ACF Regionals 2014
Packet by Dorman, Carleton University A, and LASA B

Tossups

1. This value can be reached by combining the numerator and denominator of the dependency ratio. Its impact is combined with technology and affluence in the "I equals PAT" equation. Growth in this value is measured by the intrinsic rate of increase. Julian Simon won a bet about the future prices of five metals after engaging in a debate about whether an increase in this value was a good or bad thing. Although it eventually levels off, it is the only quantity that increases in the Demographic Transition Model. It can be viewed with a namesake pyramid, which is bottom-heavy for Ghana and top-heavy for Japan. Paul Ehrlich wrote a book about its "bomb." For 10 points, name this value which grows exponentially while food production grows linearly according to Thomas Malthus.
ANSWER: world human **population** [or species **population**]

2. One crowded frontispiece to this text shows a lion sticking out its tongue below a seated figure making a V with his right-hand fingers. It mentions "seven precious gems" before quantifying the number of worlds at "three thousand great thousand." This text promises great virtue to those who recite just four lines of it to others, and lists five types of eye possessed by the "Tathagata." It likens all existence to a bubble or a dew drop in its 32nd and last chapter. A Chinese copy of it found in the Dunhuang cave, from 868 CE, is the oldest extant printed book. Set in the Jeta grove, this dialogue shows Subhuti learning the "perfection of wisdom" from the Buddha. For 10 points, name this medium-length Mahayana sutra, which likens itself to a hard, sharp cutter of illusion.
ANSWER: **Diamond** Sutra [or **Vajra** Prajña Paramita Sutra]

3. More than 200 utterances were found on the inside of one of these structures built by Unas. An object lost while being transported on the *Beatrice* was originally discovered in one of them. The largest of these structures had multiple granite plugs that may have slid into place from the Grand Gallery. Multiple angles were used in what became the Bent one of these structures, which is located near the larger Red one. Snefru refined the building of these structures, the earliest of which was originally planned as a mastaba for Djoser by its architect Imhotep. Three of them were built near each other for Menkaure, Khafre, and Khufu. For 10 points, name these structures built with limestone casings in such places as Giza, where they could be used as tombs for pharaohs.
ANSWER: step **pyramid**s

4. Herbert Feigl and J.J.C. Smart attacked the "nomological danglers" required to hold this belief. John Eccles presented a version of this theory in terms of three "worlds" in a 1977 collaboration with Karl Popper. Opponents of this stance often treat epiphenomenalism as a mere variant of it, and it was challenged by the "token identity" thesis and "anomalism principle" of Donald Davidson. Australian philosopher David Chalmers supports the "property" type of this stance. The coiner of the term "category mistake," Gilbert Ryle, attacked this belief, whose originator looked to the pineal gland to explain it. For 10 points, name this philosophical view held by Descartes and often dismissed as belief in a "ghost in the machine", the idea that the immaterial substance of mind is distinct from the body.
ANSWER: mind-body **dualism** [or Cartesian **dualism**; or **dualist**; accept **substance dualism**; accept **property dualism** until "property" is read; accept **interaction**ism or **interactionist** dualism until "property" is read; prompt on "Cartesianism"]

5. This novel was adapted into a play by Sarah Ruhl. It begins with the protagonist pretending to decapitate Moors because he is too young to go to war. After losing his lover, the protagonist of this novel holes himself up in a house with 365 rooms and 52 staircases and devotes himself to writing, accompanied by the poet Nicholas Greene. A much-lauded scene from this novel takes place during a fair on the frozen Thames, where the protagonist falls in love with Sasha. Its title character marries the sea captain Marmaduke Bonthrop Shelmerdine, and publishes the long poem *The Oak Tree*. Its title character, born during Elizabethan times, wakes up from a coma to find he has turned into a woman. For 10 points, name this Virginia Woolf novel.
ANSWER: ***Orlando**: A Biography*

