

2022 Winter Closed

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Packet L

Tossups

1. **The integral of this quantity over proper time gives the expected number of e -folds of inflation. In the FLRW metric, the equation of motion for an inflationary scalar field, ϕ , contains the friction term: “three times this quantity times $\dot{\phi}$.” The mismatch between the SH0ES (“shoes”) value of this quantity and the value inferred from the CMB is this quantity’s “tension.” The time derivative of this quantity equals the negative of this quantity squared times the expression “one plus the (*) deceleration parameter.” This quantity equals the time derivative of the scale factor over the scale factor. This quantity, whose value is about 70 kilometers per second per megaparsec, relates an astronomical object’s recessional velocity to its distance. For 10 points, what “constant” gives the rate of expansion of the universe?**

ANSWER: **Hubble** parameter [or **Hubble** constant; or **H** or **H**-naught or **H**-zero]

<Settle, Physics>

2. **DJ Cut Killer mixes a song by this singer with NTM and KRS-One’s “Sound of Da Police” as the camera weaves through low-income high rises in a scene from a film released in the US as *Hate*. Norbert Glanzberg wrote many of this artist’s songs, including one performed on the Ed Sullivan Show, “Padam Padam.” A “girl from the docks” meets a handsome Englishman in this artist’s 1959 hit “Milord.” This woman returns to the Olympia to sing a song whose chorus repeats (*) “Absolutely nothing” at the end of a 2007 biopic (“bio-pic”) about her. The signature song by this “little sparrow” mentions her lover “speaking to [her] softly” to let her “see life through rose-colored glasses” and titles a biopic starring Marion Cotillard (“ko-tee-YARR”). Hans Zimmer’s score to *Inception* often quotes this singer’s ballad “Non, Je Ne Regrette Rien.” For 10 points, what French chanteuse (“shawn-TOOZ”) sang “La Vie en Rose”?**

ANSWER: Édith **Piaf** [or Édith Giovanna **Gassion**] (The film in the first sentence is *La Haine*.)

<R. Keyal, Other Arts>

3. **The ideological conflicts between this leader’s country and nearby monarchies were described in Malcolm Kerr’s book about a regional “Cold War.” Though it was ostensibly anti-communist, the Eisenhower Doctrine was likely meant to combat the influence of this leader’s ideology. After a supporter of this leader overthrew the Mutawakkilite Kingdom, this leader’s country was embroiled in a quagmire in (*) North Yemen. In order to prevent communist takeover of another country led by Shukri al-Quwatli, this leader’s country merged with it to form the United Arab Republic. An anti-Western action carried out by this leader led to a 1956 invasion by France, the UK and Israel. For 10 points, name this proponent of pan-Arabism, a president of Egypt who nationalized the Suez Canal.**

ANSWER: Gamal Abdel **Nasser**

<Raje, World History>

4. After meeting Noria at one of these events, a man builds a house with her that he covers in magazine photos in a novel by Zakes Mda (“muh-DAH”). During one of these events in a 2016 novel, Akosua refuses to shake James’s hand because his family are slavers. Before attending one of these events that is packed with non-white attendees, a man finds a copy of the Gettysburg Address in his son’s library in (*) *Cry, the Beloved Country*. A tradition at this sort of event titles a 2016 novel about several descendants of the Asante woman Maame, Yaa Gyasi’s (“JAH-see’s”) *Homegoing*. The protagonist of another novel is sent into exile for seven years after his gun explodes at one of these events, killing Ezeudu’s son. For 10 points, in *Things Fall Apart*, Okonkwo attends what sort of event honoring a dead chieftain?

ANSWER: **funeral** [or a **burial**; or a funeral **service**; prompt on **homegoing** until read] (The Zakes Mda novel is *Ways of Dying*.)

