklamakan desert and Altai Mountains border this desert. For ten points each:
[10] Name this large Asian desert, located within northern China and southern Mongolia.
ANSWER: **Gobi** desert
[10] The Gobi desert is near this Central Asian nation, which contains Lake Balkhash. This country's current president is Nursultan Nazarbayev, and its capital is Astana.
ANSWER: **Kazakhstan**
[10] Once the fourth largest lake in the world, this "sea" between Kazakhstan and Uzbekistan has been shrinking since the 1960s, when rivers that fed it were diverted.
ANSWER: **Aral** Sea
<AG>

17. Bonus: A man stands with his right hand over his head in a sculpture titled "*The Age of* [this material]". For ten points each:
[10] Name this material used by Frederic Remington in *The Bronco Buster* and by Auguste Rodin in his *The Gates of Hell*. It is an alloy of copper and tin.
ANSWER: **bronze**
[10] This early Renaissance sculptor used bronze for the eastern doors to the Florence Baptistery. Those doors are commonly referred to as "The Gates of Paradise".
ANSWER: Lorenzo **Ghiberti**
[10] Ghiberti was a rival of this other artist, whom he defeated in a competition to design the eastern doors to the Florence Baptistery. This architect would later design the dome of the Florence Cathedral.
ANSWER; Filippo **Brunelleschi**
<RP>

18. Bonus: Answer the following about some major labor uprisings and strikes in American history. For ten points each:
[10] Coal miners in Logan County, West Virginia initiated this largest labor uprising in U.S. history in 1921. This conflict faced coal miners against strikebreakers, or Logan Defenders, and saw intervention of the United States Army.
ANSWER: Battle of **Blair Mountain**
[10] In this labor strike, the Amalgamated Association of Iron and Steel Workers revolted against Carnegie Steel in protest of a wage cut. Henry Clay Frick ordered Pinkerton guards to disband this strike.
ANSWER: **Homestead** Strike
[10] After this deadly industrial disaster in the Asch Building occurred, the International Ladies Garment Workers Union led a strike demanding higher pay for shorter hours.
ANSWER: **Triangle** Shirtwaist Factory **fire** [both underlined parts required, prompt on partial answer]
<RP>

19. Bonus: Name these literary detectives, for ten points each:
[10]\This detective fights Professor Moriarty to the death at Reichenbach Falls in "The Final Problem". This resident of 221B Baker Street investigates the case in *The Hound of the Baskervilles* with Dr. Watson.
ANSWER: **Sherlock** **Holmes** (accept either underlined answer)
[10] Edgar Allen Poe created this French detective who appears in "The Murders in the Rue Morgue" as well as "The Mystery of Marie Roget" and "The Purloined Letter".
ANSWER: C. **Auguste** **Dupin** (accept either underlined answer)
[10] This detective was played by Humphrey Bogart in a movie based off of a work he appears in, and is a recurring character of Raymond Chandler. His first appearance was in The Big Sleep.
ANSWER: **Philip** **Marlowe** (accept either underlined answer)
<RP>

20. Bonus: The filtration of the blood is very important for the maintenance of homeostasis. For ten points each:
[10] Identify this excretory bean-shaped organ located at the posterior of the abdominal cavity. It is responsible for the production of urine.
ANSWER: **kidney**
[10] Hormones such as ADH, aldosterone, and parathyroid hormone regulate this basic functional unit of the kidney. It controls the concentrations of soluble substances and water in urine through secretion and reabsorption.
ANSWER: **nephron**
[10] This portion of the nephron increases urea concentrations through a countercurrent multiplier system, and it connects the proximal and distal convoluted tubules through its ascending and descending regions.
ANSWER: **Loop of Henle**
<LP>

21. Bonus: This man was one of the founders of the Liberty Union Party. For ten points each:
[10] Name this senator from Vermont who finished 2nd in the 2016 Democratic Primaries.
ANSWER: Bernard "Bernie" **Sanders**
[10] Bernie Sanders pulled off an upset win in this Midwestern state in early May. On the Republican side, this state held the last primaries in which Ted Cruz and John Kasich competed, and Mike Pence was the governor of this state.
ANSWER: **Indiana**
[10] This former Indiana governor and senator ran for his old Indiana senate seat in 2016, but he lost to Todd Young. His father had also held the same Senate seat.
ANSWER: Birch **Evan**s **Bayh** III [prompt on "Bayh", do NOT accept "Birch Bayh"]
<AN>

22. Bonus: The largest known one of these numbers is equal to 2^74,207,281-1[read two to the power of 74 billion 207 thousand 281 minus 1] and was discovered at the University of Central Missouri. For ten points each:
[10] Name these prime numbers of the form 2^p-1[read two to the p minus 1], where p is a prime. Only 49 have been discovered as of December, 2016, and it is still unknown if there are infinitely many of them or not.
ANSWER: **Mersenne** primes
[10] These numbers are all of the form 2^p*(2^p-1)/2 [read 2 to the p times 2 to the p, minus 1 all over 2], where 2^p-1[read two to the p minus 1] is a Mersenne prime. Examples of them include 6 and 28, and they are equal to the sum of their proper factors.
ANSWER: **perfect** numbers
[10] It is not known whether there are any perfect numbers with this property. These numbers are 1 modulo 2, and the product of two of these numbers is another one of these numbers.
ANSWER: **odd**
<MS>