6. pUC19 [pr. "puck 19"] cloning vectors contain ampicillin resistance and a gene named for this structure. A protein encoded by this structure cleaves ONPG into yellow ortho-nitrophenol, and its activity is measured in blue-

white screening tests, when colonies are plated on X-gal. IPTG induces the activity of this structure. It can only be bound by a heterodimer of CAP and cAMP in a common example of catabolite repression. This structure's Z, Y, and A subunits encode a transacetylase, a permease, and a beta-galactosidase. According to the Jacob-Monot model of this structure, it is a negative inducible system, repressed at high levels of glucose, which places three genes under the control of one promoter. For 10 points, name this operon that produces enzymes which break down milk sugar.
ANSWER: **lac** operon [or **lacA**; or **lacZ**; or **lacY**; or **lacI**; or **lac promoter**; or **lac repressor**; or beta-**galactosidase** before it is read; prompt on "operons"]

7. This artist painted his sisters Zoe and Juliet sifting wheat in one painting. He painted a dented soup pot, a spoon, and a crusty loaf of bread on a white blanket resting on the ground at the right of one of his canvases. The 2010 discovery of the severed top half of one of his paintings has confirmed that it depicts the model Joanna Hiffernan. He painted two nude women intertwined in bed in his *Sleep*. In another of his paintings, Charles Baudelaire and other luminaries appear to the right of a nude model who looks over a landscape as the artist paints it. This artist of *The Origin of the World* and *The Stonebreakers* painted a man holding a large crucifix over a crowd and a white dog looking away from the title funeral. For 10 points, name this French painter of *The Artist's Studio* and *A Burial at Ornans*.
ANSWER: Jean Désiré Gustave **Courbet**

8. In a toy Yang-Mills theory of this dimension, the computation of scattering amplitudes is simplified by the positive Grassmanian, also known as the amplituhedron. The Higgs field has this many components, all but one of which are "eaten" by gauge bosons, manifesting as longitudinal polarization components. Relatedly, the electroweak interaction also features this many gauge bosons. Particle number is a natural variable for this many standard thermodynamic potentials. For a uniform rod, the moment of inertia about one end exceeds the moment about its center by this factor. This is the dimension of the vectors acted on by Lorentz transforms in special relativity, whose setting of Minkowski spacetime has this many dimensions. For 10 points, name this number, the number of fundamental forces.
ANSWER: **four** [or word forms; accept $N = 4$; accept **four-vector**]

9. According to Vasari, this man secured his first patron with a now-lost sculpture of a faun's head with a tooth knocked out. He decorated the Shrine of St. Dominic in Bologna with statues of St. Petronius and St. Proclus. Cardinal Raffaele Riario commissioned this man's sculpture of *Bacchus* after acquiring a sleeping cupid that he had buried in acidic soil to pass off as a Roman artifact. He's not Donatello, but a statue he made which is part of a tomb in the San Pietro in Vincoli was so lifelike that he allegedly hit it on the knee and commanded it to speak. This artist sculpted Rachel and Leah to flank that horned statue for the Tomb of Pope Julius II. For 10 points, name this sculptor of a marble *Moses* whose other marbles include a *Pieta* in St. Peter's and a seventeen foot high nude *David*.
ANSWER: **Michelangelo** di Lodovico Buonarroti Simoni

10. This war included a battle in which three ships were sunk with the help of the Dutch ship *Isaac Sweers*. In addition to the Battle of Cape Bon, this war had negotiations result in the commander Rene Godfroy agreeing to keep his fleet out of fighting. That negotiation and a decisive victory in this war's Battle of Cape Matapan were both handled by Andrew Cunningham. The Battle of Taranto in this war was the first ever to have a naval attack use only aircraft. The *Prince of Wales* and *Hood* engaged the *Prinz Eugen* and another ship during this war in the Battle of the Denmark Strait; that other ship, which sunk three days later, was the *Bismarck*. For 10 points, name this war that the United States entered after being bombed at Pearl Harbor.
ANSWER: **World War II** [or **Second World War**]

