

Western Invitational Tournament 2013
Packet by Chicago B (Daichi Ueda, George Dewey, Sam Bailey)

Tossups

1. A book on the economic development of this country famously begins with the line “nineteenth-century civilization has collapsed. Two education reformers from this country simultaneously developed the Monitorial System, which partially stemmed from The Madras System. Another book about this country includes a tour through this country’s “great towns” before writing about the competition between factory hands and machinery. Karl Polanyi’s *The Great Transformation* discussed a system of outdoor (*) relief for rural poverty in this country. Friedrich Engels wrote about the conditions of the working class in this country. For 10 points, name this country, four of whose citizens were written about in Lytton Strachey’s *Eminent Victorians*.
ANSWER: England [or United Kingdom of Great Britain and Northern Ireland; or Great Britain]

2. Replication of this experiment by Thomson involved measuring diffraction pattern on a photographic plate. This experiment yielded the peak intensity at 54V and 50 degrees, and the experimenters predicted that measured wavelength would be proportional to the inverse of the square root of voltage. Since it involved (*) diffraction by a crystal lattice, its results aligned with those predicted by Bragg’s law. This experiment involved firing electrons at a nickel surface and measuring the reflection at various angles with a Faraday box mounted on an arc. For 10 points, name this experiment that supported the de Broglie hypothesis by demonstrating the wave nature of matter.
ANSWER: Davisson-Germer experiment

3. It’s not the small intestine, but mutations in GLEPP1 may result in the abnormal growth of vacuoles and microvilli in this organ, two hallmarks of minimal change disease. Intense physical exercise might result in a “pseudo” condition mimicking a serious disease of this organ for three days. This organ participates in phosphate and calcium regulation by secreting calcitriol. One part of this organ extends footlike projections that interface with capillaries, known as (*) podocytes. This target of aldosterone releases renin, the activator of angiotensin. Between its proximal and distal convoluted tubules, this organ contains the loop of Henle. For 10 points, name this organ, composed of nephrons, that filters blood to produce urine.
ANSWER: kidney

4. This politician claimed that if sugar cannot be extracted from beetroot without a monopoly, then introducing its cultivation to his country would not be worth it. He instigated d’Azeglio to suppress ecclesiastical privileges to achieve “a Free Church in a Free State.” He negotiated the transfer of Savoy and Nice to France in the (*) Treaty of Turin. This politician resigned his post in protest of the terms of the Treaty of Villafranca but soon came back to power after learning that its terms would not be implemented. He got his country involved in the Crimean War and founded *Il Risorgimento* to further the cause of his country’s unification. For 10 points, name this Italian politician who became the first Prime Minister of Italy.
ANSWER: Camillo Benso, Count of Cavour [accept either underlined answer; also accept Count di Cavour]

5. In this film, one character buys a propeller for eight pounds, but he ends up leaving it behind. The protagonist later leaves a concert holding the neck of a broken guitar chased by a mob, but after escaping with it, promptly throws it on the ground. Earlier, he visits his neighbor Bill, who shows the protagonist cubist and Jackson Pollock-esque paintings. Noisy mimes play imaginary tennis at the end of this film, in which the band The (*) Yardbirds appears. The protagonist of this film, played by David Hemmings, attempts to expose a murder plot through his photographs of a couple, but he is left with only an unintelligible, magnified picture of a corpse in a park. For 10 points, name this film by Michelangelo Antonioni, titled after a Cortazar story.
ANSWER: Blowup

6. In this author's first novel, John Kemp creates the title imaginary woman in order to help with his transition to Oxford from Huddlesford. This author of *Jill* wrote a poem whose speaker smells a fish market on a train ride during which he also sees "fathers with broad belts" and "mothers loud and fat" celebrating the title events. Another of his poems discusses a stone monument that concludes "what will survive of us is love." Another poem by this author of (*) "Whitsun Weddings" and "An Arundel Tomb" closes with the charming lines "Get out as early as you can, And don't have any kids yourself." For 10 points, name this British poet who famously stated "they fuck you up, your mum and dad" in his "This Be the Verse."

