

LADUE INVITATIONAL SPRING TOURNAMENT 2013

Round 2

TOSS-UPS

1. **This poem's narrator asks "is there balm in Gilead?" before telling the title entity to "get thee back into the tempest and night's Plutonian shore!" That narrator's "quaint and curious volumes" "surcease" him of sorrow for "the rare and radiant maiden" (*) Lenore. This poem's title creature sat "upon a pallid bust of Pallas just above" the chamber door it had earlier gently rapped and tapped upon. Beginning "Once upon a midnight dreary" while the narrator "pondered weak and weary," for ten points, identify this Edgar Allan Poe poem whose title bird keeps repeating "Nevermore."**

ANSWER: "The Raven"

<MS>

2. **The Herfindahl index for these occurrences is equal to ten thousand, and this word describes a type of competition in which all goods are slightly differentiated. The natural type of these entities can arise due to increasing returns to scale caused by high fixed costs, and their revenues are maximized where the price elasticity of demand equals one. By engaging in (*) price discrimination, they can reduce the amount of deadweight loss, and they generally produce fewer goods at higher prices than perfectly competitive industries. For ten points, identify these markets in which there is only one producer.**

ANSWER: monopolies (accept word forms like monopolistic)

<MS>

3. **An incorrectly configured null corrector used to build part of this device necessitated the installation of COSTAR to properly focus a mirror in it. This instrument originally possessed the High Speed Photometer and the Goddard High Resolution Spectrograph, and a similar object named for (*) James Webb is scheduled to replace this in a few years. It took several images of the Deep Field and Ultra Deep Field that showed the shape and formation of early galaxies after the Big Bang. For 10 points, identify this optical NASA space telescope launched in 1990 and named after an American astronomer.**

ANSWER: Hubble Space Telescope (or HST)

<BZ>

4. **One battle in this war began with Operation Ironclad, which seized the port of Diego-Suarez and paved the way for the conquest of Madagascar. One side in this war made use of the Madsen anti-tank gun, but capitulated after the capture of Amalienborg caused Christian X to surrender Copenhagen. The planned Operation (*) Sea Lion was never carried out due to the RAF's defeat of the Luftwaffe ["LOOFT-vah-fuh"] in the Battle of Britain. One leader in this war committed suicide as Soviet forces conquered Berlin and another leader delayed D-Day by a month due to poor weather. For ten points, identify this war which ended soon after the surrender of Japan in 1945.**

ANSWER: World War II or Second World War

<MS>

5. **The man who discovered this object had ruled the kingdom of Sarras for a year and only his companion Bors the Younger remained alive after viewing it. Only the man who retrieved this object could (*) sit on the Siege Perilous, which had kept Joseph of Arimathea alive while he was in prison. This object was said to be located in the home of the wounded Fisher King, who would be healed once this item was found. Percival managed to see it without comprehending its significance, but Lancelot's son Galahad succeeded in the quest to find this item. For ten points, name this sacred chalice sought by the Knights of the Round Table.**

ANSWER: Holy Grail

<BZ>

6. The force per unit area of the Casimir effect is equal to this quantity times h -bar times π -squared all over 240 times distance to the fourth power, and an object's Schwarzschild radius is inversely proportional to the square of this quantity. This quantity is equal to a certain quantity times the (*) index of refraction of a material, and, according to relativity, it is invariant for all observers. Hypothetical "tachyons" can exceed this value, and OPERA mistakenly claimed they had measured neutrinos going faster than this speed. For ten points, identify this value often symbolized c and approximated as 3 times 10 to the 8th meters per second, the rate at which photons move in a vacuum.

ANSWER: speed of light (or c before mentioned)

<MS>

7. One author from this country wrote a novella in which Dalmacio Ombrellieri leads The Fugitive to a two-sunned island home to Faustine and *The Invention of Morel*. That author, Bioy Casares, shows an encyclopedia article to another author from this country in the short story "Tlon, Uqbar, Orbus Tertius." That author wrote a short story in which Richard Madden pursues the (*) German spy Yu Tsun and included in his collection *Ficciones*, "The Garden of Forking Paths." For ten points, name this country home to Jorge Luis Borges, the setting of Manuel Puig's *The Buenos Aires Affair*.