11. Two characters in this novel argue about whether or not man is an idea after an assertion that another character is capable of dying for an idea. During a performance of Gluck's *Orpheus and Eurydice* in this novel, the lead actor collapses and dies, leading to a mass exodus from the theater. In this novel, a priest gives a sermon describing the death of an innocent child as the will of God. A character in this novel named Tarrou keeps a diary including observations of an old man who spits at cats from his balcony. Its other characters include the writer Joseph Grand, who cannot get past the first sentence of his book, Raymond Rambert, and Cottard. For 10 points, name this novel in which Dr. Rieux tries to combat an epidemic in Oran, a work of Albert Camus.
ANSWER: *The **Plague*** [or *La **Peste***]

12. Either pyridine complexes or potassium bifluoride can be used in this reaction to form the monoadduct instead of a polysubstituted product. A common reagent for this reaction is a bicyclic nonane called 9-BBN. To stop dimerizations, this reaction's solvent is usually THF. The formation of a pi complex in this reaction explains its *syn* stereochemistry, and its regiochemistry is explained both by sterics and because a nonbonding p orbital accepts electrons from a pi bonding orbital. In a reaction discovered by Herb Brown, the intermediate from this reaction is treated with basic hydrogen peroxide to generate alcohols where the hydroxyl group is on the less substituted carbon. For 10 points, name this anti-Markovnikov addition to alkenes of the element with atomic number 5.
ANSWER: **hydroboration** [or **hydroboration-oxidation**]

13. In one story by this author, the narrator is annoyed at a lower-class woman sitting beside him on the train until he sees her throwing the title fruit at children. This author of "Mandarins" wrote a short story about a man who is haunted by a raincoat-wearing ghost and descends into madness, ending the story by asking "Isn't there someone kind of enough to strangle me in my sleep?" This author's suicide note is titled "A Note to a Certain Old Friend." He wrote about a monk who learns how to shorten the title body part in "The Nose." He wrote a story in which a man sees a woman stealing hair from dead bodies and ends up stealing her robe. That story takes place at the title gate in Kyoto. For 10 points, name this Japanese author of "Spinning Gears" and "Rashomon."
ANSWER: Ryunosuke **Akutagawa**

14. This composer's vocal works include one based on the song "Your Little Black Eyes." He included orchestrations of his tombeaux for Paul Dukas and Claude Debussy in his *Homages*. Arthur Rubinstein commissioned a solo piano piece by this composer named for the Latin word for his native region; that piece is *Fantasia Baetica*. He incorporated the folk music of his home country into a set of three "symphonic impressions" including "Distant Dance" and "In the Generalife." He is better known for his stage works, such as one containing the "Ritual Fire Dance" and one based on a novel by Pedro Antonio de Alarcón. For 10 points, name this Spanish composer of *Nights in the Gardens of Spain*, *El Amor Brujo*, and *The Three-Cornered Hat*.
ANSWER: Manuel **de Falla**

15. This author wrote about a man leaving his wife Diana and finding that she has gotten back together with Dirk Richardson in the Hawthorne-inspired short story "Wakefield." The protagonist of a novel by this author is ordered by his mentor to keep tabs on Drew, and ends up falling in love with her. In another of his novels, real-life socialite Evelyn Nesbit helps Tateh support his daughter, Little Girl. He wrote a novel whose title character works for the mobster Dutch Schultz. In his most famous novel, a musician based on Michael Kohlhaas goes on a violent revenge spree after being humiliated by some racist firefighters; that musician is named Coalhouse Walker. For 10 points, name this author of *Billy Bathgate* and *Ragtime*.
ANSWER: Edgar Lawrence **Doctorow**