ANSWER: Philip Larkin

7. This work presents the image of the subject as "an eye that cannot see itself." The third book of this work discusses a type of experience that allows one to become a "pure, painless, timeless subject of knowledge." This work discusses a concept that is blind striving and contains in itself no "principle of individuation." This work employs the analogy of an Australian bulldog ant to demonstrate the (*) endless cyclical violence of the world conceived in only one manner. This work's repetition of the phrase "Tat tvam asi" demonstrates its author's obsession with the Upanishads. For 10 points name this book, which contends that we live in the "worst of all possible worlds" and that existence is always worse than nonexistence, the seminal work of Arthur Schopenhauer.

ANSWER: *The World as Will and Representation* [or *The World as Will and Idea*; or *Die Welt als Wille und Vorstellung*]

8. This scientist was close friends with a Genevan-born mathematician who developed a method of drilling holes in rubies; that man, Fatio de Duillier, was derisively nicknamed "the ape of [this man]." A surviving manuscript shows this man computing the area of a hyperbola to 55 decimal places. The *Philosophical Transactions* describes his discovery that white light is formed by a (*) spectrum of different colors. This scientist responded to allegations of plagiarism by Robert Hooke by claiming "If I have seen further it is by standing on the shoulders of giants." This scientist used the term "method of fluxions" to describe differential calculus, which he discovered independently of Leibniz. For 10 points, name this scientist who formulated three laws of motion.

ANSWER: Sir Isaac Newton

9. A space has this property if and only if any two disjoint closed subsets can be separated by a continuous function by Urysohn's lemma, and those spaces satisfy T_4 . Extensions that are separable and have this property are Galois. Since A_5 has no non-trivial proper subgroups with this property, it is(*) simple. The kernels of group homomorphisms are given by this type of subgroup, whose left and right cosets are identical. For a curve parameterized by arc length, this type of vector is the derivative of the tangent vector with respect to length, and is thus perpendicular to the tangent. For 10 points, independent and identically distributed variables with finite mean and variance will approach this type of distribution according to the central limit theorem.

ANSWER: normal

10. A commander of this country's navy led a Christian fleet that clashed with Kapudan Pasha's Ottoman fleet at the inconclusive 1717 Battle of Matapan. An earlier conflict between this country and Muslim forces led to it decisively winning the Battle of Diu. One explorer from this country became the first European to see (*) Madagascar. That explorer's brother arrived at the mouth of the Congo River a few years before his greatest accomplishment, which was preceded by a discovery by a man who attempted to make a treaty with Zamorin of Calicut. Home to Bartolomeu Dias and Vasco de Gama, for 10 points, name this Iberian country whose prince Henry the Navigator funded many exploratory voyages.

ANSWER: Kingdom of Portugal

11. In March 2013, a court overturned an effort supported by this governor to legalize sports betting in his state. This man was involved in a verbal spat with Connie Mariano, who questioned his ability to serve in higher political positions. A mayor viewed as this man's 2013 opponent announced that he would seek Frank (*) Lautenberg's Senate seat instead. Mark Zuckerberg hosted his first political fundraiser for this man, who has taken flak for criticizing House Republicans and working alongside Andrew Cuomo and President Obama in the aftermath of Hurricane Sandy. For 10 points, name this Governor of New Jersey.

