

Yale University

Bulldogs over Broadway--December 4, 2004

Edited by Mike Wehrman

Questions by Princeton (Dan Benediktson, Jordan Boyd-Graber, Chris Frankel, Lenny Kostovetsky)

Tossups

1. This conflict broke out after the breaking of a peace treaty negotiated by Edmund Gaines and John Reynolds and signed at Fort Armstrong. Military forces began massing at Beardstown, and days later at Old Man's Creek in Dixon, fighting broke out with the Battle of Stillman's Run. After an extensive chase along the Rock River, its namesake surrendered, but not before seeing over 800 of his men massacred at the Bad Axe River. Fought over the presence of the Sauk and Fox tribes in the Illinois territory, this was, FTP, what 1832 war named for an Indian chief who opposed the American forces?

ANSWER: Black Hawk War

2. A divorced and disgraced mother-in-law trying to re-enter society divides the husband and wife protagonists in this play, but she runs off to accept a proposal of marriage from Augustus, allowing Arthur and Margaret to reconcile. The title object, a birthday gift with which Margaret initially threatens to hit her mother, causes a brief scandal when discovered by Cecil Graham in the room of Lord Darlington, and later is given as a gift by Margaret to the woman revealed as her mother, Mrs. Erlynne. FTP, name this Oscar Wilde play about a titular jealous noblewoman.

ANSWER: Lady Windermere's Fan

3. The title character works at Foree electronics, which shares its name with a star of the movie from which this film derived its name. Queen's *Don't Stop Me Now* plays during a bar fight, and the protagonists earlier used *The Batman Soundtrack* as a weapon after rejecting *Purple Rain* and *Sign of the Time* and before settling on cricket bats. After stealing Philip's child-lock equipped Jaguar, the protagonists decide to go to the Winchester, where they make their final stand against the zombie hordes. For ten points, name this 2004 British "romantic comedy with zombies" from Edgar Wright whose main character's name replaces one word from the title of a George Romero film.

ANSWER: Shaun of the Dead

4. A myth grew that only a silver bullet could kill him after Lem's assassination attempt failed. He fled the United States after killing a man over a craps game with a razor and then later splitting a prison guard's skull during an escape attempt. A drumbeat heard through the entire play underscores the urgency of his need to escape to Martinique after Smithers tells him that the tide has turned. For ten points, name this former Pullman porter and titular despot of a 1920 Eugene O'Neil play.

ANSWER: Brutus Jones (accept either) or The Emperor Jones

5. Aristotle reasoned that the Earth must be spherical because travelers from both West Africa and the Orient reported seeing them. During his invasion of Britain, the Roman emperor Claudius brought one to Colchester, but another one wasn't seen in England until 1224, when King Henry III received one as a present for the royal menagerie at the Tower of London. Abul-Abbas, presented to Charlemagne by Haroun-al Rashid, was an Asian one, and 37 African ones famously crossed the Rhone in 218 BC. FTP, what are these ungulates of the family Proboscidea, now endangered because of their ivory tusks?

Answer: elephants

6. Expanding on a 1908 paper by Smoluchowski, he derived a formula for the intensity of scattered light in media fluctuating densities that reduces to Rayleigh's law for ideal gases in *The Theory of the Opalescence of Homogenous Fluids and Liquid Mixtures near the Critical State*. That research supported his theories of matter first developed when he calculated the diffusion constant in terms of fundamental

parameters of the particles of a gas undergoing Brownian Motion. In that same year, 1905, he also published *On a Heuristic Point of View Concerning the Production and Transformation of Light*. That explication of the photoelectric effect won him 1921 Nobel in Physics. For ten points, name this German physicist best known for his theory of Relativity.

ANSWER: Albert Einstein

7. He classified people according to whether they were driven by inhibitions, impulses, or will, creating a hierarchy of personality types that ranged from adapted to neurotics to productive. Some consider him to have earned the first PhD in psychoanalysis with his dissertation on the Lohengrin story, and his interest in folklore also led to his *The Incest Theme in Literature and Legend* and *The Myth of the Birth of the Hero*. The theme of the latter work was a precursor to his most famous book, which, when published in 1924, caused him to break with Freud and the Vienna Psychoanalytic Society. FTP, name this Austrian psychoanalyst and author of *The Trauma of Birth*.