<Evans, Long Fiction>

5. **Philippians 3 rejects the Judaizers’ “confidence” in this stuff, whose “works” are described in Galatians 5 with a warning that those “who do such things will not inherit the kingdom of God.” Second Corinthians analogizes the torment caused by a “messenger of Satan” to an irritation that afflicts this stuff. This stuff is often considered an “enemy of the soul” alongside the world and the devil. John 1 states that “the (*) Word became” this stuff. The Opus Dei literally performs a practice in which acts like fasting or abstinence result in the “mortification” of this stuff. During the Agony in the Garden in Matthew 26, Jesus says, “the spirit is willing but [this stuff] is weak.” For 10 points, the bread consumed during Eucharist becomes what stuff during transubstantiation, whereas the wine becomes blood?**

ANSWER: **flesh** [accept thorn in the **flesh** or mortification of the **flesh**; accept **body** of Christ after “John” is read but reject before; accept **sarx** or **caro**]

<R. Keyal, Religion>

6. **Elizabeth Hardwick wrote that this man embodied the “old, pure tradition” of George Eliot’s Dinah Morris in an essay on his “apotheosis.” This man cited T. S. Eliot’s idea that “the last temptation is the greatest treason: To do the right deed for the wrong reason” in a work that responds to the criticism that he has been “unwise and untimely.” Katori Hall’s 2011 play about this man is titled for a speech that he ended by quoting from the “Battle Hymn of the Republic” after envisioning a (*) “Promised Land.” The book *Why We Can’t Wait* collects a response by this man to the article “A Call for Unity” written by eight white clergymen, in which this man argued that “justice too long delayed is justice denied” and “injustice anywhere is a threat to justice everywhere.” For 10 points, the “Letter from Birmingham Jail” was written by what civil rights leader?**

ANSWER: Martin Luther **King** Jr. [or **MLK** Jr.; accept “The Apotheosis of Martin Luther **King**”] (The speech is “I’ve Been to the Mountaintop.”)

<R. Keyal, Misc. Literature>

7. **Enzymes named for this molecule are recruited by SOCS box domains as part of the JAK-STAT pathway. Protein-protein interactions cause C-terminal and N-terminal fragments of this protein to fuse in a two-hybrid screen for membrane proteins. Enzymes named for this molecule are also recruited using bifunctional linkers to their substrate by PROTACs. SUMO is part of a family of proteins similar to this protein, which is added to substrates by the (*) SCF complex. A glycine residue on this protein is used to bond to the substrate’s lysine residue through an isopeptide bond. This protein is activated, conjugated, and ligated by enzymes labeled E1, E2, and E3. Proteins tagged with this protein are degraded by the proteasome (“PRO-tee-uh-zome”). For 10 points, name this protein that is named for the fact that is found in nearly all cells.**

ANSWER: **ubiquitin**

<A. Keyal, Biology>

8. The creation of Walt Bogdanich's thirteen-part miniseries on this industry is detailed in Allan Brandt's history titled for this industry's "century." Mike Moore's 1994 lawsuit against thirteen companies in this industry prompted those companies to reach a "master settlement" with 46 state attorneys general. A longitudinal study by Doll, Hill, and Peto at the University of Oxford inspired Luther Terry's crusade against this industry. The namesake of (*) Duke University, James Buchanan Duke, founded a company in this industry. Feminists displayed "torches of freedom" in an advertising ploy for this industry created by Edward Bernays. A company in this industry abandoned the slogan "Mild as May" for a controversial cowboy played by Darrell Winfield, who was intended to appeal to manliness. For 10 points, name this industry whose products were advocated by the Marlboro Man.

ANSWER: tobacco industry [or nicotine industry; or cigar industry; or cigarette industry; or smoking industry]
<Parameswaran, American History>

9. In a parody of a painting by this artist, Lalla Essaydi showed a dove sitting on the central subject's hand instead of a parrot like in the original. André Masson created an automatist interpretation of a different painting by this artist on a sliding door for Jacques Lacan. This artist's painting of two nude women embracing each other on silk sheets was commissioned by diplomat Khalil Bey. This artist fell out with (*) James Whistler after the latter found out about this artist's relationship with Joanna Hiffernan. This artist was castigated for three paintings at the 1850 Paris Salon, one of which depicts Antoine Joseph Cassard kneeling in front of a priest in black robes. It is unclear who modeled for this artist's painting depicting female genitalia, *The Origin of the World*. For 10 points, name this French realist painter of *The Burial at Ornans*.