ANSWER: Chris Christie

12. In this story, the title character's voice makes the protagonist think of "deep hues of purple or crimson." One character in this story tells the protagonist about an Indian doctor who presented Alexander the Great with a beautiful woman in a plot to kill him; that character gives the protagonist a vase by Cellini. Dr. (*) Baglioni frequently tries to advise this story's protagonist against visiting a woman who was born at the same moment as a large purple flower and was seen killing a spider with her breath. It ends with the death of the title character after drinking an antidote given to her by Giovanni. For 10 points, name this Nathaniel Hawthorne story about Beatrice, who has become poisonous due to being raised among her father's plants.
ANSWER: "Rappaccini's Daughter"

13. The Special Period occurred in this nation after the Comecon. Redfield Proctor verified an incident in which many townspeople in this country died when fortified towns were repurposed as concentration camps. This country was the target of a planned invasion called Operation Mongoose. Following a (*) Ten Years War and a Little War, this nation finally achieved independence after the writing of the Manifesto of Montecristi and establishment of its Revolutionary Party by Jose Marti. A Moscow-Washington DC hotline was created following a Crisis named for this county. For 10 points, name this Caribbean island nation that was the target of the Bay of Pigs Invasion and was ruled for almost 50 years by Fidel Castro.
ANSWER: Republic of Cuba

14. The protagonist of one novel by this author marvels at an insect that eats its own feces, which he proceeds to purchase from the man who kills his father. A man searches for his wife, who was taken by an ambulance while she was perfectly healthy, in his novel *The Secret Rendezvous*. In another of his novels, the elderly Broom Brigade attacks the title object, an (*) underground structure built by Mole to survive nuclear war. In another of his novels, the commotion caused by a woman's extrauterine pregnancy gives a man a chance to escape, but he chooses to remain in his prison. That work is about entomologist Niki Jumpei. For 10 points, name this Japanese science-fiction author of *The Ark Sakura* and *The Woman in the Dunes*.
ANSWER: Kobo Abe [or Kimifusa Abe]

15. One of these compositions begins in 3/8 time and is essentially a triple concerto for violin and two "flauti d'echo," with the violin playing the bass line at points. The last of these compositions features a third movement gigue that turns out to be a set of variations on a ritornello theme presented in the first movement. The first of these compositions features horn calls and ends with a polacca and trio, and may have been derived from the composer's (*) *Hunting Cantata*. The sixth is scored for viola, cello, viola da gamba, violone, and harpsichord, notably omitting violins. The fifth of these works has a long solo cadenza for the harpsichord. For 10 points, name these six compositions by J.S. Bach, named for the state ruled by Margrave Christian Ludwig.
ANSWER: Brandenburg Concertos [or Six Concerts à plusieurs instruments]

16. When in Britain, this man once refused to salute King George, forcing him to flee to Spain. After a disastrous retreat that would lead to the court-martial of Charles Lee, this man took over Lee's reserve force. This man recruited the Oneida in a war in which he avoided capture at the Battle of Barren Hill. His forces linked up with (*) Washington's to close the ring around Cornwallis at Yorktown. Later in life, this man took a Grand Tour of the United States at the behest of President Monroe. Promoted to General of the Revolutionary Army after the Battle of Brandywine, for 10 points, name this Frenchman, the "Hero of Two Worlds" that headed French aid to the American Colonies.
ANSWER: Marquis de Lafayette [or Gilbert du Motier]

17. One critic noted that this writer attempted to widen the separation between prose and metrical composition, citing the lines “I fruitless mourn to him that cannot hear,/And weep the more because I weep in vain” from this author’s “Sonnet on the Death of Richard West.” He asks “what female heart can gold despise” in a poem describing the death of the pensive (*) Selima before concluding “nor all that glisters gold.” His most famous work includes the lines “Here rests his head upon the lap of earth /A youth to fortune and to fame unknown” in “The Epitaph” and opens “The curfew tolls the knell of parting day.” For 10 points, name the 18th century poet of “Ode on the Death of a Favorite Cat” and “Elegy Written in a Country Churchyard.”
ANSWER: Thomas Gray

18. A monster defeated by this god was described as “extending over hills and valleys” and having eyes like the winter cherry. This god lost his fingernails, toenails, and beard as punishment for some of his misdeeds. For a time, he and his bride lived at the Yaegaki Shrine. This god used a necklace to create five new gods, while three goddesses emerged from a sword he owned. In one story, this god turned (*) Kushinada into a comb before using sake to get a monster drunk. After wrecking some rice fields, this god threw a flayed horse at his sister, forcing her to hide in a cavern. Later, he retrieved the sword Kusanagi after slaying the eight-headed monster Orochi. For 10 points, name this brother of Amaterasu, the kami of the oceans and storms.
ANSWER: Susanoo [or Susanowo; or His-Swift-Impetuous-Male-Augustness]

