

Michigan Fall Tournament (Written by Will Nediger, Kurtis Droge, Cody Voight, Saul Hankin, Ben Forster, Siddhant Dogra, and Peter Jiang)

Packet by Dartmouth Jensen

Warm-Up Tossup (Optional)

Near the end of this movie, one character is surprised to discover that Joyce has returned from Guam. In his movie, another character's wife is hit on by David Hasselhoff. Near its beginning, yet another character is informed that his rented copy of *Mona Lisa Smile* is overdue. That same character later observes that Hallmark doesn't make cards for getting "crushed under two tons of irony." In a scene during the end credits, one character in this movie complains about "the problem with American cinema." Cameo appearances in this movie include one at a Las Vegas airport bar by Lance Armstrong, and one on a panel by "fuckin' Chuck Norris." For 10 points, name this movie in which the Peter LaFleur leads Average Joe's Gym to victory over Globo Gym in the namesake sport's tournament.

ANSWER: *Dodgeball: A True Underdog Story*

Tossups

**1. This is the key of the twelfth and last of Handel's Opus 6 concerti grossi, as well as of Ignacy Paderewski's only symphony. It is also the key of a symphony whose lengthy first movement includes a theme inspired by the "Flower Song" from *Carmen*; that symphony in this key ends with an *adagio lamentoso* finale and is sometimes termed its composer's "suicide note." This is the key of a work that includes the "Et expecto" bridge after the "Confiteor" movement and invokes the virgin birth in the "Et incarnus est" movement of its "Symbolum Nicenum," which follows the "Missa." This is the key of Tchaikovsky's "Pathétique" symphony. For 10 points, name this relative minor of D major, the key used to compose a mass by J. S. Bach.**

ANSWER: **B minor** [do not accept nor prompt on "B"]

**2. Tension between this country and the Soviet Union came to a head in the Note Crisis. Years earlier, a group called the Kagal claimed responsibility for the assassination of Nikolai Bobrikov in this country. Due to the nationalistic drivings of Johan Snellman, this country underwent a namesake language strife in the 1800s. This country won the Battle of Raate Road. The February Manifesto of 1899 enacted Russification in this modern country, which became a Grand Duchy under Alexander I. This country fought the Continuation and Winter Wars with the Soviet Union, during which its forces were led by Carl Mannerheim. For 10 points, name this European country that fought the Soviet Union on the Isthmus of Karelia and endured the bombing of Helsinki.**

ANSWER: Republic of **Finland** [or **Suomi**; or **Suomen** tasavalta; or Republiken **Finland**]

**3. Peter and Pamela Freyd founded an organization to combat a syndrome characterized by errors in this process. One experiment illustrating errors in this process found that subjects responded most strongly to the verb "smashed," and was performed by the same researcher who investigated the failure of this process in the "lost in the mall" experiment, Elizabeth Loftus. One form of this process has been modeled by Baddeley and Hitch, who argue that it is controlled by a central executive which coordinates the visuo-spatial sketchpad and the phonological loop. George Miller wrote the paper "The Magical Number Seven, Plus or Minus Two" about the "working" form of this process. For 10 points, name this process that comes in short- and long-term varieties, which is impaired in amnesiacs.**

ANSWER: **memory** [accept specific types]

**4. "Negator" varieties of these devices exert constant force over their entire range of motion. They are attached to magnets in seismometers. The cantilevers of atomic force microscopes are approximated as these devices. To determine the density of the earth, Cavendish employed a torsional example of these devices, which can be used in hanging balances. Like that of capacitors, the namesake constant of these devices adds linearly in parallel. That constant has units of Newtons per meter and is multiplied by the negative of displacement to find the restoring force exerted on these devices in a law that relates stress and strain. For 10 points, name these sources of elastic energy whose stretching is described by Hooke's law.**

ANSWER: coiled springs [prompt on simple harmonic oscillators]

**5. Zaha Hadid recently completed an art museum in this state whose exterior consists of perpendicular and parallel series of steel rods above sheets of glass. It's not Illinois, but one city in this state contains a square named Calder Plaza because it is home to a red steel sculpture by Calder called *La Grande Vitesse*. Maya Lin's Wave Field is located at a university in this state. Sports Illustrated commissioned Robert Graham to design a massive sculpture of a fist in this state, *Monument to Joe Louis*. Eliel Saarinen designed the campus for a private arts-and-crafts academy in this state; that school is named Cranbrook. This state is home to a series of twenty seven Diego Rivera murals depicting workers in the auto industry. For 10 points, name this state whose largest city was depicted in *Detroit Industry*.**

