UIUC Earlybird 2006 - Round 5
(Tossups by UIUC Academic Buzzer Team)

1. The Lagrangian is equal to this quantity minus the potential energy. In gravitational systems, the virial theorem guarantees that the average of this quantity is equal to negative one half of the average potential energy. In special relativity, this quantity approaches infinity as the velocity approaches the speed of light. The rotational variety of this is given by one half times I times the angular velocity squared. FTP, identify this quantity, the energy of motion, that is often equal to one half times the mass times the velocity squared.
ANSWER: the **k**inetic **e**nergy (prompt on "T")

2. Berengar of Tours and John Scotus Eregina were prominent early members of this school of thought. An important issue in it was the question of universals, which lead to a nominalist branch supported by William of Ockham. Peter Abelard and St. Anselm, creator of the ontological proof, are typical philosophers from this school. FTP, name this form of philosophy dominant in the Middle Ages, perhaps best embodied by Thomas Aquinas and the Summa Theologica, and named for its acceptance in universities.
ANSWER: **scholasticism** (or **scholastic** philosophy)

3. This person was the only man named a General of the Army during his lifetime and, as a cadet at West Point, he led the honor guard at the funeral of Ulysses S. Grant. He served in the Spanish-American War with Theodore Roosevelt and helped suppress the Philippine uprising. FTP, name this leader of the hunt for hunt for Pancho Villa; a general who led the American Expeditionary Force in World War I, and who was nicknamed "Blackjack."
ANSWER: John **Pershing**

4. Cratinus and Eupolis were recognized as great writers in this style, but none of their plays survive. By definition, works in this style are not rooted in traditional myth and their resolutions are also often nonsensical, such as Dionysus bringing back Euripides since there are no good tragic poets. Political and social critiques can be found in, FTP, which ancient Greek style of drama, whose most famous writer is Aristophanes?
ANSWER: Greek **Old Comedy** (prompt on "Comedy")

5. This military leader secured the support of Robert de Baudricourt, the captain of the forces in Vaucouleurs, and was able to meet with the King. After passing an examination and being given troops by Charles VII, this commander won battles at Patay and on the Loire, but failed to besiege Paris. Upon being captured by the Burgundians and sold to the English, this prisoner of war was tried before Pierre Cauchon and executed for heresy. FTP, name this famous "Maid of Orleans" who heard the voices of saints.
ANSWER: **Joan of Arc** of Orleans (or **Jeanne d'Arc** d'Orleans)

6. Early on, this being displaced Dione, patroness of the oracle of Dodona in Epirus. Given the epithet Eileithyia as the easer of childbirth, this deity was the subject of the Shield celebration at Samos, of which she was the patron. Homer describes this goddess as "ox-eyed," and animals associated with her include the coocoo, the cow and especially the peacock. FTP, name this goddess, the Greco-Roman queen of heaven, best known as the angry wife of Zeus or Jupiter.
ANSWER: **Hera** (or **Juno**)

7. At the end of this work, the narrator discusses having shown the title figure a bronze rendition of Neptune taming a sea-horse The title figure had "a heart too soon made glad" as she was impressed by everything she saw, showing the same approval to all things, including the white mule she rode around on and a bough of cherries someone gave to her. FTP, what Robert Browning title female died after receiving a nine-hundred-year-old name from her husband, a Duke?
ANSWER: **My Last Duchess**

8. One of this person's notable works centers around a wager between Alfonso and Ferrando and Guglielmo regarding the fidelity of Dorabella and Fiordiligi, while another tells the story of a mythical King of Crete. Besides Idomaneo and Così fan tutte, this artist is notable for the Haffner, Linz, and Prague Symphonies and the serenade Eine kleine Nachtmusik. FTP, name this composer who wrote his Jupiter Symphony and operas The Marriage of Figaro, Don Giovanni, and The Magic Flute in eighteenth-century Austria.
ANSWER: Johann Chrysostom Wolfgang Amadeus **Mozart** (or Johannes Chrysostomus Wolfgangus Theophilus **Mozart**)

9. This work requests that "mothers and fathers throughout the land" refrain from "criticiz[ing] what [they] can't understand." Because of this song's titular truth, "the first one now / Will later be last," "the loser now / Will be later to win," and "you better start swimmin' / Or you'll sink like a stone." FTP, name this song which calls on Senators and Congressmen to "Please heed the call;" the title track from a 1964 album by Bob Dylan, who claims in it that things aren't remaining the same.
ANSWER: The **Times They Are A'Changin'**