19. This man claimed that Hong Kong was one of the best places to have a “phantom persona.” He once helped the mayor of Auckland set up a fireworks display and was once the top ranked player by score in *Call of Duty: Modern Warfare 3*. This man sent his newborn daughter’s placenta to the FBI for them to verify that his DNA was human. This man also released an album in 2012 with Printz Board. A frequent critic of (*) Barack Obama and organizations like the RIAA and MPAA, this man was arrested in New Zealand in 2012 on charges of racketeering, money laundering, and criminal copyright infringement, but that didn’t stop him from launching a successor to his most famous venture. For 10 points, name this man, the founder of Megaupload.
ANSWER: Kim Dotcom [or Kim Schmitz; or Kimble; or Kim Tim Jim Vestor (really)]

20. In Lurianic Kabbalah, the three highest sefirot radiates from the head of a figure with this name. That figure, called Kadmon, is contrasted with another figure of this name called HaRishon. Orson Pratt attacked the early Mormon belief that this figure was the parent of Jesus, and in the Mormon *Doctrines and Covenants*, the archangel Michael is this figure before he enters mortal existence. Paul calls Jesus a (*) “new” version of this figure in First Corinthians. This husband of Lilith names all the animals presented to him, but when none prove to be a suitable companion God forms a new being from his rib. For 10 points, give this name of the husband of Eve and the first created man in the Bible.
ANSWER: Adam [or Adam Kadmon before “HaRishon”]

Tiebreakers

21. Most information about this man’s early work comes from Francisco Pacheco’s treatise *The Art of Painting*. Women work at a spindle and spinning wheel to depict the story of Arachne in his painting *Las Hilanderas*. His only surviving history painting shows Justin of Nassau (*) handing Ambrogio Spinola a key to the title city. Francis Bacon painted a screaming version of this man’s portrait of Innocent X. In the most famous painting by this man, a background mirror shows an unseen king and queen, who are being looked at by the painter, their daughter, and their daughter’s maids of honor. For 10 points, name this painter of *Surrender of Breda* and *Las Meninas*.
ANSWER: Diego Rodríguez de Silva Velázquez

22. A short novel from this country is about a paper crusher who saves books from destruction. Another novel from this country retells Bettina’s one-sided pursuit of Goethe and ends with a section entitled “Celebration,” describing a wave that inspired the author to write the book. Nietzsche’s idea of “eternal return” opens a novel from this nation in which one character becomes a window washer after publishing an article about oedipal guilt; that novel ends with a (*) car crash that kills Tomas and Tereza. A play written in this country involves a revolt of synthetic humans invented by Rossum and introduced the term “robot.” For 10 points,

name this homeland of Karel Capek and the author of *The Unbearable Lightness of Being*, Milan Kundera.
ANSWER: Czech Republic [or Czechoslovakia]

23. Assuming that an ekpyrotic phase precedes this event implies that the scalar field kinetic energy would dominate the energy density. Steinhardt and Turok proposed that this event is a collision between two branes. A universe with positive (*) curvature, or density parameter greater than 1, and no dark energy would end in this way. This outcome is contrasted with maximum entropy and no thermodynamic free energy called the Big Freeze. For 10 points, what event is the theoretical fate of the universe if the expansion is not sufficient to counteract gravitation so that everything contracts to a black hole?
ANSWER: the Big Crunch

Bonuses

1. This man tried to replace Christianity with the Cult of the Supreme Being as the French state religion. For 10 points each:

[10] Name this president of the Jacobins and member of the Committee of Public Safety, nicknamed the “Incorruptible.”