ANSWER: Otto Rank

8. Along the banks of the Limmat River in this city, one can see the largest church clock face in Europe on St. Peter's, and the famous twin spires of the Grossmünster church built by Charlemagne in the 700s. Other attractions include the Fraumünster church containing famous stained glass windows by Marc Chagall and Augusto Giacometti, the Bahnhofstrasse, one of the world's most famous shopping streets, not to mention the headquarters of multiple major banks. FTP, located near an Alpine lake of the same name, what city was once the home to Zwingli, and is now the financial center of Switzerland?

Answer: Zürich

9. A synthetic one called "Sleeping Beauty" was developed by the University of Minnesota; Girard and Freeling showed that they can disrupt ORFs, which led to their use in a high-throughput knockout strategy for yeast; and Voytas and Boeke suggest that the end of yeast's Chromosome III is composed of them, just like in drosophila. "Class 1" varieties use a RNA intermediate, have long terminal repeats, and encode a reverse transcriptase that creates DNA. DNA intermediates and terminal inverted repeats characterize the "Class 2" varieties such as *P* elements in drosophila and *Spm* in maize, which can change the color of kernels. For ten points, name these moveable genetic elements whose discovery won Barbara McClintock the 1983 Biology Nobel.

ANSWER: transposon or transposable genetic elements (prompt on "jumping gene" or "Tn")

10. Many of his early works were amatory poems written for his cousins Amalie and Therese, which, together with admiration for Napoleon, provided material for his first work, *Gedichte*. *Gedichte* contained his poem "Two Grenadiers", a work later put to music by Schumann. Indeed, much of his work was put to music, including his most famous poem, which describes a golden-haired maiden waiting for her warrior to return from battle. FTP, name this German Romantic author of "Die Lorelei."

ANSWER: Heinrich Heine

11. Motions for it began with the taking of a lease on a basement owned by John Whynniard. In the end, that basement was raided by Thomas Knyvet, which was most likely ordered by Robert Cecil after he was shown a warning letter that was received by Lord Monteagle. One of its main goals was to have Elizabeth of Bohemia kidnapped so that she could be instilled on the throne as a Catholic monarch as a replacement for her father, James I. FTP, name this 1605 plot where Guy Fawkes and others planned to blow up Parliament.

ANSWER: Gunpowder plot

12. This name is usually attached to Mozart's String Quartet No.14, a nocturne by Irish composer Frederick May, and the first of Tchaikovsky's Children's Songs. Benjamin Britten's 1949 symphony of this name consists of parts such as *Shine Out*, *Fair Sun* and *When Will My May Come*. More famous

works of this name are Beethoven's Violin Sonata No.9, and an 1841 first symphony giving its name to a 1983 movie about Clara and Robert Schumann. FTP, what word is also in the title of celebrated works of Stravinsky and Copland, as well as the first of four *concerti grossi* of Vivaldi?

Answer: Spring

13. Portraits always show him from the left because of the large lump on the right side of his neck. In 1941, he and 120 of his men from the Anti-Japanese United Army fled to Siberia where he became a captain in the Red Army. His son was born there and not in a log cabin on the slopes of sacred White Head Mountain as is now widely claimed. After taking power, he advocated a policy of *juche* or self-reliance to allow his nation to achieve economic independence from its two main patrons. FTP, name this 'Great Leader' who died of a heart attack in 1994, bequeathing to his son the cult of personality of his native North Korea.

Answer: Kim Il-Sung

14. She was the mother of Heleus, namesake of the Helots, and was the grandmother of Amphytrion through her second son, Alcaeus. Earlier, she had been placed in danger at the behest of the prophet Ammon, and though her betrothed, Phineus, did not try to save her, he tried to take her from her eventual husband, and was turned into stone as a result. Offered as a sacrifice to Cetus as atonement to the Nereids for her mother's boasting, this is, FTP, what Ethiopian princess and daughter of Cepheus and Cassiopeia, who was freed from her chains by Perseus?

ANSWER: Andromeda

15. It was sparked by the failure to show mercy to two convicted murderers who had avoided hanging the previous day when their scaffold broke. However, the situation quickly deteriorated when the emperor showed weakness by agreeing to demands to replace three of his ministers. Beginning with the shouting of the watchword 'victory' during the twenty-second chariot race, it lasted nearly a week during which much of the capital was burned down. It was finally put down when the emperor's two generals Mundo and Belisarius, slaughtered 30,000 of the rioters gathered at the Constantinople Hippodrome. FTP, what was this January 532 revolt against Emperor Justinian involving the blue and green factions?