ANSWER: Michigan

**6. One artist from this movement created a series of three works, the third of which is dark and dominated by vertical lines, the second of which is predominantly blue and dominated by diagonal lines, and the first of which has the number "6943" in the middle. Another artist from the movement made a red-dominated painting of the funeral of the anarchist Galli. This movement's manifesto, which declared racecars to be more beautiful than the Winged Victory of Samothrace, was written by Filippo Marinetti. One artist from this movement created the *States of Mind* trilogy and a rippling bronze sculpture of a figure in motion, *Unique Forms of Continuity in Space*, and another painted *Dynamism of a Dog on a Leash*. For 10 points, name this Italian art movement which included Carlo Carrà, Giacomo Balla and Umberto Boccioni.**

ANSWER: Italian Futurism

**7. Symmetric examples of these compounds are formed under anhydrous conditions in a coupling reaction using sodium metal. Methods of preparing these compounds include reacting thioacetals with hydrogen gas and Raney Nickel, and reacting ketones with hydrazine under basic conditions. In IR spec, due to stretching and scissoring of bonds, these compounds have peaks in the 3000 to 2850 inverse centimeter and 1470 to 1450 inverse centimeter range. These compounds are produced when reacting Grignard reagents with water. Conformational isomers of these molecules, such as gauche and eclipsed, can be visualized with Newman projections. These compounds have general formula  $C_nH_{2n+2}$ . For 10 points, name these hydrocarbons that only have single bonds, as exemplified by methane.**

ANSWER: alkanes [or paraffins; prompt on saturated hydrocarbons until it is read; do not accept "alkenes" or "alkynes"]

**8. One of this author's title characters is dissuaded from leading a violent rebellion after he hears Milly singing a gospel; in that book, Edward Clayton tries to win a court case to impress Nina Gordon. This author wrote a novel in which James Marvyn is lost at sea, causing Mary Scudder to accept the reverend Samuel Hopkins's proposal. One of this author's characters, Tom Loker, becomes a Quaker after being shot by George Harris. This author of "A Tale of the Great Dismal Swamp," *Dred*, and *The Minister's Wooing* created a character who bonds with Eva St. Claire before being beaten and then killed by Simon Legree. She also created Eliza, who crosses the frozen Ohio River with her young child during her bid for freedom. For 10 points, name this author who inspired the anti-slavery movement with her book *Uncle Tom's Cabin*.**

ANSWER: Harriet Beecher Stowe

**9. In one of these ecosystems, David Tilman found a positive correlation between alpha diversity and community stability. These terrestrial ecosystems expanded during the Miocene epoch. From studies of one of these ecosystems, McNaughton formulated a form of the intermediate disturbance hypothesis stating that herbivory can lead to increased primary productivity. Forbs are common organisms in these ecosystems, which are often characterized by mollisols with agriculturally-valuable A-horizons. The grazing optimization hypothesis was developed in one of these ecosystems, whose animals include pronghorn and wildebeest. For 10 points, name these ecosystems exemplified by the Great Plains and Serengeti, characterized by few trees and a whole lot of grass.**

ANSWER: grasslands [or subtypes, such as savannas, prairies, shrublands, steppes, Pampas, or puna; or Great Plains or Serengeti until they are read]

**10. Mustafa Sa'eed claims that this character "was a lie" in *Season of Migration to the North*. This character recalls narrating stories of "men whose heads do grow beneath their shoulders" to a woman who pronounced those tales "passing strange" to deny charges that he employed witchcraft to woo his wife. This character asks, "Do you triumph, Roman?" to a character who narrates his conquest of a prostitute who is unsatisfied by a "minx's token" with a strawberry pattern. This character, whose first gift to his wife was a handkerchief, wounds the play's villain after being driven to murder by the "green-eyed monster," jealousy. For 10 points, name this "Moor of Venice" who suffocates Desdemona in a tragedy by Shakespeare.**