ANSWER: Maximilien de Robespierre

[10] Robespierre’s Jacobin faction attacked this more moderate faction of the Revolutionary government. Their leader Jacques-Pierre Brissot pushed for the Republic to go to war with Austria.

ANSWER: Girondins [prompt on “Brissotins”]

[10] Robespierre was attacked as insufficiently radical by this founder of *Le Père Duchesne*. This man and his supporters were arrested and executed after a failed uprising of sans-culottes in March 1794.

ANSWER: Jacques Hébert

2. For 10 points each, answer the following about California in the 20th century.

[10] This structure constructed in 1908 uses water from the southern California high desert to generate electricity for its namesake city. Establishment of this system destroyed the Owens Lake farming community.

ANSWER: Los Angeles Aqueduct [or equivalents]

[10] In the 1960s, the Summer of Love movement focused widespread media attention on the Haight-Ashbury neighborhood in this city, where the openly gay Harvey Milk once served as city supervisor.

ANSWER: San Francisco

[10] 1965 also saw a precursor to the 1992 LA Riots in this southern neighborhood of Los Angeles, now home to a famous set of towers.

ANSWER: Watts

3. Most residents of the central town in this play work tirelessly in a gold mine on the orders of a ridiculously cruel king, who unsuccessfully pursues this play’s central character. For 10 points each:

[10] Name this play, in which Ranjan’s death inspires Nandini, who wears the title object in her earrings, to lead a revolution against the King.

ANSWER: Red Oleanders [or Raktakarabi]

[10] This collection of 103 poems, written by the author of *Red Oleanders*, includes a famous introduction by Yeats addressed to William Rothenstein. The first poem opens “Thou hast made me endless, such is thy pleasure.”

ANSWER: Song Offerings [or Gitanjali]

[10] This writer of *Red Oleanders* and *Song Offerings* surrendered his knighthood in protest against the Massacre of Amritsar and became the first non-Westerner to win the Nobel Prize for Literature, doing so in 1913.

ANSWER: Rabindranath Tagore

4. This man finally receives his death sentence for treachery after a duel in which Thierry defeats Pinabel. For 10 points each:

[10] Name this knight who is sent to the court of King Marsile, where he betrays his brother-in-law, Charlemagne.

ANSWER: Ganelon

[10] King Marsile, who governs from the city of Saragossa, is described as the leader of this group of people that Charlemagne ultimately defeats.

ANSWER: Saracens [or Moors]

[10] Ganelon betrays Charlemagne because of his wish to see this knight die. This knight sounds the *oliphant* and wields the sword Durandal in an French epic poem named for his “song”.

ANSWER: Roland

5. Answer the following about some real-life evidence that may be linked to Arthurian legend, for 10 points each:

[10] The Artognou stone, which has been erroneously linked to Arthur, was found at this sub-Roman site in Britain. More agreed on is the fact that Arthur was conceived here after Uther disguised himself as Gorlois.

ANSWER: Tintagel Castle

[10] Thomas Malory claimed that the town of Winchester is the location of this castle, the seat of Arthur’s rule. Geoffrey of Monmouth thought it might have been in London, while John Leland thought it was in Cadbury.

ANSWER: Camelot

[10] Glastonbury has long been linked with Joseph of Arimathea and the location of this mystical island, where Arthur departed to after suffering wounds at the Battle of Camlann.

ANSWER: Avalon [or Ynys Avallach; prompt on Annwn]

6. The central figure in this painting is dressed in white and has his left index finger pointed upward. For 10 points each:

[10] Name this painting, in which many men look on in despair as the title man calmly reaches out to drink from a golden cup.

ANSWER: *The Death of Socrates*

[10] *The Death of Socrates* is by this Neoclassical French painter of *The Death of Marat* and *The Oath of the Horatii*.

ANSWER: Jacques-Louis David

[10] David’s painting *Mars Being Disarmed by Venus* also shows these figures holding a helmet and a shield. This trio is shown intimately embracing each other in an Antonio Canova sculpture.