16. In a larger battle, an opponent's victory on this body of water led to the land forces of Manley Power, Thomas Brisbane, and Frederick Philipse Robinson being commanded to cease their attack. Construction was moved slightly south to create Fort Montgomery on this body of water following the attempt to built Fort Blunder. A battle on this body of water was delayed for the arrival of the *Confiance*, whose commander George Downie was killed. This body of water was where the *Philadelphia* was sunk after Benedict Arnold's defeat in the Battle of Valcour Island. Another battle on this lake was won by American commander Thomas Macdonough during the War of 1812. For 10 points, name this lake that was the naval site of the Battle of Plattsburgh and lies between New York and Vermont.
ANSWER: Lake **Champlain**

17. It's not childbirth, but one god of this domain had a name mistranslated as "placenta king," and displaced an older god of it named Iah. During the Middle Kingdom, this domain was represented symbolically by a lake at Karnak, and by the youngest member of the Theban Triad, who was the son of Mut and Amun. One god of this domain allowed Kheru-Ur and four other new deities to be born from Nut after losing one seventy-second of his power, elongating the year by five days. This realm was represented by Khonsu, who lost a gambling game to Thoth. This object also corresponds to a body part removed in combat with Set. For 10 points, name this cosmic object which ancient Egyptians equated with the ripped-out left eye of Horus.
ANSWER: the **moon**

18. This lake is connected to a northern lake by the Tipitapa River. The poet-priest Ernesto Cardenal moved to its Solentiname Islands to set up an artists' colony. It is called "Cocibolca" and "Mar Dulce" by residents of the surrounding region. The volcanic peaks Concepcion and Maderas combine to form its largest island, Ometepe. Cities on this lake's coast include Granada, San Carlos, San Jorge, and San Miguelito. In the 1960s, ecologists discovered that the sharks believed to be native to this lake were actually bull sharks that swam through the San Juan River. Since the expiration of the Bryan-Chamorro Treaty, proposals have been floated to build a canal through this lake, mirroring the original plans for the Panama Canal. For 10 points, name this large freshwater lake about 20 miles south of Managua.
ANSWER: Lake **Nicaragua**

19. A kingdom of this name experienced a civil war between Godegesil and his brother, a king who created his namesake law code, the Lex Gundobada. Two places with this same name agreed to be neutral in 1522 at Saint-Jean-de-Losne. A kingdom of this region was also known as Arles, and this region fought a civil war against the Armagnacs that was ended by the Treaty of Arras. Mary the Rich was the only child of this region's last Valois duke, who died in the Battle of Nancy and whose father created its Order of the Golden Fleece. This name was given to a Free County, or Franche-Comte. For 10 points, identify this name given to a medieval duchy ruled by John the Fearless, Philip the Good, and Charles the Bold in eastern France.
ANSWER: **Burgundy** [or **Bourgogne**]

20. Immediately following this event, a "coal gap" is observed, corresponding to a large negative anomaly in "delta 13-C". Acid rain with pH as low as 2, generated by sulfur aerosols, may have played a role in this event. A stratum rich in fossil fungi characterizes this event, which may have been the result of severe anoxia in Panthalassa. The "Murder on the Orient Express" hypothesis refers to the many probable causes of this event. It is speculated that the cause of the Wilkes Land mass concentration triggered a million years of volcanism during this event; that volcanism occurred at the Siberian Traps. This event marked the end of the trilobites, and defines the end of the Paleozoic. For 10 points, name this most severe extinction event of all time, which marks the beginning of the Triassic.
ANSWER: **Permian**-Triassic extinction event [or **P-Tr** event; prompt on "Great Dying"; prompt on answers that mention the "Siberian traps"]

TB1. In this play, a friar tries to kill another friar with a club, not realizing that he is already dead. The speaker of this play's prologue says, "I count religion but a childish toy." This play contains the oft-quoted line "Thou hast committed fornication: but that was in another country, and besides, the wench is dead." This play, whose prologue is spoken by Machiavel, is about a character who causes a duel between the governor's son and his friend, leading to the death of both. The title character of this play is assisted by Ithamore in poisoning his daughter Abigail for becoming a nun. The title character of this play has his vast wealth stolen to pay tribute to invading Turks, and hatches an elaborate revenge plot. For 10 points, name this play about Barabas by Christopher Marlowe.
ANSWER: The **Jew of Malta**