ANSWER: Othello

**11. The construction of one of these buildings is the goal of Project Guedelon. One of the best preserved examples of these buildings is named Krak des Chevaliers and is found in Syria near the Lebanese border. A popular style of this building introduced to England in the wake of the Norman conquest consisted of a larger part called a bailey and a smaller part called a motte. James of Saint George was hired to construct several of these buildings by Edward I in the wake of his Welsh expedition, including one that was never completed at Beaumaris. Edward Reidel designed one of these buildings in Bavaria for Ludwig II, a crazy monarch who was a big fan of them. One of these buildings houses the crown jewels of England and survives to this day as the Tower of London. For 10 points, name these defensive structures that include one at Neuschwanstein.**

ANSWER: castles [prompt on similar answers like "forts"]

**12. Abraham Abulafia wrote several books on the proper way to perform this practice in Judaism. It's not prayer, but this practice is known as either *hisbonenus* or *hisbodedus* in Hebrew. In Sufi tradition, it is called *muraqaba*. In 1989, the Holy See released a document titled "aspects of" this practice, distancing it from similar practices in other religions. Along with four standing exercises, this practice is one of the five exercises of Falun Gong, and it is a key component of *qigong*. This practice can be aided by the technique of omphaloskepsis. In Zen Buddhism, this practice is called *zazen* when it is performed sitting down. In Christianity, it is often performed while repeating Hail Marys by considering the Mysteries of the Rosary. For 10 points, name this practice of directed contemplation which is often accompanied by the chanting of mantras.**

ANSWER: meditation

**13. A poet from this country proclaimed "The blood of love has robed me in purple" in a poem that repeats the line "Mother far away, my everlasting Rose." Mary Renault set most of her works in this country that owns the island that provides much of the setting for John Fowles's *The Magus*. An author from this country created Pavli, who drowns himself after being spurned by the Widow. One poet from here wrote "To Axion Esti," while its primary language was used by the poet of "The God Abandons Antony" and "Waiting for the Barbarians." An author from here created a character who opens a coal mining venture with an unnamed narrator**

and seduces Madame Hortense, and that author described Jesus as overcoming human vices in *The Last Temptation of Christ*. For 10 points, name this homeland of the creator of Zorba, Nikos Kazantzakis.

ANSWER: Greece

**14. This man campaigned to repeal the death sentence of Jean Calas, who was accused of murdering his son because he planned to convert to Catholicism. He analyzed British religion and politics in his *Letters Concerning the English Nation*, after which he fled to Champagne, where he lived under the protection of Émilie du Châtelet. He completed the *Anti-Machiavel* of his frequent correspondent Frederick the Great. He wrote a novel in which both Azora and Sémire are love interests of the title Babylonian philosopher. He is best known for a novel which ends with the declaration “We must cultivate our garden.” In that novel, the optimistic philosophy of Leibniz is satirized in the form of Dr. Pangloss. For 10 points, name this Enlightenment philosopher who wrote *Zadig* and *Candide*.**

ANSWER: Voltaire [or François-Marie Arouet]

**15. In this state in 1968, army testing of the nerve agent VX at Dugway Proving Ground killed six thousand sheep on the Skull Valley Goshute Reservation. A swarm of katydids in this state were allegedly fended off by some birds in the “Miracle of the Gulls.” Women were disenfranchised when the Perpetual Emigration Fund was unincorporated by the Edmunds-Tucker Act in this state, whose justice system was reformed by the Poland Act. A party of immigrants to this state from Arkansas was slain by some Paiutes in the Mountain Meadows Massacre. That was part of this state’s namesake war, in which James Buchanan ordered Alfred Cumming to replace Brigham Young as its governor. For 10 points, name this state once known as Deseret, where Mormon settlers founded Salt Lake City.**

ANSWER: Utah

**16. Ibn Gabirol dispatched a female one of these beings after having sex with it. According to one legend, the body of the most famous of these beings can still be found in an attic. In some accounts, these beings can be destroyed by walking around them and saying words backwards to reverse the process that created them, although they are more typically defeated by erasing one of the letters on their forehead or reaching into their mouths and taking out a scroll inscribed with the name of God called a *shem*. These non-jinni beings are bound to literally obey commands. In 1580, one of these beings was created by the Maharal in order to defend Prague’s ghetto. For 10 points, name these robot-like beings created from unformed material like clay in Jewish folklore.**