ANSWER: the Graces [or the Charites; accept *The Three Graces*]

7. You are a citizen of the Qin empire. As a human in 210 BCE, your expected lifespan is pretty short, but for 10 points each, answer these questions about things you might have seen:

[10] You just witnessed the rise to power of this man after the death of Qin Shi Huang. This man replaced the First Emperor’s son because Li Si and the chief eunuch forced that son to commit suicide.

ANSWER: Qin Er Shi [or Huhai]

[10] You were born during this period of Chinese history that preceded the Qin dynasty, in which the Legalist scholar Shang Yang wrote many reforms that strengthened the Qin government.

ANSWER: Warring States period

[10] Thanks to the Legalists, these violent anti-intellectual events happened all around you, stifling the Hundred Schools of Thought. In *Fahrenheit 451*, firemen like Guy Montag are hired to carry out these events.

ANSWER: burning of books [prompt on partial answer; accept, bemusedly, burning down houses that contain books]

8. In simpler life forms, this compound acts exclusively as an antioxidant; a good one too, because it doesn’t cycle between oxidation and reduction. For 10 points each:

[10] Name this compound, secreted from the pineal gland, that governs circadian rhythms by inducing drowsiness based on the presence or absence of light.

ANSWER: melatonin

[10] This other hormone is released in 3 to 5 hour cycles, with peak release occurring one hour after the onset of non-REM sleep. Somatostatin inhibits release of this hormone, one of many to be secreted by the anterior pituitary.

ANSWER: human growth hormone [or HGH; or somatropin; or somatotropin]

[10] Melatonin release from the pineal gland is controlled by this tiny region of the brain, found in the anterior hypothalamus, that controls mammalian circadian rhythms.

ANSWER: suprachiasmatic nucleus [or suprachiasmatic nuclej; or SCN]

9. Answer some questions about critical points in relations between Turkey and Greece, for 10 points each.

[10] In 1999, relations worsened when the Greek military attempted to give refuge to Abdullah Öcalan, founder of

this nationalist organization that aims to form a separate state for its traditionally persecuted ethnic group.

ANSWER: **PKK** [or **Kurdistan Workers' Party**; or **Parti Karkerani Kurdistan**; or **KGK**]

[10] Turkish PM Turgut Özal met with this Greek PM as part of reconciliation efforts at Davos in 1988. He is considered Greece's most successful prime minister, but his son George presided over Greece's financial collapse.

ANSWER: **Andreas Papandreou** [prompt on **Papandreou**]

[10] Several of these disasters rocked Greece and Turkey in 1999, leading to a détente. The ensuing aid efforts, organized by citizens from both nations for one another, are termed this type of "diplomacy."

ANSWER: **earthquakes**

10. This psychologist worked her theories into an award-winning mystery novel, *The Murder Yet to Come*. For 10 points each:

[10] Name this co-author of *Gifts Differing*, which clarifies the intentions of her best known work. Using that work, this psychologist conducted a long-term study of freshmen at the GWU School of Medicine.

ANSWER: Isabel Briggs **Myers** [or Isabel **Briggs Myers**, do not, under any circumstances, accept only "Briggs"]

[10] Myers, along with her mother Briggs, developed a test for assessing this thing, dividing people into categories like ESTJ or INFP. It is a measure of a person's attitudes, emotions, and behaviors.

ANSWER: **personality**

[10] The Myers-Briggs Type Indicator was based on the theory of psychological types developed by this earlier thinker.

ANSWER: Carl Gustav **Jung** [pronounced "yung"]

11. This institution, founded in 1933 in North Carolina, attracted artists such as Walter Gropius and Willem de Kooning. For 10 points each:

[10] Name this short-lived art institution, which was known for its integration of art into everyday life and its many experimental and interdisciplinary studies.

ANSWER: **Black Mountain** College

[10] Among the many luminaries who were students at Black Mountain College was this artist, who is best known for artworks in which objects are placed directly onto the canvas, his combines.