ANSWER: Argentina

<MS>

8. Jean-Jacques Rousseau arranged "Spring" from Vivaldi's *The Four Seasons* for this instrument, which plays a rippling motif at the beginning of "Moldau" from Smetana's *Ma Vlast*. The "Morning Mood" movement from Grieg's *Peer Gynt* suite begins with a solo by this instrument, which also represents Sasha, who quarrels with Sonya the duck in another work. It portrays a (*) bird in Prokofiev's *Peter and the Wolf*, and Tamino is given one of these instruments by the attendants of the Queen of the Night. The piccolo is a half-sized version of, for ten points, what reedless woodwind instrument, a magic one of which titles an opera by Mozart?

ANSWER: flute

<HX>

9. One method for finding this quantity is through an algorithm whose worst-case is when the inputs are Fibonacci numbers. Bezout's lemma states that this value is the smallest positive integer which can be written as a linear combination of this function's inputs. The value of this function over two variables can be found with the (*) Euclidean Algorithm, and two numbers are relatively prime if this function of them returns the value of one. For two integers x and y , this function equals xy divided by the LCM of x and y . For ten points, identify this function, which gives the largest integer that divides a collection of numbers.

ANSWER: greatest common divisor (or greatest common factor, also accept highest for greatest)

<MS>

10. The Boot Monument in New York manages to commemorate this man without naming him. With Richard Montgomery, he led a failed invasion of Canada, and along with Ethan Allen, this man led the Green Mountain Boys in capturing Fort Ticonderoga. This man successfully defended (*) Bemis Heights during the Battle of Saratoga, but felt he did not get enough credit for it. This man's most famous deed was exposed when the spy John André was captured with his letters and the plans to surrender West Point. For ten points, identify this American traitor who, encouraged by his Loyalist wife Peggy, defected to the British during the Revolutionary War.

ANSWER: Benedict Arnold

<MS>

HALFTIME

11. This country controls the island of Wolin. Mount Rysy lies in its Tatra Mountains, which, along with the Sudetes, forms much of this country's southwest border. This country lies south of Kaliningrad Oblast and across the Western Bug from a neighboring country's city of Brest. The Masurian Lake District is located in this country, and its city of Stettin lies on the Bay of (*) Pomerania. Its cities include Krakow, Lublin, and Gdansk, and it contains Auschwitz. This country's western border is formed by the Neisse and Oder Rivers, and the Vistula flows through this country before draining into the Baltic Sea. For ten points, name this country with capital at Warsaw.

ANSWER: Republic of Poland

<JD>

12. This organ's muscle is surrounded and controlled by orthosympathetic and parasympathetic plexuses. Canaliculi help expand the surface area of this organ's parietal cells, which release intrinsic factor to facilitate the absorption of vitamin B12. Folds called rugae allow this organ to expand or contract, and its chief cells secrete (*) pepsinogen, an inactive molecule that is later converted into the enzyme pepsin. Through the pyloric sphincter, chyme passes from this organ to the duodenum. For ten points, name this organ that lies between the esophagus and the small intestine and produces hydrochloric acid.

ANSWER: stomach

<MiP>

13. One of this author's novels begins after a man who was seduced by a servant girl leaves his umbrella below-decks on a ship. In another of this author's works, the protagonist meets the painter Titorelli and the lawyer Herr Huld. Karl Rossman befriends a stoker in this author's *Amerika*, and Josef K. dies "like a dog" in another work. This author of *The (*) Trial* is most famous for a novella whose protagonist has apples thrown at him by his father and dreams of sending his sister Grete to play violin at the conservatory. For ten points, name this author who wrote of Gregor Samsa's transformation into a bug in *The Metamorphosis*.

ANSWER: Franz Kafka

<MS>

14. This man's opposition to Brissot's proposed war with Austria led him to publish the journal "Defender of the Constitution." With his close ally Saint-Just, this man ordered and directed the trials of Fabre d'Eglantine and Jacques Hebert. He replaced the atheistic "Cult of Reason" with the deistic (*) "Cult of the Supreme Being," and gained power after Danton's death. The Thermidorian Reaction removed him from post as head of the Committee of Public Safety. "The Incorruptible" was a nickname given to, for ten points, what Jacobin leader whose guillotining during the French Revolution ended the "Reign of Terror?"