ANSWER: golems

**17. This man was influenced by a group led by Aureliano Coutinho, known as the Courtier Faction. This ruler reestablished cordial relations with Britain following the visit of Edward Thornton. The “smash the kilos” riots occurred after this ruler’s implementation of the metric system, and he also faced a rebellion in the Pernambuco region called the Praieira Revolt. This husband of Teresa Cristina of the Kingdom of the Two Sicilies was deposed and succeeded by Deodoro da Fonseca. Soon after the invasion of Mato Grosso, this man joined his country with Argentina and Uruguay in the War of the Triple Alliance. This man’s daughter Isabel passed the Golden Law, outlawing slavery in his country. For 10 points, name this second emperor of Brazil.**

ANSWER: Pedro II

**18. This thinker’s first publication was a satirical imitation of the style of an anti-religious contemporary, which was so accurate that many reviewers did not realize it was satire. He influenced Joseph de Maistre, who is often considered his French equivalent. This thinker, who satirized Lord Bolingbroke in *A Vindication of Natural Society*, led the prosecution in the impeachment trial of Warren Hastings. His most famous work was attacked in Mary Wollstonecraft’s *A Vindication of the Rights of Man* and Thomas Paine’s *Rights of Man* and predicted that the title conflict would end badly because it was based on abstract principles which didn’t take into**

account society's complexities. For 10 points, name this conservative political philosopher who wrote *Reflections on the Revolution in France*.

ANSWER: Edmund **Burke**

**19. In a letter to William Saroyan, Flann O'Brien explained that his novel *The Third Policeman* is set in this place. When describing the shipwreck in *The Tempest* to Prospero, Ariel quotes a man who declares that this place is "empty." Marbodius visits this place in *Penguin Island*. In a short story, a painter destroys a carriage with his daughter inside so he can finish a painting of this place. The speaker of a long poem set in this place claims to be a "master of phantasmagoria." Paul Verlaine is a character in that poem, whose sections include "Bad Blood" and "Delirium I." In the *Aeneid*, Aeneas uses a golden bough to visit this place. For 10 points, name this place which was visited by Arthur Rimbaud for a "season," and is defined as "other people" in Sartre's *No Exit*.**

ANSWER: **Hell** [accept equivalents, like the **Underworld**]

**20. Okadaic acid induces GVBD in these cells, committing them to enter M phase. In zebrafish, activin stimulates maturation of these cells during their quiescent period. These cells are pierced by micropipets during ICSI, which sometimes employs a GnRH-agonist. The vitelline membrane surrounds large examples of these cells that can be microinjected with cRNA in *Xenopus*.** In mammals, these cells are surrounded by the zona pellucida. Androstenedione from the theca is reduced by aromatase in the granulosa cells that form the follicle surrounding these cells after they are stimulated by FSH. They are produced in a process that also makes three polar bodies. For 10 points, name these female gametes that form a zygote by being fertilized with sperm.

ANSWER: **egg** cells [or **ovum**; or **ova**; or **oocytes**; or **ovocytes**; or **ovarian follicles**; prompt on **gametes**; prompt on **gametocytes**; prompt on **germ cells**]

**21. This man was mocked with the phrase "New Danger" in a poster designed by his political opponents that shows him with demon eyes. This man mocked his predecessor in office by saying, "I lead my party, he follows his." In the election in which he came to power, his party promised to create the first national minimum wage in his country, which he enacted in 1998. This creator of the Faith and Globalisation Initiative allegedly made a deal with his successor at the Granita restaurant. This author of the memoir *A Journey* negotiated with Bertie Ahern to reform power sharing in Northern Ireland in the Good Friday Agreement and controversially ordered his country's troops to support the American invasion of Iraq. For 10 points, name this ardent supporter of George W. Bush and predecessor of Gordon Brown, the Labour Party Prime Minister of the United Kingdom from 1997-2007.**

ANSWER: Anthony "Tony" Charles Lynton **Blair**

## Bonuses

1. This city's university was chartered by Alfonso IX, and it names a school of thought associated with Francisco de Vitoria. For 10 points each:

[10] Name this Spanish city that was a hotspot for intellectuals in the 15th and 16th centuries. During the Peninsular War, it was the site of an 1812 victory for the Duke of Wellington over Auguste Marmont.