TB2. In the opening scene of this movie, a diagonal camera angle displays a close up of a man tearing tickets at a theater. A close-up of a gun going off interrupts a performance, and in the evacuation the protagonist meets the mysterious Annabella Smith. That interrupted show includes a man telling the audience the exact distance between Winnipeg and Quebec. In another scene in this film, Pamela is handcuffed to the protagonist and an innkeeper mistakes the two for honeymooners. Professor Jordan turns out to be a part of the title secret spy organization of this film, which ends as the Robert Donat played Richard Hannay discovers that Mr. Memory was used to steal military secrets. For 10 points, name this film by Alfred Hitchcock based on a novel by John Buchan.
ANSWER: The **39 Steps**

Bonuses:

1. The title character of this novel is the leader of a group called the "twelve cavaliers." For 10 points each:
[10] Name this novel about a fallen priest who takes over the manor of Ekeby from Margarita Samzelius.
ANSWER: *Gösta Berling's Saga* [or *Gösta Berlings saga*]
[10] *Gösta Berling's Saga* is by this Nobel-winning author of the children's book *The Wonderful Adventures of Nils*.
ANSWER: Selma Ottilia Lovisa **Lagerlöf**
[10] Lagerlöf is from this country, like a bunch of other Nobel Prize winners, which is not surprising, since the prize is awarded by an academy from this country.
ANSWER: Kingdom of **Sweden** [or Konungariket **Sverige**]

2. This god turned a princess of Izumo into a comb before slaying the eight-headed serpent Yamato-no-Orochi, and made his sister Amaterasu hide in a cave by throwing a flayed horse at her loom. For 10 points each:
[10] Name this god created when Izanagi washed his nose, a Japanese kami of rain and storms.
ANSWER: **Susanoo** [or Takehaya **Susanowo**-no-mikoto]
[10] Susanoo obtained this relic from the corpse of Yamata-no-Orochi, and gave it to Amaterasu to make amends. Prince Yamato-Takeru could later use this weapon to control the wind.
ANSWER: **Kusanagi** [or Ame-no-**Murakumo**-no-tsurugi; or the **Grass-cutter** Sword; prompt on answers such as "Imperial sword of Japan"]
[10] Susanoo killed this goddess after she attempted to vomit out a feast for him; her body then decomposed into many kinds of food. In other variants, the moon god Tsukuyomi killed her.
ANSWER: **Uke Mochi**

3. This iterative method solves the Schrödinger equation for a multi-electron atom under the Born-Oppenheimer approximation. For 10 points each:
[10] Name this method of approximately computing the state of a multi-electron atom, in which the energy eigenfunctions are described by Slater determinants, corresponding to orbitals.
ANSWER: **self-consistent field** method [or **SCF**; or **Hartree-Fock** method; or **HF** method]
[10] The SCF method solves the time-*independent* Schrödinger equation, and thus computes states with this property of having unchanging probability density. This term also denotes one of the phases used in chromatography.
ANSWER: **stationary** (state or phase)
[10] In the Born-Oppenheimer approximation, the motion of this thing is assumed to be separable from electronic motion. This thing was discovered in the gold foil experiment.
ANSWER: atomic **nucleus** [accept **nucleons**]

4. In this play, Beatrice hires Olimpio and Marzio to kill her father Francesco. For 10 points each:
[10] Name this play which ends with Beatrice walking to her execution.
ANSWER: *The **Cenci***
[10] In this play by the author of *The Cenci*, the title Titan is reunited with Asia after being freed by Hercules.
ANSWER: *__Prometheus Unbound__*
[10] *The Cenci* and *Prometheus Unbound* are by this poet, who also wrote "Adonais" and "Ozymandias."
ANSWER: Percy Bysshe **Shelley**