ANSWER: Maximilien François Marie Isidore de Robespierre

<KT>

15. This character has a cousin named Murph Murphy, who owns a recycling plant, and this character stands trial for turning Keesha's prize-winning cucumber into a pickle. One of this character's disciples enjoys touting the safety at her old school, while another frequently voices his discontent with various situations by declaring, "I knew I should have (*) stayed home today." This character has the pet lizard Liz, and frequently tells her students to "Take chances, make mistakes, and get messy!" For ten points, name this wacky, red-headed teacher who drives the Magic School Bus.

Answer: Mrs. Valerie Felicity Frizzle (accept The Friz)

<CC>

16. After his death, this man's wife asked the Hittite king Suppiluliuma to send his son Zannanza as a husband, but he was killed en route by this man's successor. This man's advisor Ay eventually succeeded him to the throne, and was in turn quickly succeeded by this man's general, (*) Horemheb. This pharaoh moved Egypt's capital back to Thebes from Amarna and reinstated the worship of traditional Egyptian gods. This son of Akhenaten was raised by his grandmother Nefertiti, and his body was discovered in the Valley of the Kings by a team financed by Lord Carnarvon. For ten points, name this boy-king of Egypt whose tomb was discovered in 1923 by Howard Carter.

ANSWER: Tutankhamun (or Tutankhaten)

<CC>

17. A reaction of this order will produce lines of identical slope when the rate is plotted on a molarity vs. time graph. Having a bond order of this value indicates that a molecule is unlikely to exist due to its instability, and this value is the smallest orbital angular momentum quantum number. This is the number of pi bonds formed by the central carbon when it is sp³-hybridized in (*) methane. The standard electrode potential of hydrogen takes on this value, and this is the number of neutrons found in the hydrogen-1 nucleus. For ten points, identify this number used to represent the charge on a neutral atom.

ANSWER: zero (accept zeroth)

<EnC>

18. The Auspicious Events of this religion include the Kevalgyan Kalyanaka, in which a certain figure delivers a speech from the Samavasarana. Nirjara, the act of destroying karmas, is one of the nine tattvas of this religion, which encourages its followers to pursue the Five Vows. It can be split into Svetambara and Digambara sects, the latter of which practices nudity and is known as (*) "sky-clad." This religion's 24 tirthankaras have attained its ultimate goal of reaching *moksha*. Mahavira founded, for ten points, what Indian religion whose adherents fast rigorously to follow the principle of ahimsa, or nonviolence?

ANSWER: Jainism (or Jain Dharma)

<KT>

19. This work's antagonist is shot after saving a drowning girl, and before that learns of the love between Felix and the Turkish Safie. Alphonse, the father of the protagonist, dies soon after his son's wedding night, and Justine Moritz is framed for the murder of William. The frame story of this novel is told in a series of letters written to Margaret Saville by her brother, (*) ship captain Robert Walton. The protagonist of this novel is friends with Henry Clerval, and marries Elizabeth Lavenza. For ten points, identify this Mary Shelley novel in which Victor, the title scientist, creates a monster in the lab.

ANSWER: Frankenstein

<MS>

20. A soldier tripped and accidentally shot this man while he was a lieutenant colonel with the "Iron Rakkasans." This man's wife is the Head of Servicemember Affairs in the Consumer Financial Protection Bureau, Holly Knowlton. This man handed control to General Odierno of the Iraq troop surge so he could succeed a man who (*) gave an interview with *Rolling Stone*, Stanley McChrystal, as commander of NATO forces in Afghanistan. He succeeded Leon Panetta in another role when the latter became Defense Secretary. For ten points, name this four star general and former head of the CIA, who stepped down after an affair with his biographer.

ANSWER: David Petraeus

<DA>

End of regulation, only proceed if tied

21. This man depicted a pointing general atop a white horse in his portrait of George Augustus Eliott. In another of his works, a pink-collared boy modeled off Henry Pelham holds a chain above a wooden table, while his most famous painting depicts Morro Castle in the background. That painting by this artist of (*) *Boy with a Squirrel* shows a black man wearing a yellow scarf next to a standing man who prepares to plunge his spear into the title animal. For ten points, name this British painter who depicted a marine predator attempting to kill the title figure in his *Watson and the Shark*.