Answer: Nika revolt or Nika riots

16. An "American" one shows fellow firemen carrying the dead body of Father Mychal [MY-kuhl]. The "Rondanini" one is unfinished and was worked on until only several days before the sculptor's death, and looks similar to its sculptor's works showing slaves, as yet unseparated from the marble. The greatest one depicts the virgin, if Christ is in scale, as almost 16 feet tall. The last complete one by the artist of the previous three contains the artist, depicted as Joseph of Arimathea, and is accurate even to showing the Michelangelo's broken nose. With a name meaning "pathetic" in Italian, these sculptures are all given, FTP, what name, describing any work depicting Mary cradling the dead Christ?

ANSWER: Pietà

17. The originator of this complexity class used it to show, in a paper published with Safra, that approximating CLIQUE within two to the square root of log N is NP-Hard. Its namesake theorem says that the complexity class NP is contained in this class given $\log(n)$ random bits and a constant number of queries. It also trivially contains NP given zero random bits and n queries, because in that case you're checking every evidence bit and ignoring the "probabilistic" component of this class of decision problems. Developed by Berkeley's Sanjeev Arora, give the three letter acronym for this complexity class that - for ten points - shares its name with ketamine-like hallucinogen developed by Parke and Davis known as Pixie Dust or Phencyclidine.

ANSWER: Probabilistically Checkable Proofs

18. A subset of this school is the erotic variety, known as shunga. In its earliest form, it often depicted the pleasures of urban life, such as the theater and restaurants, and was developed by artists like Sharaku and Utamaro. But while early on it featured topics like sumo wrestlers and geishas, it later moved towards landscapes, as demonstrated by "The Great Wave off Kanagawa", by one of its greatest masters, Hokusai. FTP, give the name for this Japanese art form, often associated with woodblock printing, with a name literally meaning "Pictures of the Floating World".

ANSWER: ukiyo-e (accept pictures of the floating world early)

19. Late in life, he spent most of his time writing *autos sacramentales*, though he continued to write some secular plays. He was notably uncreative when it came to plot and character, and like an earlier dramatist, he took holy orders. Works like *El Mágico Prodigioso* and *El Alcalde de Zalamea* demonstrated his powerful lyricism, but he's better known for another play about a prince, forced to live isolated in a tower, who believes his brief respite from that tower is just a dream. FTP, name this Spanish playwright of *La Vida es Sueño*.

ANSWER: Pedro Calderón de la Barca

20. Its development in the Christian world is chronicled by Ghevond, who collected the missives sent by Umar II in an attempt to convert an emperor to Islam. That conversion failed, but it probably influenced the doctrine that resulted in the rebellion of the Cyclades Islands and the installation of Anastasius as Patriarch after Germanus refused the new policy decreed by Leo III, the founder of the Isaurian dynasty. Persecution increased under Constantine V, and Ravenna left Constantinople's sphere of influence, but Empress Irene ended the policy in 787. For ten points, name this heresy whose end is celebrated in the Feast of Orthodoxy and rejected the use of images in worship.

ANSWER: Iconoclasm or Iconoclasts

Extras:

Although it can be performed with suitable radioactive samples, it is much more commonly performed inside a nuclear reactor. It gives a very fine measure of the breakdown of various elements inside a sample, since the decay patterns of radioactive elements are well-known, and since causes no damage to the sample it is especially useful in analyzing samples in art. FTP, identify this method of determining elements in a sample by bombarding the sample with the namesake non-charged particle.

ANSWER: Neutron Activation Analysis

Animals visible include a featureless red snake that slithers and disappears into the lower right corner, a black bird with a yellow underside perched upon a fruit-filled tree, and an elephant hidden behind a thicket with only one eye and tusk showing. Along with two confused-looking lions, a shadowy black figure plays a flute and marches through the middle of the lush forest, the dark skin directly contrasting to that of the naked white woman with braided hair who reclines on an oddly placed sofa. FTP, name this surrealist jungle scene painted by Henri Rousseau.

ANSWER: *The Dream*

When his father dies, he moves in with his aunt Tara, though an unpleasant encounter with one of her in-laws inspires his vow to get a job and a home of his own. His occupations include government clerk, driver, manager of a dry goods store, and writer for the *Sentinel*. However, it is through his job as a sign-painter that he meets and flirts with Shama before being rushed into an unhappy marriage that entangles him with the Tulsi family. FTP, name this title character of a V.S. Naipul novel about a house for him.