5. This man wrote that he was responsible for creating a mentality that "the job must be done" in his memoir *The Ends of Power*. For 10 points each:
[10] Identify this White House chief of staff who spent 18 months in prison after resigning in 1973.
ANSWER: Harry Robbins **Haldeman**
[10] Haldeman called himself this man's "S.O.B." This president was pardoned by his successor Gerald Ford after becoming the only president to resign.
ANSWER: Richard Milhous **Nixon**
[10] After Nixon succeeded in the Saturday Night Massacre by having Archibald Cox fired, this man took over as special prosecutor. He got the Supreme Court to force Nixon to turn over sixty-four taped conversations.
ANSWER: Leon **Jaworski**

6. He rapped about "Huey Newton going stupid" on "HiiPoWeR," and sang "I am a sinner, who's probably gonna sin again" on "Bitch Don't Kill my Vibe." For 10 points each:
[10] Name this Compton artist of the 2013 album *Good Kid, M.A.A.D. City*.
ANSWER: Kendrick **Lamar**
[10] Kendrick Lamar collaborated with this rapper on "Poetic Justice" and "Fuckin' Problems." He got his start on the Canadian TV show *Degrassi*.
ANSWER: Aubrey **Drake** Graham
[10] Lamar infamously called out a ton of other rappers on "Control," a collaboration with Big Sean and this other rapper of *Eternal Sunshine* and "Exhibit C."
ANSWER: **Jay Electronica** [or Timothy Elpadaro **Thedford**]

7. George Campbell belonged to a school which championed this faculty, and G.E. Moore's "Defense of" it began with a "list of truisms" which he knew with certainty to be true. For 10 points each:
[10] Name this mental faculty which might be trusted with little philosophical analysis. It also titles a 1776 pamphlet which declared it absurd for an island to perpetually govern a continent.
ANSWER: **common sense**
[10] This critic of Hume, who kicked off Scottish common sense realism and common sense epistemology, distilled his life's work in *Essays on the Intellectual Powers of Man*.
ANSWER: Thomas **Reid**
[10] Reid also attacked a form of this stance held by Bishop Berkeley, which held that material things don't exist. Post-Kantian Germans with this stance, such as Fichte and Schelling, stressed the importance of the thinking subject.
ANSWER: **idealism** [or **idealist**s]

8. Name some things about Roman literature, for 10 points each.
[10] This poet of a bunch of odes coined a number of phrases which are still in use today, including "dulce et decorum est pro patria mori," "carpe diem," and "in medias res," the last of which was used in his *Ars Poetica*.
ANSWER: **Horace** [or Quintus Horatius **Flaccus**]
[10] This play by Terence is about a plot to rape Pamphila. Chaerea poses as the title character and everything seems groovy until Thais spills the beans and causes Chaerea to be beaten and whipped.
ANSWER: *The **Eunuch*** [or ***Eunuchus***]
[10] Like Horace, this poet coined several popular phrases, including "bread and circuses," "a sound mind in a sound body," and "who watches the watchmen?"
ANSWER: **Juvenal** [or Decimus Iunius **Iuvenalis**]

9. This city's conquerors had a giant cannon built by Orban. For 10 points each:
[10] Name this city that fell to an Ottoman siege in 1453, ending the Byzantine Empire. Following its fall, this city's Hagia Sophia was converted from a church to a mosque.
ANSWER: **Constantinople** [or **Istanbul**]
[10] Constantinople fell to this Ottoman sultan, a son of Murad II. He was succeeded in 1481by his son Bayezid II.
ANSWER: **Mehmed II** [or **Mehmed the Conqueror**; or **Mehmed Fatih**; prompt on "Mehmed"]
[10] This final Byzantine emperor died defending Constantinople in 1453. According to legend, this ruler didn't die, but was actually turned into marble and now waits to retake Constantinople from the Turks.
ANSWER: **Constantine XI** Palaeologus [prompt on "Constantine"]