ANSWER: John Singleton Copley

<KT>

22. Aglauros and Herse went mad and jumped to their deaths after disobeying this deity, who had told the daughters of Cecrops to not open a box that held a boy disguised as a snake. That boy was a son of Gaia and Hephaestus even though the latter had tried to rape this goddess instead. Marsyas picked up a flute that she (*) invented but eventually discarded because it disfigured her face. Homer often refers to this figure as "gray-eyed", and as Mentor, she helps Odysseus leave for the Trojan War and return home to Ithaca. One of her symbols is the owl, and she was born from Metis in Zeus's head. For 10 points, name this Greek goddess of wisdom.

ANSWER: Pallas Athena (accept Athene; accept Athena Parthenos)

<BZ>

BONUSES

1. Bonus: It contains the Sawtooth Mountains and the Lost River Range. For ten points each:

[10] Name this state which contains cities such as Pocatello, Coeur d'Alene ("KORR duh-LAYN"), and Boise.

ANSWER: **Idaho**

[10] This river rises in Yellowstone National Park and receives the Salmon and Clearwater Rivers in Idaho before passing into Washington and eventually flowing into the Columbia River.

ANSWER: **Snake** River (or **Lewis** River; or **Shoshone** River; or **Mad** River; or **Saptin** River; or **Yam-pah-pa**)

[10] The Snake River carves this deepest North American gorge on the border between Idaho and Oregon.

ANSWER: **Hells** Canyon

<JD>

2. Bonus: This passage tells the audience that they are the "salt of the Earth" and the "light of the world." For ten points:

[10] Identify this collection of teachings given by Jesus from a large hill, which also contains the Beatitudes.

ANSWER: **Sermon on the Mount** (or **Sermo in Monte**)

[10] The Sermon on the Mount is found in this first of the four Gospels. Its presumed author was a tax collector from Capernaum.

ANSWER: Gospel According to **Matthew** (or Gospel of **Matthew**)

[10] The Gospel of Matthew is the only one to mention this amount of money that Judas was given for betraying Jesus, which was then given back and used to buy Potter's Field.

ANSWER: **thirty silver** pieces/coins (prompt if only one of those two is given)

<MS>

3. Bonus: As Majority Leader, he persuaded fellow senators to vote his way using "The Treatment." For ten points each:

[10] Name this man who became president after John F. Kennedy's assassination.

ANSWER: **Lyndon Baines Johnson** (or **LBJ**, prompt on Johnson)

[10] To combat poverty and racism, Johnson launched a domestic policy initiative given this name. Though many of the programs were gutted during the Vietnam War, a few, like Medicare and Medicaid, survive today.

ANSWER: **Great Society**

[10] LBJ appointed this Associate Justice to replace Earl Warren as Chief Justice, but his nomination was successfully filibustered by the Senate. This man later resigned from the Court after a number of ethical scandals.

ANSWER: Abe **Fortas**

<MS>

4. Bonus: After realizing this character does not like her, Kitty chooses to marry Levin instead. For ten points each:

[10] Identify this owner of the horse Frou-Frou and cousin of Princess Betsy. He has a long affair with Anna Karenina.

ANSWER: Count Alexei Kirillovich **Vronsky**

[10] *Anna Karenina* was written by this Russian author of *War and Peace*.

ANSWER: Lev Nikolayevich "Leo" **Tolstoy**

[10] Tolstoy published this novel to procure funds for the Dukhobors to emigrate from Russia. The last of his novels published during his lifetime, it follows Dmitri Nekhlyudov, who had an affair with his maid Maslova.

ANSWER: **Resurrection** (or **Voskreseniye**)

<MS>

5. Bonus: Answer the following about Atwood's machines, for ten points each:

[10] A typical Atwood machine consists of two blocks connected by a rope which wraps around one of these round simple machines, of which there are multiple in a block and tackle.

ANSWER: pulleys

[10] The string holding block one up exerts the same force on block one as block one does on it, according to this law of motion.

ANSWER: Newton's third law of motion

[10] This quantity for an ideal Atwood machine is equal to little- g times the difference of the masses divided by their sum.

ANSWER: acceleration of the system

<MS>

6. Bonus: Some countries do not hold elections because they lack democracy. For ten points each:

[10] This largest Asian nation just had a change in leadership within its Communist Party that has been in control since Mao Zedong gained power in 1949.

ANSWER: Peoples' Republic of China (or PRC, do not accept Republic of China or ROC)

[10] This man is almost certainly replacing Hu Jintao as the President of China and is currently the Central Secretariat of the Communist Party.