ANSWER: **Salamanca**

[10] This dude went up against Juan Gines de Sepulveda in the Valladolid debate, in which he argued for the rights of indigenous peoples in the Americas. He also served as the first Bishop of Chiapas.

ANSWER: Bartolome de las **Casas**

[10] The mesta was a union concerned with these animals. Industry regarding them provided most of the tax revenues in England for most of the Medieval and Renaissance times and was the subject of the Australian Shearers' Strike.

ANSWER: **sheep**

2. In this author's most recent novel, Nestor Camacho gets in trouble after becoming vilified in a viral online video. For 10 points each:

[10] Name this author of *Back to Blood* who also wrote a novel in which Hoyt Thorpe witnesses a politician getting a blow job and tries to leverage it into an investment banking job.

ANSWER: Tom **Wolfe**

[10] In this novel, Wolfe's best known, Sherman McCoy's life is ruined after Peter Fallow helps to publicize the story of his accidentally running over a black youth in the Bronx.

ANSWER: *The **Bonfire of the Vanities***

[10] In Wolfe's novel *A Man in Full*, Charles Croker is a real estate mogul in Atlanta. In this Margaret Mitchell novel, Scarlett O'Hara spends time in Atlanta with Melanie, the sister of her deceased husband, Charles Hamilton.

ANSWER: **Gone with the Wind**

3. This piece is now generally played on an organ without vocal accompaniment. For 10 points each:

[10] Name this march with such lyrics as "Zierde der Jugend, schreite voran!" and "Streiter der Tugend, bleibe daheim!" It opens its opera's third act, in which a character hopes to go to Monsalvat rather than fight Hungarians.

ANSWER: "**Bridal Chorus**" [or "**Treulich geführt**"]

[10] The "Bridal Chorus" appears in this Antwerp-set opera in which the title lover of Elsa defeats Telramund after appearing in a boat drawn by a swan, who is actually the transformed Duke of Brabant Gottfried.

ANSWER: **Lohengrin**

[10] *Lohengrin* is a work of this racist German composer of *Das Liebesverbot*, *Rienzi* and *Tannhäuser*. His *Ring* cycle is renowned for its "redemption through love" leitmotif and *Ride of the Valkyries*.

ANSWER: Wilhelm Richard **Wagner**

4. Characters in this play are forced to put on an absurd comedy because no good ones come from France anymore. For 10 points each:

[10] Name this play that opens with a rehearsal of *The Rules of the Game* interrupted by a family's entrance. At the end of this play, actors debate whether a character's suicide following a girl drowning in a fountain is real or fake.

ANSWER: **Six Characters in Search of an Author** [or **Sei personaggi in cerca d'autore**]

[10] *Six Characters in Search of an Author* was written by this Italian author of *Right You Are (If You Think You Are)* and *Tonight We Improvise*.

ANSWER: Luigi **Pirandello**

[10] This other Italian Nobel winner was a frequent contributor to the *Corriere della Sera*, and published poetry collections like *The Storm* and *Cuttlefish Bones*.

ANSWER: Eugenio **Montale**

5. The major cells involved in this process are activated by the binding of the NF-kappa B ligand RANKL. For 10 points each:

[10] Name this process that is inhibited by gallium nitrate, which interferes with the proton pump across the "ruffled" membranes of osteoclasts.

ANSWER: **bone resorption** [or obvious equivalents, such as **breaking down bone**]

[10] As you might have guessed, bone resorption breaks down bone, which is an example of this basic tissue class. This tissue class, which strangely includes blood and adipose tissue, is composed of a ground substance surrounded by an extracellular matrix.

ANSWER: **connective** tissue

[10] This specialized bone tissue occurs in red and yellow forms and may be transplanted to leukemia patients. This tissue, located on the interior of bones, is a major source of stem cells and the site of hematopoiesis.

ANSWER: bone **marrow**

6. This poem ends with "some grave Tyrian trader" journeying "outside the Western Straits." For 10 points each:

[10] Name this poem about a man "born in days when wits were clear and fresh" "before this strange disease of modern life." It is based on a story told by Glanvill about a man who leaves Oxford.

ANSWER: "The **Scholar-Gipsy**"

[10] "The Scholar-Gipsy" was written by Matthew Arnold, who is best known for this poem about the once-full "Sea of Faith." The speaker of this poem describes a place "where ignorant armies clash by night" on some cliffs.