10. This process is triggered by MAP kinase-activated expression of Snail and Slug, which disrupt desmosomes and E-cadherins. For 10 points each:
[10] Name this transition by which cells that are firmly attached to an extracellular matrix or membrane are extruded. Malignant tumors must have undergone this transition.
ANSWER: **epithelial-mesenchymal** transition [or **EMT**]
[10] Specifically, the EMT for cancer cells leads to this phenomenon, the spread of a tumor from one area of the body to another.
ANSWER: **metastasis**
[10] This term refers to any cancer that originated from an epithelial tissue, and must undergo the epithelial-mesenchymal transition to spread. In contrast, sarcomas, which are rarer, affect mesenchymal tissues.
ANSWER: **carcinoma**

11. This film featured the first score composed by Clint Mansell. For 10 points each:
[10] Name this 1998 film in which the mathematician Max Cohen repeatedly encounters a 216 digit number spit out by his computer Euclid.
ANSWER: *Pi*
[10] *Pi* is the first film of this American director of *Black Swan* and *Requiem for a Dream*.
ANSWER: Darren **Aronofsky**
[10] In this other Aronofsky film, Mickey Rourke plays Randy "The Ram" Robinson, who meets Marisa Tomei and plans for a rematch with his old rival "The Ayatollah."
ANSWER: *The **Wrestler***

12. This general led the Russian Eighth Army during its fighting in Galicia, and an action named for this man led Romania to enter World War I on the side of the Allies. For 10 points each:
[10] Name this general whose namesake Offensive on Russia's Southwestern Front in 1916 dealt a major blow to Austria-Hungary and may have helped divert some German attention from Verdun.
ANSWER: Aleksey Alekseyevich **Brusilov**
[10] Brusilov also led the failed 1917 June Offensive planned by this leader of the Provisional Government, who was targeted in the Kornilov Affair. This man issued Order No. 8 and fled after the October Revolution.
ANSWER: Aleksandr Fyodorovich **Kerensky**
[10] After the revolution, Lenin issued the Decree on Peace, which eventually led to this 1918 treaty that ended Russia's involvement in World War I.
ANSWER: Treaty of **Brest-Litovsk**

13. This strategy opens by cooperating and then mimics the response of its opponent on each subsequent iteration. For 10 points each:
[10] Name this strategy developed by Anatol Rapoport.
ANSWER: **tit for tat**
[10] Rapoport coded the "tit for tat" strategy for a pair of Robert Axelrod tournaments on this game. In it, two criminals decide whether to inform on each other or keep their mouths shut.
ANSWER: **Prisoner's Dilemma**
[10] The Prisoner's Dilemma was originally postulated by scientists working for this think tank. It was originally created by the Douglas Aircraft Company to research matters of national security.
ANSWER: **RAND** Corporation [or **Research and Development** Corporation]

14. During this leader's tenure, a military commander named Barak defeated the iron chariots of Sisera near mount Tabor. For 10 points each:
[10] Name this Old Testament leader who names a poetic "Song" in which Sisera is killed by Jael, and who sat and issued rulings from under a palm tree.
ANSWER: **Deborah** [or **Dvorah**]
[10] Deborah is the only female member of this book's title group of pre-monarchic Israelite leaders, which also includes Gideon and Samson.
ANSWER: Book of **Judges** [or **Shoftim**]
[10] This judge promises God he'll sacrifice the first creature he sees after returning if he defeats the Ammonites. Unfortunately, that creature ended up being his daughter.
ANSWER: **Jephtha**h [or **Yiftach**]

15. This piece was composed in a German POW camp, and is based on a passage from Revelation. For 10 points each:
[10] Name this piece which contains such movements as "Dance of Fury, for the Seven Trumpets," "Liturgy of Crystal," and "Abyss of Birds."
ANSWER: *Quartet for the End of Time* [or *Quatuor pour la fin du temps*]
[10] The aforementioned "Abyss of Birds" movement from Messiaen's *Quartet for the End of Time* is a solo for this instrument, which plays a famous glissando at the beginning of *Rhapsody in Blue*.
ANSWER: B-flat **clarinet**
[10] In his book *The Technique of My Musical Language*, Messiaen laid out this set of seven modes used in his

music, made up of symmetrical groups, such that the first note of each group is the same as the last note of the preceding group.
ANSWER: modes of **limited transposition**