ANSWER: Mohan (Mr.) Biswas (accept *A House for Mr. Biswas*)

It is rejected by intuitionist mathematicians, though still widely used throughout mathematics, and it is one of the few interesting things provable as a theorem with no assumptions in the complete Propositional Calculus, since it is equivalent to the rules Modus Tollens and Reductio Ad Absurdum. In Latin, it is

quoted as “tertium non datur”. FTP, what is this law of logic which states that for any sentence, either the sentence is true or its negation is true.

ANSWER: Law of the **Excluded Middle**

In 1965, Richard Selten extended this concept to multiple stages by backwards induction, and three years later John Harsanyi developed a Bayesian form as the appropriate solution when there is uncertainty. First used by Antoine Cournot in the late 1830s to find the optimal production in a duopoly, in 1950 its namesake used Kakutani’s fixed point theorem to prove that one always exists although sometimes only in mixed strategies. Often used in economics, business, international diplomacy and evolutionary biology, this is, FTP, what important solution to problems of game theory usually elucidated by the Prisoner’s Dilemma.

Answer: **Nash equilibrium**

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1. His mother was incinerated by her glimpse of Zeus's naked body. FTPE:

(10) Name this Greek God of wine and revelry.

ANSWER: Dionysus

(10) Name the mother of Dionysus, who was tricked into requesting the sight of Zeus by a jealous Hera.

ANSWER: Semele

(10) According to Ovid, Dionysus turned a whole boatload of pedophilic sailors into dolphins, leaving only this more honorable captain as a human.

ANSWER: Acoetes

2. Name these characters who share a profession for ten points each.

(10) Played by Howard McNear, he rented 132 Main Street until Howard Sprague jacked up the rent; shortly thereafter, he turned the location over to Emmett Clark, who opened up Emmett's Fix-it Shop.

ANSWER: Floyd Lawson (accept either)

(10) In the 1980's, this lackey of Hulk Hogan hosted an interview segment on WWF shows. He also had a habit of cutting the hair of defeated opponents with his giant pruning shears after knocking them out with his sleeper hold.

ANSWER: Brutus "The Barber" Beefcake or Ed Leslie (accept any underline portion)

(10) This barber at Blanda Army Base convinces his friend Hank Hill to moon former governor Ann Richards, which gets this troubled ex-husband of Lenore a date.

ANSWER: William "Bill" Fontaine De La Tour Dauterive (accept any underlined portion)

3. Answer the following about the University Wits, FTPE.

(10) The most well known member of the group was likely this man, who wrote a poem about a passionate shepherd and a play about the tragical history of Dr. Faustus.

ANSWER: Christopher Marlowe

(10) Often linked with the group was this playwright, to whom *Soliman and Perseda* is attributed. The only plays verified to be his own are *Cornelia* and *The Spanish Tragedy*.

ANSWER: Thomas Kyd

(10) This picaresque novel about Jack Wilton was the *magnum opus* of noted University Wit, Thomas Nashe.

ANSWER: *The Unfortunate Traveller*

4. Identify these related chemistry terms FTPE.

(10) This term identifies the anion NH_2^- [read as N H-sub-2 minus-one], the conjugate base of ammonia.

ANSWER: amides

(10) Amides are also a functional group, and are formed from these organic acids by replacing a hydroxyl group with an amide group.

ANSWER: carboxylic acids

(10) These compounds are similar to amides, but the atom double-bonded to oxygen is sulfur rather than carbon.

ANSWER: sulfonamides

5. Name these American sociological books from the 1950's, FTPE.

(10) Blind loyalty and the inability to separate work and one's personal life were characteristics of the titular representative personality, who gave up his imagination for corporate conformity in this William Whyte work.

ANSWER: The **Organization Man**

(10) It was argued that the economy, military, and government were controlled by the decisions of the title group of wealthy, prestige-holding figures in this 1956 C. Wright Mills work.

ANSWER: The **Power Elite**

(10) Written by David Riesman, this text examined alienation and conformity in middle class life, and argued that Americans were moving from an inner-directed organization to an other-directed one.

ANSWER: The **Lonely Crowd**

6. Answer the following about a school of ancient philosophy FTPE.

(10) This was the name for the school founded by Aristotle, so-called because of his tendency for walking around as he lectured.