10. Sometimes known as the Poverello, this person was named patron of ecology in 1979. According to Thomas of Celano, a voice from a crucifix prompted this knight to sell some of his father's possessions to repair the Chapel of San Damiano; he also fixed the Porziuncola, where a lesson from Matthew 10 lead to his most notable accomplishment. FTP, name this Catholic saint who founded the Poor Clares and Third Order as well as an order of Friars Minor named for him; a patron saint of Italy from Assisi.
ANSWER: Saint **Francis** of Assisi (or San **Francesco** d'Assisi or Francesco di Pietro di **Bernardone**)

11. This person fought under Carus in Persia and was appointed as a co-ruler after the death of Numerian. He gained full control when Carinus was killed by his own men and among his accomplishments were gaining Britain and checking the Persians. He tried to restore the gold standard, but his attempts to regulate prices proved ruinous, which helped result in his most famous decision. FTP, name this Roman emperor who formally divided the Roman empire in half.
ANSWER: Gaius Aurelius Valerius **Diocle**tianus

12. In this work, the protagonist and his sister move in with their uncle Ralph after the death of their father, but the sister Kate soon moves in with Sir Mulberry Hawk, after which the protagonist teaches at Dothesby Hall. The title character takes offense at to how Wackford Squeers mistreats the orphans in his charge, so the title character thrashes Squeers and takes the orphan Smike home with him. FTP, identify this Dickens novel with an alliterative title.
ANSWER: **Nicholas Nickleby**

13. The 1997 Nobel Prize in Physiology or Medicine was awarded for research into these. The disorders they cause are known as slow infections. This class of disease-causing agents was discovered by Stanley Prusiner and consists of abnormal proteins that spontaneously fold normal proteins into their configuration. FTP, name these pathogenic abnormal proteins best known for causing fatal familial insomnia, Creutzfeldt-Jakob disease, mad cow disease, and other spongiform encephalopathies.
ANSWER: **prion**s (or **protinaceous infectious particle**s)

14. A firm's profits can be calculated by multiplying the quantity sold by the vertical distance between the curve for this quantity and the average cost curve. The area under this curve measures total variable costs. When the quantity produced is one, this quantity equals the average cost. This curve passes through the minimum of both average total cost and average variable cost. FTP, name this quantity that is the change in cost when one more unit of a good is produced.
ANSWER: the **m**arginal **c**ost of production

15. On a phase diagram, this state function is constant on any coexistence curve. The change in this quantity under standard conditions is proportional to natural logarithm of the equilibrium constant. Developed in the late nineteenth century by an American scientist, this measure of the available energy in a system is useful in chemical kinetics. A reaction will be spontaneous if the change in this quantity is negative. It is defined as the enthalpy minus the product of the absolute temperature and entropy. FTP, identify this thermodynamic quantity.
ANSWER: the **Gibbs free energy** (or **Gibbs function**; prompt on "free energy" or "Gibbs")

16. Settled by Mormons in 1855, this city was intended originally as a stopover point between Salt Lake City and San Bernadino, California. In recent years there has been concern over this city's water supply, because it is reaching the limit that can be pumped from Lake Mead and the Colorado River. As part of its 2005 centennial celebration, Mayor Oscar Goodman helped bury a time capsule containing, among other things, programs from Mystere, Zumanity, and Penn and Teller. FTP, name this city home to more hotel rooms than any other city in the world and that is famous for its namesake Strip.
ANSWER: Las **Vegas**, Nevada

17. This period began with a revival of the Arvand-Roud waterway dispute and in Khouzestan, one side created unrest in labor camps and the Kurdish regions. The attacking side began on September, 22, 1980 with bombing raids at Tabriz, Ahvaz, and others but, within hours, F-4s took off from the same bases. Eventually, one side resorted to poison gas while the other began attacking Kuwaiti oil fields, after which the UN stepped in and ordered a ceasefire. FTP, name this 1980's conflict between two Arab nations.
ANSWER: the **Iran-Iraq War**