ANSWER: Gustave Courbet (The first clue refers to *Woman with a Parrot*.)
<Parameswaran, Painting and Sculpture>

10. A hand holding a flag with this symbol on it appeared alongside a bottle, a dagger, and a grenade in the logo for the Black Hand. Carl Sagan proposed this symbol as the solution to a problem posed by the US Department of Energy about nuclear semiotics. The issue of children making incorrect associations about this symbol led Pittsburgh doctors to design a fluorescent green face named (*) "Mr. Yuk" to replace it. The 3rd SS Panzer Division was named after the German word for this symbol, "totenkopf." The number 322 is significant to an organization named for this symbol, the oldest secret society at Yale. A flag featuring this symbol, meant to intimidate prey ships, was flown by Edward England and "Black Sam" Bellamy, but likely not by Blackbeard. For 10 points, name this danger-signifying symbol found on the Jolly Roger.

ANSWER: skull and crossbones [prompt on Jolly Roger until read]
<Lo, Other Academic>

11. Nucleophilic attack preferentially occurs to acyclic instances of these compounds versus cyclic ones by the Davies–Green–Mingos rules. A rate law analogous to that of S_N2 ("S-N-2") describes the substitution of one of these compounds by another via an associative mechanism. Varying the number of pyrazolyl groups or substituents at the central boron atom tunes the properties of a class of these compounds likened to scorpions. Two of these compounds couple together in a (*) migratory insertion reaction. One of these compounds acts as a sigma-donor and a pi-acceptor in a back-bonding interaction. Cyclopentadienyl ("cyclo-penta-die-EE-nil") groups act as these compounds in ferrocene ("FAIR-oh-seen"). The number of binding sites on one of these compounds is its denticity. For 10 points, name these compounds bound to metals in coordination complexes.

ANSWER: ligands
<A. Keyal, Chemistry>

12. A story by this author ends as a man dies in a fire overnight after two friends can only identify a “naked foot” amid a “formless fog” in an image of a “beautiful troublemaker.” The protagonist of a story by this author cries out when he sees an “ideal beauty” in a Jomelli opera, which a later author read as both “hermeneutic” and “proairetic” (“pro-air-ET-ick”). Despite finding the perfect model for his masterwork, the painter Frenhofer goes mad in a story by this author featuring a young (*) Nicolas Poussin (“poo-SAN”). This author’s story about a sculptor who kidnaps the castrato Zambinella is analyzed in Roland Barthes’s (“bart’s”) *S/Z*. This author’s stories “The Unknown Masterpiece” and “Sarrasine” appear in a massive collection whose characters include the criminal Vautrin (“vo-TRAN”) and the law student Eugène de Rastignac (“oo-ZHEN duh rah-steen-YAHK”). For 10 points, name this author who included *Père Goriot* (“pair gor-YO”) in his cycle *The Human Comedy*.

ANSWER: Honoré de **Balzac**

<Morrison, Short Fiction>

13. A thinker from this school “resolved” the Sorites (“so-RYE-teez”) paradox by telling people to stop answering before they were unsure whether the grains formed a heap. According to this school, logic did not describe relations between words but between “sayables” called *lekta*. This school divided philosophy into the three subjects of logic, physics, and ethics. This school believed the universe was infused with a mixture of air and fire called (*) *pneuma*. A thinker from this school argued that the only thing with value is one’s *prohairesis*, or volition, because that is the only thing that can be controlled. That thinker from this school wrote the *Discourses* and *Enchiridion*. Another thinker from this school described striving to live as a philosopher in notes written during a military campaign. For 10 points, name this school of thought propounded by Epictetus and the author of *Meditations*, Marcus Aurelius.