ANSWER: **Peripatetic** School

(10) This man led the Peripatetic School after Aristotle's death, writing one work on botany and one named the *Ethical Characters*

ANSWER: **Theophrastus** of Lesbos

(10) He succeeded Theophrastus as head of the Peripatetic and was nicknamed the Natural Philosopher.

ANSWER: **Strato** of Lampsacus

7. Answer some questions about late medieval Scandinavian history, FTPE.

1. In 1397, in a town on the Swedish coast, three Nordic countries joined together to be ruled by Queen Margaret I. Identify this conglomeration that lasted until 1523.

Answer: Union of **Kalmar**

2. The agreement stated that future kings had to be from this country.

Answer: **Denmark**

3. Sweden seceded from the Kalmar Union after this 1520 mass execution of Swedish nobles by the Danish king Christian II.

Answer: **Stockholm Bloodbath**

8. Things from the presidency of Calvin Coolidge, FTPE.

(10) This ambitious 1928 agreement named for Coolidge's Secretary of State and a French foreign minister sought to outlaw war, though it provided no means of enforcement.

ANSWER: **Kellogg-Briand** Pact

(10) Coolidge twice vetoed this bill designed to help struggling farmers by artificially propping up the prices of domestically sold farm goods.

ANSWER: **McNary-Haugen** Bill

(10) Coolidge also vetoed a plan that would rent out a government-constructed dam and chemical plants along the Tennessee River at this Alabama location. The facilities there later would be used by the TVA.

ANSWER: **Muscle Shoals**

9. Grass was a common theme in American poetry. FTPE:

(10) This long-winded, heavily individualistic Walt Whitman poem talks about hearing a child ask, "What is the grass?"

ANSWER: **"Song of Myself"**

(10) This Illinois poet penned the lines, "Pile the bodies high at Austerlitz and Waterloo / Shovel them under and let me work / I am the grass; I cover all," in his anti-war poem, "Grass."

ANSWER: Carl **Sandburg**

(10) She wrote a poem about eel-grass, a bunch of sonnets about nature stuff, and the collection *A Few Figs from Thistles*.

ANSWER: Edna St. Vincent Millay

10. Identify some paintings by everybody's favorite raw-pork-eating painter, Hieronymus Bosch FTPE.
(10) This painting depicts one of the title characters reaching for a bag of money as an angel tries desperately to lead him away.

ANSWER: Death and the Miser

(10) In this Bosch painting, a number of people laze about on a boat, eating, drinking, flirting, and generally doing wasteful things.

ANSWER: Ship of Fools

(10) Bosch's most famous painting, this triptych shows Adam and Eve on the left, hell on the right, and in the middle, tons of nude men and women, along with giant strawberries.

ANSWER: The Garden of Earthly Delights

11. Utopian communities from 19th Century America, FTPE.

(10) Originally centered around the Ebenezer colony in New York, this socialist community was run by German immigrants and moved to its present home in Iowa in 1855.

ANSWER: Amana

(10) Founded by John Humphrey Noyes, this New York community revolved around the theme of free love, though its legacy now appears in glassware and silverware.

ANSWER: Oneida

(10) Robert Owen took over this Indiana town with the ambition of developing a society with free education and no social classes.

ANSWER: New Harmony

12. FTPE, identify the following types of numbers.

(10) This field of numbers is usually constructed by defining it as the set of Dedekind Cuts, which are infinite sets of rational numbers.

ANSWER: Real numbers

(10) This algebraically-complete field is constructed from the Real Numbers by adjoining the number i , the square root of -1 .

ANSWER: Complex numbers (do **not** accept imaginary numbers)

(10) Often considered to be generalized complex numbers, these numbers, invented by Hamilton, do not commute, and are constructed by adjoining the numbers j and k , which also square to -1 , to the complexes.

ANSWER: Quaternions

13. Identify the following curves from the field of economics, FTPE.

1. This curve, named after a 19th century German statistician, shows how the demand for a good or service changes as a consumer's income level changes. It is upward-sloping for normal goods, and downward-sloping for inferior goods.

Answer: Engel curve (DO NOT accept Engels curve)

2. This curve, developed by an early 20th century American economist, shows the distribution of assets or personal income, and is a graphical representation of societal inequality.