18. In Act 2 of this work, a stag party chagrins of Mrs. Elvsted. Eljert loses his manuscript and gets arrested, but Jurgen Tesman, the title character's husband, snags it and gives it to his wife. Eljert tells the title character that he wants to kill himself, so she gives him a pistol. Upon learning that the gun accidentally went off, she is blackmailed by Judge Brack and kills herself too. FTP, name this play by Henrik Ibsen.
ANSWER: **Hedda Gabler**

19. Pencil and Paper Ready. What are the roots of the polynomial f of x equals x cubed minus three x squared plus x minus three? The rational root theorem can simplify this problem by showing that 1 is a root. Synthetic division will then yield a quadratic that can be easily factored. FTP, what are the roots of the expression quantity x minus one, close quantity, times quantity x squared minus two x minus three?
ANSWER: **one**, **negative one**, **and three** (accept in any order)

20. Called a "chief lieutenant" of the Bank War, this person was Speaker of the House from 1835-39 and left when he was elected governor of Tennessee. In order to avoid war, he sent an envoy to Mexico offering $20 million plus a damage settlement in return for California and New Mexico. The envoy was sent away, prompting the Mexican-American War. FTP, name the dark horse winner of the 1844 Presidential election.
ANSWER: James Knox **Polk**

21. This person dealt with insanity in Yard with Lunatics and "The Sleep of Reason Produces Monsters", the latter of which is part of his series Los Caprichos. Fight with Cudgels, The Dog, and Saturn Devouring his Children are among the works he painted on the wall of his house, the Quinta del Sordo, which are called the Black Paintings. FTP, name this painter best known for The Naked Maja and The Third of May, 1808; a Spanish painter of the late-eighteenth and early-nineteenth centuries.
ANSWER: Francisco José de **Goya** y Lucientes

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(Bonuses by UIUC Academic Buzzer Team)

1. Given a description, identify the work by Sir Walter Scott FTPE.
[10] Effie Deans is spared from execution for murdering her son. She marries George Staunton, who is shot by the son who, as it turns out, wasn't dead.
ANSWER: The **Heart of Midlothian**
[10] Richard the Lion-Hearted is disguised as the Black Knight and Rebecca the Jewess is rejected by the title knight, Wilfred, in favor of Rowena.
ANSWER: **Ivanhoe**
[10] In this work set during the Jacobite Rebellion of 1715, the title character is sent to retrieve documents from Rashleigh Hildebrand and kills him when Rashleigh tries to kill the narrator Franks Osbaldistone.
ANSWER: **Rob Roy**

2. Answer the following questions about a certain Japanese ruler FTPE.
[10] Born Matsudaira Takechiyo, he defeated the forces of Hideyoshi at the battle of Sekhigahara in 1600 and was given the title of shogun in 1603. His dynasty of Shoguns was to rule Japan until the twentieth century.
ANSWER: **Tokugawa** Ieyasu
[10] Tokugawa Ieyasu established his capital in this city.
ANSWER: **Edo** (or **Chiyoda** or **Tokyo**)
[10] One major event that led to the downfall of the shogunate was the signing of a treaty with this American Commodore in 1854 that opened-up Japan to the West.
ANSWER: Matthew Calbrainth **Perry**

3. Answer the following related to deserts FTPE.
[10] At three-and-a-half million square miles, it's the largest desert in the world.
ANSWER: the **Sahara** Desert
[10] This large desert in southern Africa is the ancestral home of the Bushmen. It has only one permanent river, the Okavango.
ANSWER: the **Kalahari** Desert
[10] This large Asian desert is famous for its fossil finds. In the 1930s, Roy Chapman discovered the first fossilized dinosaur eggs here.
ANSWER: the **Gobi** Desert

4. Name each of the following artists of the Northern Renaissance FTP.
[10] This attributed inventor of oil painting created the Ghent Altarpiece with his brother Hugo and is also the master behind The Arnolfini Wedding.
ANSWER: Jan **van Eyck**
[10] This poorly understood proto-surrealist created Death and the Miser; The Ship of Fools; and the triptychs The Temptation of St. Anthony, Haywain, Garden of Earthly Delights, and Last Judgment.
ANSWER: Hiëronymus **Bosch** (or Jheronimus **Bos** or Jerome **Van Aeken** or Jerome **Van Aquen** or Jerome **Van Aken** or Jeroen **Anthoniszoon**)
[10] This great landscapist and member of a large painterly family created Landscape with the Fall of Icarus, The Triumph of Death, The Tower of Babel, The Hunters in the Snow, and Peasant Wedding.
ANSWER: **P**ieter **Bruegel** the **Elder** (or **Peasant Bruegel** or **P**ieter **Bruegel** De **Oudere** or **Boeren Bruegel**; prompt on anything less)