ANSWER: **Stoicism** [or word forms like **Stoic**]

<French, Philosophy>

14. In an operatic finale, a chorus of people with this profession sing a somber melody beginning “long A, A B B C,” which abruptly shifts to C minor after a percussive climax. One of these people drinks poison to reunite with her dead illegitimate son at the end of the second opera in Puccini’s *Trittico*. Several ghostly examples of these people attempt to seduce the main character in a ballet from *Robert le diable*. In an opera about these people, Constance reunites with Blanche during a scene in which these people stop singing one by one as they are (*) guillotined. A character in this profession sings “Climb Ev’ry Mountain” to Maria, who leaves this profession to go to the Von Trapp household in *The Sound of Music*. For 10 points, name this profession held by the title women of Francis Poulenc’s (“poo-LANK’s”) opera *Dialogues of the Carmelites*.

ANSWER: **nuns** [or **sisters** or **abbesses**; accept **Carmelites** until read]

<Strombeck, Classical Music>

15. Michael Bradley’s work on this man’s “Conspiracy” and a study by Eric Williams that charts a path from him “to Castro” are heavily cited in John Henrik Clarke’s book on his link to the “Afrikan Holocaust.” A book by Carol Delaney relates this man’s goal to the “Quest for Jerusalem.” A pioneering environmental history by (*) Alfred Crosby examines this man’s role in creating a system for biological diffusion. *A People’s History of the United States* begins with the Arawak perspective on this man, who inspired two books by Charles C. Mann titled for years. Crops, livestock, and disease spread through an “exchange” named for this man, the namesake of a holiday replaced by Indigenous Peoples’ Day. For 10 points, what explorer claimed to discover the New World?

ANSWER: Christopher **Columbus** [accept *The Columbus Conspiracy* or *Christopher Columbus and the Afrikan Holocaust*; prompt on **Columbian** Exchange]

<R. Keyal, Other History>

16. At a chance encounter in a train station, Kurt Gerstein met a diplomat from this country and told him about the horrors of the Belzec (“BEL-zhets”) concentration camp. Lord Cork was tasked with blockading iron exports from this country as part of the never-executed Operation Catherine. With a more-southerly country, this country organized “white buses” to evacuate Jews to safety. A member of this country’s most prominent banking family provided (*) passports to save Hungarian Jews. After World War II, this country’s prime minister Tage Erlander (“TAW-guh air-LAHN-dair”) built up a social welfare state known as the *folkhemmet*, or “people’s home.” Raoul Wallenberg and Folke Bernadotte were from this country, which helped rescue the majority of Danish Jews during the Holocaust. For 10 points, name this country that remained outwardly-neutral during World War II under Gustav V (“the fifth”) Vasa.

ANSWER: **Sweden** [or Kingdom of **Sweden**]

<Parameswaran, European History>

17. The speaker describes how she visits these places “alone” to “become invisible” and concludes that “if you have ever gone with me... I must love you very much” in a poem by Mary Oliver. A prologue describing the “voices sad and prophetic” in one of these places asks “where are the hearts that beneath it / leaped like the roe.” A poem set in one of these places, which drew on the author’s friendship with Edward Thomas, was labeled by David Orr the “most (*) misread poem in America.” An 1847 epic poem in dactylic hexameter opens by describing one of these places as “primeval.” In a poem set by a “lovely, dark, and deep” one of these places, a wagon-driver sees his horse “[give] his harness bells a shake” and claims to have “promises to keep” and “miles to go before [he sleeps].” For 10 points, what type of place does the speaker of a Robert Frost poem stop by on a snowy evening?

ANSWER: **woods** [or **forest**; accept “How I Go Into the **Woods**” or “Stopping By **Woods** on a Snowy Evening”; prompt on **roads** or “The **Road** Not Taken”] (Edward Thomas inspired “The Road Not Taken,” and the epic poem is Longfellow’s *Evangeline*.)