Answer: Lorenz curve

3. This curve shows the real level of GDP purchased by households on the horizontal axis for different price levels which are on the vertical axis. It graphically displays the relationship between expenditures on real production and the price level.

Answer: aggregate demand curve

14. Colorful works of world lit, FTPE.

(10) This semi-autobiographical work has yellow, red, blue, and black sections, and follows the struggles of the leftist author Anna Wulf.

ANSWER: The *Golden Notebook*

(10) The title of this epic 18th Century novel by Cao Xuequin refers to a vision in which Jia Bao-Yu sees his future, as well as the Twelve Beauties of Jinling.

ANSWER: The *Dream of the Red Chamber* or The *Story of the Stone*

(10) The titular place is a brothel founded by Anselmo in this Mario Vargas Llosa novel set in various locales in Peru.

ANSWER: The *Green House* or La *Casa Verde*

15. Answer the following about the Duke of Mantua, FTSNOP.

(5) The Duke of Mantua appears in this Verdi opera, whose title character is a hunchbacked jester that becomes cursed and loses his daughter Gilda as a result of a failed revenge plot.

ANSWER: *Rigoletto*

(10) When sang by the Duke of Mantua outside Sparafucile's house, this famous aria celebrating the capriciousness of women informs Rigoletto that the Duke has not been assassinated after all.

ANSWER: "*La Donna e Mobile*"

(15) At the beginning of the opera, the Duke hosts a party, where he sings this aria bragging of his amorous escapades and his hedonistic lifestyle.

ANSWER: "*Questo o Quella*"

16. Identify the following people whose stories concern jars for ten points each.

(10) God ordered him to send home all but 300 of the army meant to conquer the Midianites. The remaining men blew their trumpets, breaking open the jars that concealed their torches, which then provided light for their night attack.

ANSWER: Gideon

(10) This legendary first emperor of Japan was ordered to make ceremonial jars on Mount Kagu to ensure his victory against Ihare.

ANSWER: Jimmu Tenno

(10) These sisters were punished for their collective murder of their new husbands, the sons of Aegyptus, by carrying water in jugs with holes in the underworld.

ANSWER: Danaides or the "daughters of Danaus"

17. One of them shared the 1937 Nobel prize for showing that electrons, like photons, can diffract. For ten points each:

(10) Name these two Bell Labs scientists who bounced electrons off a nickel lattice.

ANSWER: Clinton Joseph Davisson and Lester Halbert Germer (do not accept George Thomson, who got the 1937 prize for related experimental work)

(10) The Davisson-Germer experiment derived an expression for the wavelength of electrons accelerated through a voltage by using this equation developed by two Englishmen to explain why crystals reflect X-Rays at certain incident angles.

ANSWER: Bragg's Law (from Henry and Lawrence Bragg)

(10) That equation verified this equation, which says that a particle's wavelength is equal to Plank's constant divided by the particle's momentum.

ANSWER: de Broglie Wavelength Equation

18. Ottoman sultans often had cool nicknames. Identify the sultans from their nicknames and other information, FTPE.

1. The first sultan of this name was known as the "thunderbolt". He took command and won at the 1389 battle of Kosovo after his father's death, and also defeated the Hungarians at Nicopolis.

Answer: Bayezid or Bayazid

2. The first sultan of this name was known as the “grim” or the “inexorable”. He defeated the Safavids and Mamelukes and extended Ottoman rule to Syria, Egypt, and the Hedjaz. The second sultan of this name, nicknamed the “sot” for his heavy drinking, ruled at the time of Lepanto.

Answer: Selim

3. The first sultan of this name, known as the “magnificent” and “lawgiver”, ruled during the peak of Ottoman civilization. He annexed much of Hungary after his victory at Mohacs, laid siege to Vienna, built bridges, mosques, and palaces throughout his empire, and revised the *kanun* law code.

Answer: Suleyman

19. FTPE, Answer the following about a famous modern writer and his works.

(10) This Italian novelist and philosopher wrote “A Theory of Semiotics”.

ANSWER: Umberto Eco

(10) Eco is better known for works like this novel, in which the title object is the focus of a massive group of conspiracy theorists looking for the ultimate power of telluric currents.

ANSWER: Foucault's Pendulum

(10) Eco's most recent novel to be translated into English, this work focuses on a young master of languages who once served Frederick Barbarossa.