5. Name the French king from the years of their reign FTPE.
[10] 1774-1792.
ANSWER: **Louis XVI** (prompt on "Louis")
[10] 1589-1610.
ANSWER: **Henry IV** (prompt on "Henry")
[10] 1814-1824.
ANSWER: **Louis XVIII** (prompt on "Louis")

6. According to the Gospel of Matthew, Jesus said, "I will use parables when I speak to them; I will tell them things unknown since the creation of the world." Answer these questions about parables FTPE.
[10] According to the Parable of the Unforgiving Servant, how many times should Peter forgive his brother if he keeps on sinning against him? As a hint, it's not seven.
ANSWER: **seventy-seven**
[10] What animal is featured as 'lost' in a Parable in which a man loses and then is joyous to find one of his one hundred of them?
ANSWER: **sheep**
[10] Which "smallest of all seeds" becomes the "biggest of all plants, so that birds come and make their nests in its branches," according to one parable?
ANSWER: the **mustard** seed

7. Answer the following concerning an early twentieth-century writer FTPE.
[10] In the 20's, her salon at 27 Rue de Fleurs in Paris hosted such famous writers as Hemingway, Sherwood Anderson, and Thornton Wilder.
ANSWER: Gertrude **Stein**
[10] Stein's most famous work was an "autobiography" of this woman, her lover.
ANSWER: Alice B. **Toklas**
[10] Stein coined this term for the group of expatriate writers that frequented her salon.
ANSWER: the **Lost Generation**

8. Give the bond hybridization on the following molecules FTPE.
[10] Methane, CH_4.
ANSWER: sp^3
[10] Phosphorus pentachloride, PCl_5.
ANSWER: sp^3d
[10] Sulfur dioxide, SO_2.
ANSWER: sp^2

9. Answer each of the following about some music of the Roman Catholic Church FTP.
[10] This term refers to the unison liturgical vocal music of the Church and is named for the Pope who codified it around 600 CE.
ANSWER: **Gregorian chant**
[10] As a Gregorian chant has only one note being produced by its performers at any given time, it can be referred to by this term, from the Greek for "one sound."
ANSWER: **monophonic** (or **monophony** or **monophone**)
[10] This second-to-last of the canonical hours of Gregorian chant is now a term that means twilight.
ANSWER: **Vespers**

10. Answer the following about the European sixteenth-century wars of religion FTPE.
[10] This chief minister of King Louis XIV attacked the Huguenots by using dragonnades to wreak havoc.
ANSWER: Cardinal Jules **Mazarin**
[10] The widow of Henry II and the regent for her sons, this Italian-born queen initially sought compromise with the Huguenots but later took more extreme actions.
ANSWER: **Catherine de Medici** (prompt on "Catherine" on "Medici")
[10] Catherine ordered this massacre of thousands of Huguenots on the day after the wedding of her daughter Margot to Henry of Navarre.
ANSWER: the **St. Bartholomew's Day** massacre

11. Answer the following about a philosopher and his works FTPE.
[10] This major Greek philosopher outlined his political philosophy in the Politics. His major works in logic are known as the Organon and include the Prior and Posterior Analytics.
ANSWER: **Aristot**e**le**s
[10] This incomplete work on the nature of literature defines its titular genre as a form of mimesis and divides it into tragedy, comedy, and epic verse.
ANSWER: **Poetics** (or **Peri poietikes**)
[10] Possibly compiled by the namesake son of Aristotle, this major work on virtue posits eudaimonia as the ultimate good and discusses the golden mean in Book 2.
ANSWER: **Nicomachean Ethics** (or **Ethika Nikomacheia**)

12. Identify these Native American deities FTPE.
[10] The image of this flute-playing god is on walls, pottery, canyons, and more all over the Southwestern United States.
ANSWER: **Kokopelli**
[10] Sometimes noble and sometimes not, he is often a trickster and other times the butt of jokes, and is also sometimes given credit as a creator god.
ANSWER: **Coyote**
[10] This is Coyote's wiser brother, who is often antagonized by Coyote.
ANSWER: **Wolf**