<R. Keyal, Poetry>

18. These values are the longer of the two types of values discovered and communicated with the STUN protocol, which is used as part of the ICE protocol. A protocol named for the shipworm *Teredo navalis* embeds obfuscated information in these values to avoid “probabilistic rewrite” behavior. In a zone file, these values are contained in A and AAAA (“quad-A”) resource records. These values are dynamically assigned by DHCP servers, with manual assignment used only for special cases. NAT (*) translates between local and global instances of these values found in packet headers. These logical, not physical, values have been practically exhausted for a protocol that represents them in a dot-decimal notation. Computers always identify themselves with the same one of these values: “127-dot-zero-dot-zero-dot-one.” For 10 points, name these values that identify devices on the Internet.

ANSWER: **IP addresses** [or **Internet Protocol addresses**; accept **IPs**; accept **IPv4 addresses** or **IPv6 addresses**; prompt on **addresses**; prompt on **logical addresses** until “logical” is read] (The STUN protocol also communicates port number.)

<Settle, Other Science>

19. **Tourists to this country’s Moucha and Maskali islands engage in whale shark snorkeling and pearl diving in the Gulf of Tadjoura. This is the smaller of two countries to share Lake Abbe, whose natural limestone chimneys are often falsely claimed to be a filming site for the 1968 film *Planet of the Apes*. The Issa people dominate this country’s politics and include its president Ismaïl Omar Guelleh. This country’s (*) Lake Assal is the world’s largest salt reserve. China’s first overseas military base is located in this country, as is Camp Lemonnier, the only permanent US base in Africa. Yemeni refugees have flocked across the Bab el-Mandeb strait to this country, whose capital is nicknamed the “Pearl of the Gulf of Aden.” For 10 points, name this small country north of Somalia on the Horn of Africa.**

ANSWER: **Djibouti** [or Republic of **Djibouti**]

<Evans, Geography>

20. **William Miller’s studies of this condition inspired his stages of change model. It’s not schizophrenia, but Gregory Bateson’s essay “The Cybernetics of Self” applies systems theory to this condition, whose treatment was studied in Project MATCH. The AUDIT and CAGE tests screen for this specific condition, which is modeled by E. Morton Jellinek’s namesake curve and “disease theory” of it. Acamprosate and disulfiram treat this condition, whose sufferers can experience (*) memory loss due to Wernicke–Korsakoff syndrome. Children born to mothers with this condition often display a smooth philtrum, a small head, or learning disabilities. Bill W’s “Big Book” advises people with this condition to submit to a “higher power” and admit powerlessness as part of the Twelve Steps. For 10 points, AA helps its members recover from what form of addiction?**

ANSWER: **alcoholism** [or word forms such as **alcoholic**; accept **alcohol dependence** or **alcohol use disorder** or **AUD**; accept **Alcoholic Anonymous**; prompt on drug **addiction** or **substance use disorder** or drug **abuse** or substance **abuse**]

<R. Keyal, Social Science>

Bonuses

1. After walking into a Southern restaurant and being told they don't serve colored people, this man responded "that's alright, I don't eat colored people." For 10 points each:

[H] Name this comedian and civil rights activist who ran for president in 1968 under the Freedom and Peace Party.

ANSWER: Dick **Gregory** [or Richard Claxton **Gregory**]

[M] Gregory distributed fake money with his face on it in this city, joking that you could tell it was fake because it had a Black man on it. The leader of this city's Rainbow Coalition was assassinated by the FBI in 1969.

ANSWER: **Chicago** (That leader was Fred Hampton.)

[E] This president amused Gregory by making Newt Gingrich sit in the back of Air Force One. Gingrich began several government shutdowns during this president's term after Republicans emerged victorious from the 1994 midterm elections.

ANSWER: Bill **Clinton** [or William Jefferson **Clinton**]

<Raje, American History>

2. The narrator believes that large examples of these things are classified as "military material" for which the CIA will pay 10,000 dollars. For 10 points each:

[H] Identify these things whose similarity to life inspires their use as chapter titles in a 15-year-old boy's mystery book about the murder of Wellington.

ANSWER: **prime** numbers [prompt on **numbers**]

[E] In "Chapter 107" of *The Curious Incident of the Dog in the Night-Time*, Christopher meticulously lists the clues left by this author to help readers discover that Charles Baskerville was startled to death by the title hound.