ANSWER: Robert **Rauschenberg**

[10] A faculty member of Black Mountain College was this avant-garde composer of *Imaginary Landscapes* and *4'33'*, in which a performer sits at a piano but plays no notes.

ANSWER: John **Cage**

12. Answer some questions about contemporary American literature, for 10 points each:

[10] An unnamed Father and Son travel through a post-apocalyptic United States in this man's Pulitzer-winning novel *The Road*. His "Border Trilogy" of novels includes another depressing work, *All The Pretty Horses*.

ANSWER: Cormac **McCarthy**

[10] This novel by Jeffrey Eugenides begins "I was born twice: first as a baby girl...then again as a teenage boy." It is about the transsexual Cal, who has sex for the first time with "the Obscure Object" and later becomes a diplomat.

ANSWER: **Middlesex**

[10] This man's 2007 novel *Tree of Smoke* won the National Book Award, but he first became noticed with his collection of stories loosely revolving around the often drug-addled character Fuckhead, titled *Jesus' Son*.

ANSWER: Denis **Johnson**

13. For 10 points each, give these terms that relate to sensations in philosophy.

[10] This comprehensive term is used to describe the intangible essence of a sensation or mental state that cannot be described purely in words. A common example is describing "cold" as a quality independent of sensation.

ANSWER: **qualia**

[10] David Lewis came up with the "Martian" variety of this sensation, which Rorty linked to the firing of C-fibers. Motor neurons cause you to feel this sensation after sensory neurons pick up a stimulus like you stubbing your toe.

ANSWER: **pain**

[10] John Locke used the example of light striking porphyry to demonstrate that external causes for these types of qualities do not resemble our idea of them. They are contrasted with objective qualities like solidity and figure.

ANSWER: **secondary** qualities [prompt on "subjective qualities"]

14. The most recent one occurred in the Pleistocene epoch. For 10 points each:

[10] Name these periods of low-temperature and expanded glaciation divided into glacial and interglacials.

ANSWER: ice ages [or glacial ages]

[10] Glacial rebound is a consequence of this effect, the gravitational equilibrium between the rigid lithosphere and the deformable asthenosphere.

ANSWER: isostasy

[10] Named after a Serbian, these cycles of variations in the Earth's orbit are one explanation for the occurrence of ice ages.

ANSWER: Milankovitch cycles

15. The true NBA center is becoming a rare specimen. For 10 points each, answer the following questions about the disappearance of the low post master.

[10] Perhaps the best true center remaining in the NBA is this one, who was traded to Philadelphia from the Lakers this past offseason..

ANSWER: Andrew Bynum

[10] Early in his career, Bynum had duels with this man, known by his many nicknames including the Big Aristotle. 3-time NBA champion with LA and winner of one with Miami, he currently acts as an anchor on TNT.

ANSWER: Shaquille Rashaun O'Neal

[10] Both Bynum and O'Neal owe much of their skills to this drill, taught to both big men to emphasize rebounding fundamentals and stamina. It is named for a former Lakers great that defined the center position in the 1950s.

ANSWER: Mikan drill

16. Ladner's theorem gives a necessary condition that would allow for a solution to this problem. For 10 points each:

[10] Name this open question in computer science that asks whether being quickly checkable is equivalent to being quickly solvable, formulated as whether two complexity classes are equal.

ANSWER: P=NP [or P≠NP; or P versus NP; or anything mentioning P and NP]

[10] Unlike for time, using Savitch's theorem it is provable that $P=NP$ for this computational resource. In-place algorithms use a constant extra amount of this resource

ANSWER: space

[10] For a problem to be NP-complete, it must be in NP and there must be a polynomial-time function of this type, which sends an instance of any other problem in NP to an instance of the given problem.

ANSWER: many-one reduction [or mapping reduction; do not accept "Turing reduction"]

17. This composer's *Der Getreue Musik Meister* contains many sonatas for various instruments, while lots of chamber works can be found in his *Tafelmusik*. For 10 points each:

[10] Name this prolific German composer, who was the Kapellmeister at Barfüsserkirche and Gotha and was the godfather of C.P.E. Bach.