ANSWER: "**Dover Beach**"

[10] In "Dover Beach," the speaker claims that "we are here as on a...plain" described by this adjective. "An aged thrush, frail, gaunt and small" is described by this adjective in the title of a poem by Thomas Hardy.

ANSWER: **darkling**

7. In August 2013, a rufous-necked wood rail was sighted in this state, the location of the extinct Capulin volcano. For 10 points each:

[10] Name this state, whose Gila Wilderness is home to a reintroduced population of Mexican wolves. This state's capital Santa Fe was settled by the Spanish, and its city of Albuquerque is home to a hot air balloon fiesta.

ANSWER: **New Mexico** [accept such silly nicknames as **Land of Enchantment**]

[10] This New Mexico national park houses a riparian oasis for birds at Rattlesnake Springs and a subterranean oasis for chemolithoautotrophic bacteria at Lechugilla. A flight of Mexican free-tailed bats exits this park every evening.

ANSWER: **Carlsbad Caverns** National Park

[10] Carlsbad Caverns is across the border from Texas's Guadalupe Mountains National Park, which contains a peak of this name. Another rock formation with this name is made of granite and has a climbing route called "The Nose."

ANSWER: El **Capitan**

8. Many composers were inspired by our feathered friends, the birds. For 10 points each:

[10] This British composer was inspired by a George Meredith poem to write *The Lark Ascending*. He also wrote *Fantasia on a Theme of Thomas Tallis* and *Sinfonia Antarctica*.

ANSWER: Ralph **Vaughan Williams**

[10] This student of Paul Dukas catalogued bird songs extensively. He evoked an “Abyss of Birds” in the third movement of a work which uses a clarinet to imitate a blackbird in the movement “Liturgy of Crystal,” *Quartet for the End of Time*.

ANSWER: Olivier **Messiaen**

[10] Two birds sing the chorus in this composer’s *Sea Drift*, which is set to Whitman’s “Out of the Cradle Endlessly Rocking.” He wrote a set of variations on “Brigg Fair” and a tone poem which quotes the song “In Ola Valley.”

ANSWER: Frederick **Delius**

9. Dasius of Durostorum was killed for refusing to take on the symbolic role of “king” during this holiday. For 10 points each:

[10] Name this holiday during which slaves were allowed to participate in many of the activities normally reserved for freedmen. Its tradition of gift giving may have influenced practices on Christmas, a holiday close to it on the calendar.

ANSWER: **Saturnalia**

[10] During Saturnalia, slaves were sometimes allowed access to a Pileus, one of these objects owned by manumitted slaves. In Christianity, some religious figures have one of these called a zucchetto.

ANSWER: **hats** [accept equivalents]

[10] James Frazer claimed that the king of Saturnalia took on this role, analogous with an animal that was cast out into the wilderness during the Day of Atonement to symbolically take the blame for various sins.

ANSWER: **scapegoat** [prompt on “Azazel”]

10. Mennonite settlers introduced the ‘Turkey’ red cultivar of this crop to Kansas. For 10 points each:

[10] Name this cereal that turned the Great Plains into the breadbasket of the United States. In 1904, an epidemic of stem rust decimated this crop, whose durum variety is usually grown to produce pasta.

ANSWER: **wheat** [or **Triticum**]

[10] This man transformed wheat farming with his mechanical reaper, which was sold on credit. This man’s rival John Henry Manny won a patent case against him after hiring the young lawyer Abraham Lincoln.

ANSWER: Cyrus Hall **McCormick**, Sr.

[10] This term refers to the period of time in the mid-20th Century when agriculture was changed by the biotechnological innovations of Norman Borlaug. Its use of monoculture increased yields at the cost of severe dependence on chemicals.

ANSWER: **Green Revolution**

11. This country’s current president, Jacob Zuma, is a member of its dominant political party, the ANC. For 10 points each:

[10] Name this country formerly led by the HIV/AIDS denialist Thabo Mbeki, whose administration was marked by the “arms deal” scandal. Its apartheid policy ended under F. W. de Klerk, allowing Nelson Mandela to be elected.

ANSWER: Republic of **South Africa** [accept any unfamiliar names that sound like they have “Afrika” in them]

[10] Before it became a British dominion, the Boers’ South African Republic was led by this man, who was the recipient of a namesake telegram from Wilhelm II. He also lends his name to a South African gold coin.