ANSWER: Arthur Conan **Doyle**

[M] In "Chapter 157," Christopher blacks out after sifting through 43 of these objects hidden in his father's bedroom. In a mystery story, one of these objects stolen by Minister D— is found using a pair of green spectacles.

ANSWER: **letters** [accept "The Purloined **Letter**"]

<Naveh-Benjamin, Long Fiction>

3. Answer the following about the 20th-century musical tradition of writing a concerto for orchestra, for 10 points each.

[E] Arguably the best-known *Concerto for Orchestra* was written by this Hungarian composer of *Duke Bluebeard's Castle* and *Music for Strings, Percussion and Celesta*.

ANSWER: Béla **Bartók** [or Béla Viktor Janós **Bartók**]

[M] Witold Lutoslawski's ("VEE-told loo-toh-SWAFF-skee's") *Concerto for Orchestra* begins with loud repeating notes from one of these instruments. Two players of these instruments "duel" in the finale of Carl Nielsen's "Inextinguishable" Symphony.

ANSWER: **timpani** [or **kettledrums**; prompt on **drums**]

[H] This composer's 1991 *Concerto for Orchestra* was written in the middle of a series of six compositions by this composer dedicated to conductor Marin Alsop ("MAIR-in AL-sop"), her *Fanfares for the Uncommon Woman*.

ANSWER: Joan **Tower**

<Strombeck, Classical Music>

4. For Kenichi Fukui's work using these orbitals' interaction to explain reaction mechanisms, he was awarded half of the 1981 Nobel Prize in Chemistry. For 10 points each:

[M] Name these molecular orbitals whose constructive overlap forms chemical bonds.

ANSWER: **HOMO** ("ho-mo") AND **LUMO** ("loo-mo") [accept **frontier** orbitals; accept **highest occupied** molecular orbital in place of "HOMO"; accept **lowest unoccupied** molecular orbital in place of "LUMO"]

[E] In frontier molecular orbital theory, the LUMO on species that accept pairs of these particles interacts with the HOMO on the nucleophile. A pair of these particles, each with a different spin, occupies an atomic orbital.

ANSWER: **electrons**

[H] The Woodward–Hoffman rules are explained by constructing orbital correlation diagrams and seeing whether this property of the frontier orbitals imposes a barrier. The conservation of this property is used to derive the Woodward–Hoffman rules.

ANSWER: orbital **symmetry**

<Kulkarni, Chemistry>

5. Use of haloperidol to treat schizophrenia stems from this compound's namesake hypothesis, which links schizophrenia to too much of it. For 10 points each:

[E] Name this neurotransmitter. One of this neurotransmitter's pathways begins at the substantia nigra, which produces insufficient amounts of it in Parkinson's disease.

ANSWER: **dopamine** [or **DA**; or **3,4-dihydroxyphenethylamine**; accept **dopaminergic** hypothesis]

[H] The overactivity of this dopaminergic pathway is thought to cause the positive symptoms of schizophrenia. The ventral tegmental area is linked to the nucleus accumbens in this reward pathway.

ANSWER: **mesolimbic** pathway

[M] Another hypothesis links improper levels of this other neurotransmitter to schizophrenia. An [emphasize] *antagonist* of this neurotransmitter's NMDA receptors, ketamine, is being studied for use against treatment-resistant depression.

ANSWER: **glutamate** [accept **glutamic acid**; accept **Glu**; prompt on **E**]

<A. Keyal, Social Science>

6. In 1945, workers gathered at this location on "Loyalty Day" to call for the release of Juan Perón. For 10 points each:

[M] Name this square in Buenos Aires, where "Mothers" and "Grandmothers" organized by Azucena Villaflor ("ah-soo-SEN-ah vee-yah-FLOR") protested against the forced disappearance of their children by the 1970s Argentinian junta.