13. Answer each of the following about a cell membrane FTP.
[10] Cell membranes are generally comprised of a bilayer of these chemicals, a combination of the constituents of fats and a compound containing element fifteen.
ANSWER: **phospholipid**s
[10] The lipid tails of phospholipids are described as this, which means "water-fearing." Because their tails are repelled by polar molecules like water, the phospholipids bilayer is a stable configuration in water.
ANSWER: **hydrophobic**
[10] Chemicals of this kind, proteins covalently bonded to carbohydrates, protrude from the cell membrane and function in identifying the cell. Their carbohydrate appendages are called oligosaccharides.
ANSWER: **glycoprotein**s

14. Name the African leader from description FTPE.
[10] He was elected President of Egypt in 1981 for a six-year term and has been re-elected four times.
ANSWER: Hosni **Mubarak**
[10] He became prime minister and eventually president of Zimbabwe in 1980 and has been the only head of state in its history.
ANSWER: Robert **Mugabe**
[10] The predecessor to F.W. de Klerk, he was elected Prime Minister of South Africa in 1978, but resigned in 1989.
ANSWER: Pieter Willem **Botha**

15. The merits of war are debatable, but does produce some fine literature. Identify the following about works dealing with warfare FTPE.
[10] This Leo Tolstoy work contains three short stories, each set in a different month, which he wrote while serving in the Crimean War.
ANSWER: **Sevastapol Sketches** (or **Sevastopolskiye rasskazy**)
[10] According to the narrator of this Wilfred Owen poem, all are lame, blind, fatigued, and deaf to the five-nines dropping behind them.
ANSWER: **Dulce et Decorum Est**
[10] According to a John McCrae poem, what kinds of flowers "blow between the crosses, row by row?"
ANSWER: **poppies**

16. Answer these questions about forces FTPE.
[10] This term is used to describe any force that is the cause of a circular motion.
ANSWER: **centripetal** force
[10] This is the force that a surface exhibits upon an object resting on that surface. It is so named because of the direction in which points relative to the surface.
ANSWER: **normal** force
[10] This term describes the force that a general electromagnetic field will exhibit on an object. It is named for a nineteenth century Dutch physicist.
ANSWER: **Lorentz** force

17. Consider the rational function y equals quantity five x squared plus 1, over the quantity x squared minus 4. FTPE:
[10] What are the x-coordinates of the graph's two vertical asymptotes?
ANSWER: **2** and **-2** (any order)
[10] What is the equation of the graph's horizontal asymptote?
ANSWER: **y equals 5** or **y minus 5 equals 0**
[10] What is the value of the function's derivative with respect to x at x equals zero?
ANSWER: **zero**

18. Name these directors from films FTPE.
[10] Taxi Driver and Goodfellas.
ANSWER: Martin **Scorsese**
[10] Strangers on a Train and North by Northwest.
ANSWER: Alfred **Hitchcock**
[10] The Seventh Seal and Fanny and Alexander.
ANSWER: Ingmar **Bergman**

19. Given a description, identify the following fictional doctors FTPE.
[10] This Sinclair Lewis physician takes his practice to Vermont and the West Indies and fails in his quest for "pure science".
ANSWER: Dr. Martin **Arrowsmith**
[10] He is friends with Matthew Mugg, is the central figure in fourteen different works, and worked in Puddleby-on-the-March.
ANSWER: Dr. John **Doolittle**
[10] A young doctor, he likes to write religious poems and his anti-Marxist discussions with his uncle Kolya led to the censorship of the novel in which he appears in the Soviet Union.
ANSWER: Dr. Yury **Zhivago**

20. Name these Supreme Court cases FTPE.
[10] This 1963 case determined that the right to council is fundamental, even if the defendant has no money to pay for a lawyer. It determined that the Sixth Amendment applied to the states through the Fourteenth Amendment.
ANSWER: **Gideon v**ersus **Wainwright**
[10] This case in 1969 decided to protect symbolic speech. Justice Fortas spoke for the majority when he stated that when there is no reason to regulate students' free speech; they can have freedom of expression.
ANSWER: **Tinker** versus Des Moines
[10] This 1810 ruling decided that the Supreme Court can declare a state law to be unconstitutional. John Marshall concluded that Georgia state legislature could not invalidate their previous contract with the four companies.
ANSWER: **Fletcher v**ersus **Peck**