ANSWER: Stephanus Johannes Paulus “Paul” **Kruger** [accept “**Uncle Paul**” or “**Oom Paul**” from Afrikaners]

[10] The South African Republic was sometimes named after this region, which existed as the northeasternmost province of South Africa until 1961.

ANSWER: **Transvaal**

12. Polar, Ferrell and Hadley cells mediate the extensive air mixing that occurs in this layer of the atmosphere. For 10 points each:



[10] Name this lowest atmospheric layer, which has a positive lapse rate and is separated from the stratosphere by a namesake "pause".

ANSWER: troposphere

[10] The chemistry of the troposphere is primarily mediated by this free radical, which abstracts hydrogen atoms from volatile organic compounds. Electronically excited oxygen atoms are intermediates in its formation.

ANSWER: hydroxyl radical [or OH dot; or OH radical]

[10] Oxidation of carbon monoxide by the OH radical eventually results in the production of hydrogen peroxide, which replenishes the OH radical when it reacts with this diatomic gas to form a compound that is photolyzed to produce this gas and ozone.

ANSWER: nitric oxide [or NO; or nitrogen monoxide]

13. Atomic examples of these constructs are linearly combined to form molecular ones in the LCAO method. For 10 points each:

[10] Name these constructs that describe the regions where electrons may be found. They are described by principal, azimuthal, magnetic and spin quantum numbers, and hybridize to produce types like sp<sup>3</sup>.

ANSWER: atomic orbitals

[10] This function, which can be scaled to A naught, describes the probability of finding an electron at a given distance from the nucleus. When squared, it is equal to four pi small r squared times big r squared.

ANSWER: radial distribution/probability function [or pair correlation function; or g of r; or RDF]

[10] The radial and angular wavefunctions can be used to find these locations with zero electron density. There are N minus L minus one radial ones and N minus one total ones in a given orbital.

ANSWER: nodes

14. A mural from the Villa of Livia provides valuable information about the composition of these locations, whose study was pioneered by Wilhelmina Jashemski. For 10 points each:

[10] Name these places generally located at the back of a domus, sometimes within a peristyle. The Piazza d'Oro is one example of these places, many of which were found at the Villa Poppaea of Oplontis.

ANSWER: ancient Roman gardens [or horti; or viridaria; accept clear-knowledge equivalents]

[10] A well-preserved garden was found at the House of Sallust in this city near Naples. Its four styles of mural painting include some famously sexual scenes, which were luckily preserved when Vesuvius destroyed it.

ANSWER: Pompeii

[10] The eruption of Vesuvius also destroyed this town, where the deep layers of hot ash better conserved the shape of its buildings. Excavations at this site unearthed a library of scrolls at the Villa of the Papyri.

ANSWER: Herculaneum [or Ercolano]

15. The third round of this policy was launched in September of 2012, and it is intended to stimulate the U.S. economy by making money more widely available to investors. For 10 points each:

[10] Name this policy that may be tapered beginning in September of this year.

ANSWER: quantitative easing

[10] Quantitative easing actually largely consists of the Fed buying back these financial instruments that come in short term and long term varieties and have a yield inversely proportional to the market interest rate.

ANSWER: bonds [accept more specific answers]

[10] Many fear that tapering quantitative easing will cause investors to withdraw cash from emerging markets, perhaps triggering an event that would mirror a 1997-1998 crisis that began when this country floated its currency, the Baht.

ANSWER: Thailand

16. The title character of this novel goes to parties at a settlement called Verona, where he buries a man killed by Harry Edwards. For 10 points each:

[10] Name this novel about a man who goes on a killing rampage with his half-brother. The title character is underpaid for his work putting up fences after leaving a family of Methodist missionaries.

ANSWER: *The Chant of Jimmie Blacksmith*

[10] *The Chant of Jimmie Blacksmith* was written by Thomas Keneally, an author from this country. Another author from this country, Patrick White, described a German leading an expedition into the Outback in *Voss*.

ANSWER: Commonwealth of Australia

[10] Keneally's best known novel centers on this character, an anti-hero who rescues Jews from a concentration camp run by Amon Goeth. It was based on the real-life accounts of Poldek Pfefferberg.