ANSWER: Xi Jinping

[10] Xi Jinping is also the first-ranking member of the Standing Committee of this 25-member body, which is nominally selected by the Central Committee. No one really knows much about how it works, but we think it meets monthly.

ANSWER: Central Politburo of the Communist Party of China (or Political Bureau)

<DA>

7. Bonus: One character in this novel is nicknamed "Samsonite" due to his habit of stapling his enemies hands. For ten points each:

[10] Identify this novel in which the dictator Sam rules Kangan and orders the execution of reporter Idem Osodi, who is friends with Chris Oriko and his girlfriend Beatrice Okoh.

ANSWER: Anthills of the Savannah

[10] This novel by the author of *Anthills of the Savannah* takes its title from the poem "The Second Coming." In this novel all sorts of bad things happen to Okonkwo after he kills his adopted son Ikemefuna.

ANSWER: Things Fall Apart

[10] *Anthills of the Savannah* was written by this Nigerian author, who followed *Things Fall Apart* with *No Longer at Ease* and *Arrow of God*.

ANSWER: Chinua Achebe

<MS>

8. Bonus: This approximation adds a n -squared times a over V -squared term to pressure, adjusting for intermolecular attraction. For ten points each:

[10] Identify this equation of state named for a Dutch scientist, which also subtracts n times b from the volume to account for the volume of individual gas molecules. That correction is also due to the forces which allow geckos to stick to walls.

ANSWER: van der Waals equation (do not accept "van der Waal" without the S)

[10] The van der Waals equation adds and subtracts those terms from values in this law, which states that $PV=nRT$.

ANSWER: ideal gas law/equation (or combined gas law)

[10] Kamerlingh Onnes used statistical mechanics to introduce this equation of state, which relates the pressure and temperature of a many-particle system to an infinite power series.

ANSWER: virial equation/expansion/theorem

<MS>

9. Bonus: His eldest son Jochi was not appointed as his successor. For ten points each:

[10] Identify this man who was born as Temujin (TEM-uh-jin) and conquered most of Asia in the name of the Mongol Empire.

ANSWER: **Genghis** Khan (accept **Chingis** Khan, prompt on “Khan”)

[10] This Khanate was known for conquering Kievan Rus and putting it under the “Mongol Yoke”, which was eventually lifted by Ivan III. It was once led by Batu and is named for the color of the tents they used.

ANSWER: **Golden Horde** (or **Kipchak** Khanate)

[10] After a conflict arose between Jochi and Chagatai, Genghis decided to appoint this third son as his successor. As the second Great Khan, he further expanded the empire his father had built.

ANSWER: **Ogedei** Khan

<MiP>

10. Bonus: Abbot Suger really got this movement started with his renovations of Saint-Denis. For ten points each:

[10] Identify this medieval architectural style which grew out of the earlier Romanesque period. Cathedrals built in this style typically have very high ceilings and pointed rib vaults, like the Notre Dame de Paris.

ANSWER: **Gothic**

[10] To laterally support the enormous walls, Gothic churches typically have these projecting structures, which curve outward and downward, but do not maintain contact all the way to the ground.

ANSWER: **flying buttresses** (prompt on partial)

[10] This Gothic cathedral was built on the site of one previously destroyed in a 1211 fire. It was the site of French kings' crownings, has three large portals, and a rose window in place of the tympanum.

ANSWER: **Reims** Cathedral

<MS>

11. Bonus: This man's namesake function is 1 for all rational inputs, and 0 otherwise. For ten points each:

[10] Identify this German formulator of the pigeonhole principle, who also proved that any arithmetic sequence whose first term and common difference are coprime contains infinitely many prime numbers.

ANSWER: Gustav Lejeune **Dirichlet**

[10] Dirichlet proved the n equals 5 and n equals 14 case of this man's “last” theorem, which was finally proven when Andrew Wiles showed the validity of part of the Taniyama-Shimura Conjecture.

ANSWER: Pierre de **Fermat**

[10] Another proof for the n equals 5 case of Fermat's last theorem was given by this mathematician, who supposedly summed the first 100 integers as a child. He proved quadratic reciprocity and sometimes names the normal distribution.

ANSWER: Carl Friedrich **Gauss**

<MS>

12. Bonus: Answer the followings about rebellions in 14th century Europe, for ten points each:

[10] This rebellion was led by Wat Tyler until his death at the hands of the Lord Mayor of London. Before it broke up after Tyler's death, this uprising had tried to eliminate an unpopular head tax.