16. In transition state theory, the Eyring equation replaces this equation. For 10 points each:
[10] Name this equation which sets the rate constant proportional to the exponential of negative activation energy over RT.
ANSWER: **Arrhenius** equation
[10] This effect occurs when the difference between the zero-point energy of a bond in the reactant and that same bond in the transition state increases when one nucleus is slightly heavier. Reaction mechanisms can be determined using this effect.
ANSWER: kinetic **isotope** effect [or **KIE**]
[10] This theory developed by an American chemist predicts that, because redox reactions' rates depend on the reorganization energy, strongly exergonic reactions in the "inverted region" will actually occur slowly.
ANSWER: **Marcus** theory

17. Krishna Deva Raya was a king of this empire's Tuluva Dynasty, and this empire lasted until around 1646 after being founded in 1336 by the brothers Harihar and Bukka. For 10 points each:
[10] Name this empire that ruled from a namesake city in southern India, and which lost to the Deccan sultanates in the 1565 Battle of Talikota.
ANSWER: **Vijayanagar**a Empire
[10] The Deccan sultanates' rulers practiced this religion, unlike the Hindu Vijayanagara Empire. This religion was also practiced by most rulers of the Mughal Empire.
ANSWER: **Islam** [or **Muslim**s]
[10] In 1639, the Vijayanagara Empire allowed the British East India Company to build Fort St. George, which became a part of this city in Tamil Nadu. This city was exchanged for Louisbourg in the Treaty of Aix-la-Chapelle.
ANSWER: **Madras** [or **Chennai**]

18. Babette cheats on this character in order to obtain the drug Dylar. For 10 points each:
[10] Name this professor of Hitler Studies at The-College-on-the-Hill.
ANSWER: **Jack** **Gladney** [accept either name]
[10] Jack Gladney is the protagonist of *White Noise*, a novel by this author, whose other works include *Mao II*, *Libra*, and the short story collection *The Angel Esmeralda*.
ANSWER: Don **DeLillo**
[10] The title story of *The Angel Esmeralda* is largely taken from this DeLillo novel whose characters include Klara Sax and a graffiti artist known as Moonman 157.
ANSWER: *Underworld*

19. The much-maligned GOTO statement is an instruction of this type that is unconditional. For 10 points each:
[10] Name these instructions that cause a computer to transfer execution to a different sequence of instructions. Namesake "predictors" like saturating counters attempt to determine where control will be transferred by one of these instructions.
ANSWER: **jump** [or **branch**]
[10] This name is given to the act of affecting the order in which instructions are executed. The jump is the most basic method of doing this task, though statements like "if" and "while" are more common in high-level languages.
ANSWER: **control flow** [or **flow of control**; or obvious word-form equivalents like "**controlling** the **flow** of program execution"]
[10] To achieve non-local control flow, many languages implement these constructs, which signal that an anomalous condition has occurred. These constructs are typically "thrown" and "caught."
ANSWER: **exception**s

20. The subject of this portrait holds her left hand in front of her and parallel to the ground, while her right hand is behind her back. For 10 points each:
[10] Name this Thomas Lawrence portrait of the eleven year old Sarah Barrett Moulton, who wears a hat with long dangling ribbons being blown by the wind.

ANSWER: *__Pinkie__*
[10] Thomas Lawrence's *Pinkie* hangs in the Huntington Library across from *The Blue Boy*, a portrait by this artist of *Mr and Mrs Andrews*.
ANSWER: Thomas **Gainsborough**
[10] Gainsborough also painted a portrait of this actress, famed for her portrayal of Lady Macbeth. In another portrait, she sits enthroned in front of two figures representing Pity and Fear and holding a knife and a chalice.
ANSWER: Sarah **Siddons**