<Jensen>

ANSWER: Oskar Schindler [accept either name; accept Schindler's Ark; accept Schindler's List]

17. If the energy for a particle in this model is greater than the potential  $V_{\text{sub-naught}}$ , it is unbound. For 10 points each:

[10] Name this model whose transcendental solutions to the Schrödinger equation involve a function of tangent and cotangent for even- and odd-parity solutions.

ANSWER: one-dimensional finite potential well [or one-dimensional finite square well; or FPW; or FSW; or particle in a finite-walled box; do not accept answers containing "infinite"]

[10] The solution for an infinite square well is typically written as root of two over the length of the well,  $L$ , times sine of  $n\pi$  over  $L$  times  $x$ , where the factor root two over  $L$  comes from normalizing a particle's wavefunction so that its integral over the length of the well, or the probability of finding the particle in the well, is this number.

ANSWER: one

[10] The potential energy for the quantum harmonic oscillator system depends on this power of the distance from the origin.

ANSWER: two

18. This people's moon god Igaluk gets thinner every month because he forgets to eat while chasing his sun goddess sister Malina. For 10 points each:

[10] Name this myth system that describes Anguta cutting off his daughter Sedna's fingers to create whales and seals, after which Sedna heads to the bottom of the sea with the weather-controlling Qailertetang.

ANSWER: Inuit people [accept Inuk; prompt on Eskimos]

[10] In Inuit myth, Nanook is the master of one species of these animals, which the Latvian hero Lāčplēsis is good at slaying. The nymph Callisto is transformed into one of these animals, creating the constellation Ursa Major.

ANSWER: bears [or Ursidae; accept specific species; prompt on carnivores or mammals or other less specific answers]

[10] In a myth of this people, a bear chases seven girls onto a rock, which grows in height but can't save them from becoming the Pleiades. The White Buffalo Calf Woman gave them a sacred pipe, and they believe in the trickster Iktomi.

ANSWER: Lakota people [or Teton; or Titunwan; accept Sioux; accept Kiowa since there's some overlap in their mythology]

19. This work asks if Maldoror is the angel of pity in its section "Lautréamont and Banality." For 10 points each:

[10] Name this philosophical essay that discusses historical regicide and state terrorism, positing that "murder and suicide are one and the same thing." This work claims that "to breathe is to judge."

ANSWER: *The Rebel* [or *L'Homme révolté*]

[10] *The Rebel* was written by this Algerian-born philosopher, who claimed that "one must imagine Sisyphus happy" in *The Myth of Sisyphus*.

ANSWER: Albert **Camus**

[10] This contemporary of Camus claimed that authenticity is necessary but not sufficient condition for an ethical system in *Must We Burn Sade?* This author of *The Ethics of Ambiguity* wrote that “One is not born, but rather becomes, a woman” in another work.

ANSWER: Simone-Lucie-Ernestine-Marie Bertrand de **Beauvoir**

20. The title goddess huddles on a red cloth next to a shivering Cupid in this artist’s *Venus Frigida*. For 10 points each:

[10] Name this painter of a self-portrait with his first wife called *The Honeysuckle Bower*. This artist of a *Descent from the Cross* and the Marie de’ Medici cycle is noted for his depictions of voluptuous women.

ANSWER: Peter Paul **Rubens**

[10] Rubens’ first wife was this woman, who is also the subject of a portrait by Anthony van Dyck.

ANSWER: Isabella **Brant**

[10] Rubens collaborated with the elder of the two painters named Jan from this family. Another member of this family painted *The Fight Between Carnival and Lent* and *The Tower of Babel*.

ANSWER: **Brueghel**

21. Zhang Heng is sometimes credited with having invented the first odometer, which may have been used in tandem with his south-pointing chariot. For 10 points each:

[10] Zhang Heng also improved upon the clepsydra, which is the Greek term for a water-powered one of these devices.

ANSWER: **clocks**

[10] Zhang Heng also invented one of the first of these devices, which consisted of a large bronze vessel adorned with eight dragons and possibly contained a pendulum sensitive to vibrations.

ANSWER: **seismographs** [accept **seismometers**]

[10] One law that relates the magnitude and number of earthquakes in a region is named after Gutenberg and this man, who is also the eponym of a certain scale.

ANSWER: Charles Francis **Richter**