ANSWER: **Peasant's Revolt** (accept synonyms for “revolt” like **rebellion** or **uprising**, but do not accept “Peasant's War”)

[10] The Peasant's Revolt targeted the second king of this name, who was heavily influenced by his uncle John of Gaunt. A more famous king of this name was an enemy of Saladin and was known as “the Lionhearted”.

ANSWER: **Richard** (accept **Richard I** or **Richard II**)

[10] Around the same time period as the Peasant's Revolt was this 1358 French uprising. It was named after a common term for a French peasant and arose partly due to French failures during the Hundred Year's War.

ANSWER: **Jacquerie**

<BZ>

13. Bonus: The title character is actually Clyde Wynant, whose body was dressed up in a larger person's clothes. For ten points each:

[10] Identify this novel in which Dorothy asks Nick Charles to help locate her father.

ANSWER: *The Thin Man*

[10] This other novel by Dashiell Hammett sees Sam Spade attempt to avenge the death of his partner Miles Archer and find the title bird figurine. Other characters in this novel include Brigid O'Shaughnessy and Joel Cairo.

ANSWER: *The Maltese Falcon*

[10] Nick Charles and Sam Spade are members of this profession. Other literary characters with this job include Hammett's Continental Op and Doyle's Sherlock Holmes.

ANSWER: detective or private investigator

<MS>

14. Bonus: For ten points each, answer the following about a historically significant raptor:

[10] This national bird of the United States is named for its white plumage on the top of its head and not for its lack of hair. It faced near-extinction in the middle of the 20th century.

ANSWER: bald eagle (accept *Haliaeetus leucocephalus*)

[10] This woman's book *Silent Spring* raised awareness for the plight of the bald eagle population and the impact of DDT on other birds. She was a marine biologist, and also wrote *The Sea Around Us*.

ANSWER: Rachel Carson

[10] The United States is not a signatory to this treaty, signed in a namesake European capital, which restricts the use of Persistent Organic Pollutants like DDT.

ANSWER: Stockholm Convention on Persistent Organic Pollutants

<MiP>

15. Bonus: The leaders of one side in this event were Alcyoneus and Porphyron. For ten points each:

[10] Name this rebellion against the Olympian gods, which was quelled with the help of Heracles. Some participants in it could not be killed unless they were taken out of their homeland of Pallene.

ANSWER: Gigantomachy (accept equivalents like Giant War)

[10] The Giants were sons of this personification of the Earth. With Ouranos, she was the mother of the Titans, Hekatonkheires, and Cyclopes.

ANSWER: Gaia (accept Ge)

[10] This gigantic hundred-headed monster was also a son of Gaia. His union with his wife Echidna was said to have brought forth all other monsters. After his defeat by Zeus, he was imprisoned under Mount Etna.

ANSWER: Typhon (accept Typhoeus, Typhos, or Typhaon)

<BZ>

16. Bonus: Following its dissolution, Napoleon organized many of its member states into the Confederation of the Rhine. For ten points each:

[10] Name this rather loose association of German, Austrian, and Bohemian states that existed from the 10th to the 19th centuries. Its emperor, traditionally from the Hohenstaufen family, was chosen by seven electors.

ANSWER: Holy Roman Empire (accept Sacrum Romanum Imperium or Heiliges Römisches Reich)

[10] Through family ties, this Holy Roman Emperor also ruled Spain, the Netherlands, and Austria. He presided over the Diet of Worms, which outlawed Luther and the Reformation that had started during this man's reign.

ANSWER: Charles V (accept Karl V or Carlos V; prompt on just "Charles" or "Carlos"; accept Charles I of Spain or Carlos I of Spain but do not accept or prompt on "Charles I")

[10] This league of Protestant German princes was formed in 1530 to protect Lutheranism in the Holy Roman Empire. After fighting and losing a war against it, Charles V guaranteed religious freedom in the Peace of Augsburg.

ANSWER: Schmalkaldic League (or Schmalkaldischer Bund)

<BZ>

17. Bonus: Purkinje fibers in this organ act as a pacemaker when the SA and AV nodes fail. For ten points each:

[10] Name this organ that pumps blood through the body and is divided into four chambers in humans.