ANSWER: Baudolino

20. Identify these orders of reptiles from clues about their sex life for ten points each.

(10) This only extant order of Archosauria has no sex chromosomes and instead has temperature dependant sex-selection; it's thought that dinosaurs, also a member of Archosauria, could have stopped producing females when temperatures dropped at the end of the Cretaceous.

ANSWER: Crocodylia, accept Crocodyles

(10) All members of this largest order of reptiles that includes lizards and snakes have double penises, but some, like the water skink, also have the sex of their offspring determined by ambient temperature.

ANSWER: Squamata or Squamates

(10) Unlike Squamata, this order only has a single penis, but fertilization lasts much longer; the female diamondback terrapin can lay fertile eggs for four years.

ANSWER: Chelonians

Extras

Hidden Markov Models have become a popular subject for shitty CS bonuses. Here's one that doesn't mention Qualcomm or confuse Markov Chains with HMMs.

(10) If you make an HMM into a deterministic FSA by setting all the output probabilities to one and all the state transition probabilities to one, you end up with this type of FSA that outputs a symbol for each state.

ANSWER: Moore Machine

(10) In training your HMM, you often start with a Moore Machine and then change the transition and output parameters using this algorithm named for two men working at the IDA that uses the alpha and beta parameters of the forward-backward algorithm to compute the MLE with your training set; it's a specific case of the EM algorithm.

ANSWER: Leonard Baum-Lloyd Welch Algorithm

(10) This algorithm uses dynamic programming to give the most likely state sequence given a sequence of observed output states for a Markov process.

ANSWER: Viterbi Algorithm

Answer these questions about the 1659 Peace of the Pyrenees, FTPE.

1. For five points each, name the two kings who signed the Peace, which involved one of them marrying the daughter of the other.

Answer: **Louis XIV** of France and **Philip IV** of Spain

2. The Spanish decided to sue for peace after losing this June 14, 1658 battle, at which French forces allied with 6,000 English troops sent by Oliver Cromwell defeated Spanish forces allied with several corps of Royalists led by the future James II.

Answer: Battle of the **Dunes**

3. The Anglo-French victory at the Battle of the Dunes led to the surrender of this important city in Spanish Flanders which would later be the site of a 1940 evacuation of 350,000 Allied troops across the straits of Dover.

Answer: **Dunkirk** or **Dunkerque**

Given a series of four famous paintings, identify which painting is NOT located in the same museum as the other three, FTPE.

1. Bosch's *The Garden of Earthly Delights*, Titian's *Danae Receiving a Golden Shower*, Velazquez's *Las Meninas*, Picasso's *Guernica*.

Answer: Pablo Picasso's **Guernica**

(The other three are in the Prado, *Guernica* is at the Reina Sofia Museum in Madrid)

2. Van Eyck's *Arnolfini Wedding*, Holbein's *The Ambassadors*, David's *Oath of the Horatii*, Turner's *The Fighting Temeraire*

Answer: Jacques-Louis David's **Oath of the Horatii**

(The other three are in the National Gallery in London, *Oath of the Horatii* is in the Louvre)

3. Manet's *Olympia*, Van Gogh's *Starry Night*, Picasso's *Les Femmes d'Alger*, Mondrian's *Broadway Boogie Woogie*

Answer: Edouard Manet's **Olympia**

(The other three are in the New York Museum of Modern Art, *Olympia* is in the Musee d'Orsay)

Name these fiery mythological figures, FTSNOP.

(5) This Titan stole fire from the gods and got in deep shit for it, i.e. getting chained up and having a vulture eat his heart every day.

ANSWER: **Prometheus**

(10) The subject of many hymns in the Rig Veda, this fire god had two faces and seven tongues, which helped him lick up butter presented to him as an offering.

ANSWER: **Agni**

(15) The wife of Bres, this Celtic goddess was a patron to blacksmiths and poets, and was symbolized by a sacred flame.

ANSWER: **Brigid** or **Bridget**

Given a city, identify the first (closest) foreign country located due south of that city, 5-10-5-10. For example, if I said Brussels, Belgium, you would say France, and if I said Lisbon, Portugal, you would say Morocco.

1. For five points: Helsinki, Finland.

Answer: **Estonia**

2. For ten points: Mecca, Saudi Arabia.

Answer: **Eritrea**

3. For five points: Kuala Lumpur, Malaysia.

Answer: **Indonesia**

4. For ten points: Dushanbe, Tajikistan.

Answer: **Afghanistan**