ANSWER: Georg Philipp Telemann

[10] Telemann's concerto for this instrument is considered the first for it. Music for this stringed instrument is usually written in alto clef.

ANSWER: viola

[10] Another notable viola concerto was written by this British composer, whose *Faade* sets to music poems by Edith Stillwell. He gained fame for *Belshazzar's Feast*.

ANSWER: William Walton

18. This theorem states that energy is shared equally amongst all accessible degrees of freedom of a state. For 10 points each:

[10] Name this thermodynamic result, which can be used to derive Dulong–Petit law and is not to be confused with the virial theorem.

ANSWER: equipartition theorem

[10] The equipartition theorem predicts that the average kinetic energy for a particle in a monatomic ideal gas is 3/2 times this quantity, which is often used as a scaling factor for energy in molecular systems.

ANSWER: kT [the product of Boltzmann constant and temperature]

[10] Applying the equipartition theorem to these objects resulted in the ultraviolet catastrophe. These objects are so

named because they absorb all incident light.

ANSWER: **black bodies**

19. Written in heroic couplet, this poem can be read as a defense of Catholicism, as it was written after its author's conversion to that faith. For 10 points each:

[10] Name this long poem, the first part of which represents the various religious sects as animals, including the Presbyterians as a bear and Quakers as a hare, in addition to the two title animals.

ANSWER: "**The Hind and the Panther**"

[10] "The Hind and the Panther" was written by this Restoration poet. His other works include the drama *Marriage a la Mode* and his poetic reflection on the year 1666, "Annus Mirabilis."

ANSWER: John **Dryden**

[10] Dryden's satirical poem "Mac Flecknoe" is an attack on this critic, a contemporary of Dryden's. His own works include the play *The Virtuoso*.

ANSWER: Thomas **Shadwell**

20. For 10 points, name some important popes in ecclesiastical history:

[10] This "Warrior Pope" was elected in the shortest conclave ever. A patron of the arts, he commissioned Michelangelo to make statues for his tomb as well as leading the League of Cambrai in battle.

ANSWER: **Julius II**

[10] This later pope was the longest-reigning in history. He convoked the First Vatican Council and pronounced the doctrine of Immaculate Conception as well as papal infallibility.

ANSWER: **Pius IX**

[10] This pope succeeded Clement VII and convened the Council of Trent. He promulgated the papal bull "Sublimus Dei" that forbade the enslavement of the indigenous people of the Americas.

ANSWER: **Paul III**

21. The Jataka Tales are stories about the previous lives of this figure. For 10 points each:

[10] Name this figure, who achieved enlightenment under the Bodhi tree and taught the Four Noble Truths.

ANSWER: The **Buddha** (or **Siddhartha** Gautama; or Siddhartha **Gautama**)

[10] In one branch of Buddhism, the Jataka Tales are included in this larger body of work. Named for the language it was written in, it is divided into three *pitakas* which deal with monastic rules, sayings of the Buddha, and more metaphysical matters.

ANSWER: **Pali** Canon

[10] The Pali Canon is scripture in this branch of Buddhism, the oldest surviving. Its name fittingly means "teaching of the elders."

ANSWER: **Theravada**

22. These substances are commonly studied using EPR spectroscopy. For 10 points each:

[10] Name these highly reactive chemical species, which contain unpaired electrons.

ANSWER: free **radicals**

[10] Either heat or this other stimulus produce the halogen radicals used in the free radical halogenation of alkanes.

ANSWER: **UV** light [or **ultraviolet** light; or **hv**; prompt on **light**]

[10] These normally inert compounds produce chlorine radicals when exposed to ultraviolet light, triggering a chain reaction that results in the depletion of ozone.

ANSWER: **chlorofluorocarbons** [or **CFCs**; or **Freon**]