ANSWER: heart

[10] This double membrane covers the heart and is divided into fibrous, parietal, and visceral types, the latter of which is part of the epicardium. It surrounds the myocardium and prevents the heart from expanding too much.

ANSWER: pericardium

[10] This artery is the largest in the human body and originates from the left ventricle. Below the kidneys, it separates into the iliac arteries.

ANSWER: aorta

<BZ>

18. Bonus: Husserl notes that we have too little memory to conceive of sufficiently high numbers in his *Philosophy of [this]*. For ten points each:

[10] Identify this discipline, the foundations of which were written about by Gottlob Frege. That work attacks the notion that $7+5=12$ is a synthetic statement.

ANSWER: arithmetic (or Arithmetik)

[10] This man had earlier analyzed the statement $7+5=12$ in his *Critique of Pure Reason*. The most well-known formulation of his categorical imperative states that one should only do something if it should be done universally.

ANSWER: Immanuel Kant

[10] One of Kant's essays is titled "What is [this word]?", and defines it as "man's emergence...from his immaturity." This word also names a 17th and 18th century movement which emphasized scientific reasoning.

ANSWER: enlightenment (or Aufklärung)

<MS>

19. Bonus: It calls for scordatura tuning of the solo violin, lowering the E-string to an E-flat. For ten points each:

[10] Name this work based on a French superstition which opens with twelve D's in the harp. Its original vocal text was a poem by Henri Cazalis, which was replaced by solo violin playing a *Dies irae* waltz theme.

ANSWER: Danse Macabre

[10] The "Fossils" movement of this suite by the composer of *Danse Macabre* incorporates similar xylophone motifs. Fluttering flutes depict birds in its "Aviary" movement, while a solo cello depicts "The Swan".

ANSWER: *The Carnival of the Animals* or *Le carnaval des animaux*

[10] This French composer of *Danse Macabre* and *The Carnival of the Animals* included a "Bacchanale" danced by priests of the Temple of Dagon in his opera *Samson and Delilah*.

ANSWER: Camille Saint-Saëns

<HX>

20. Bonus: Lindsay Lohan used to be in a lot of movies. Name some, for ten points each:

[10] This teen comedy explained the life of Cady Heron and her adventures with the Regina-led Plastics, who wear pink on Wednesdays.

Answer: **Mean Girls**

[10] Lindsay Lohan plays both of the twins Hallie and Annie who attempt to bring their divorced mother and father back together in this remake of a 1961 film.

Answer: **The Parent Trap**

[10] This film stars Lohan as a racecar driver of a certain sentient Volkswagen Beetle, and features cameo appearances by Dale Earnhardt Jr. and Jeff Gordon.

Answer: **Herbie: Fully Loaded**

<CC>

21. Bonus: In this play, the captured Balthazar falls in love with Bel-Imperia. For ten points each:

[10] Identify this play which sees Hieronimo bite out his tongue after orchestrating the murder of the villainous Lorenzo. It is the most famous work of Thomas Kyd.

ANSWER: **The Spanish Tragedy**

[10] *The Spanish Tragedy* is very similar to this Shakespeare play, whose title character courts Ophelia, knew the jester Yorick, duels Laertes, and gives the “to be or not to be” speech.

ANSWER: **The Tragedy of Hamlet, Prince of Denmark**

[10] *The Spanish Tragedy* and *Hamlet* are the most famous examples of this genre of play, popular in Elizabethan times, in which the protagonist gets back at someone, usually killing someone who killed their loved ones.

ANSWER: **revenge** plays/tragedies

<MS>

22. Bonus: Nuclear reactors typically glow blue due to this phenomenon. For ten points each:

[10] Identify this phenomenon, discovered by its Soviet namesake, in which particles moving faster than the speed of light in a given medium emit radiation.

ANSWER: **Cherenkov** (“Chair-in-koff”) radiation

[10] Igor Tamm helped mathematically explain Cherenkov radiation, for which he won the Nobel Prize. Along with Sakharov, Tamm also developed these devices, which use a magnetic field to contain fusion reactants in the shape of a torus.

ANSWER: **tokamaks**

[10] The substances contained by a tokamak are usually in this “fourth state of matter,” most similar to a gas. It consists of a number of hot, ionized particles, and is the most common state of matter in the known universe.

ANSWER: **plasma**

<MS>