ANSWER: **Plaza de Mayo** [or **May Square**]

[H] The Vicariate of Solidarity distributed tapestries called *arpilleras* woven by women protesting this leader. The Rettig Report detailed abuses of power under this leader, who was arrested in London and extradited to face trial years after leaving power.

ANSWER: Augusto **Pinochet** [or Augusto José Ramón **Pinochet** Ugarte]

[E] Activist and teacher Carmen Casco de Lara Castro organized women to protest this country's dictator Alfredo Stroessner. Much earlier, this landlocked country was humiliated in the War of the Triple Alliance.

ANSWER: **Paraguay** [or Republic of **Paraguay**; or República del **Paraguay**; or Tavakuairetã **Paraguái**]

<Parameswaran, World History>

7. Scholars often link the Near Eastern goddess Astarte to this title, applied to a goddess honored with cakes impressed in her image in one biblical passage. For 10 points each:

[H] Give this title. The prophet Jeremiah condemned women who made offerings to a goddess with this title, leading other scholars to identify her with an ancient sky goddess worshiped with *kamanu* cakes.

ANSWER: **Queen of Heaven** [or **Malkath haShamayim**]

[E] This goddess of love and war identifies herself as the “Queen of Heaven” during her descent to visit her sister, Ereshkigal. Acolytes who were “neither male nor female” honored this Mesopotamian deity with ritual war dances.

ANSWER: **Ishtar** [or **Inanna**]

[M] R. E. Witt identified this “Queen of Heaven” as the “great forerunner” to Mary Magdalene. In the *Golden Ass*, this deity instructs Lucius to regain his human form by eating a rose at the Navigium festival honoring her.

ANSWER: **Isis** [accept variants like **Aset**, **Iset**, **Ese**, or **Wusa**]

<Meeker, Mythology>

8. To show that a derivative can be brought inside an integral, one can uniformly bound the difference quotients and then apply this theorem. For 10 points each:

[H] Name this theorem that is typically proved using Fatou’s lemma. This theorem holds when, for all n , the absolute value of f -sub- n is bounded by g for some function g in L^1 (“ell-one”).

ANSWER: **dominated convergence** theorem [or Lebesgue’s **dominated convergence** theorem; prompt on **DCT**]

[E] The other major convergence theorem used to swap limits and integrals requires that the sequence of functions has this property. A sequence has this property if it is either always increasing or always decreasing.

ANSWER: **monotone** [or word forms like **monotonic**; accept strictly **monotone** or strictly **monotonic**]

[M] When one of these functions is finite, such as on a probability space, the DCT conveniently holds if the f -sub- n are uniformly bounded. These countably additive functions are used to define the Lebesgue (“luh-BEG”) integral.

ANSWER: **measure** [accept probability **measure**]

<Morrison, Other Science>

9. A poem by Gavriila Derzhavin imagines creating one of these objects “eternal and miraculous,” which inspired a mocking response by Alexander Pushkin that ends “never argue with a fool.” For 10 points each:

[H] An ancient poet predicted his enduring fame by claiming to have made what sort of object that “shall not dread... angry Boreas” and “shall escape the queen of funerals?”

ANSWER: **monuments** [accept “Exegi **monumentum**” or **pamyatnik**]

[E] Derzhavin and Pushkin’s monument poems both respond to this Latin poet’s boast that his poetry is “a monument more lasting than bronze.” This poet used the phrase “carpe diem” in one of his *Odes*.

ANSWER: **Horace** [or Quintus **Horatius** Flaccus]

[M] This other ancient poet claimed in one of his *Isthmian Odes* that the poet’s gift is to “build for all to share a monument of beauty.” This rival of Simonides wrote many *epinikia*, or victory odes.

ANSWER: **Pindar** [or **Pindaros**]

<Karim, Poetry>

10. Rod Dreher's *The Benedict Option* takes its title from this book's claim that "we are not waiting for a Godot, but for another – doubtless very different – St. Benedict." For 10 points each:

[H] Name this book that compares Nietzsche's ("NEE-chuh's") attack on European morality to Kamehameha's abolition of Hawai'ian taboos. This book claims that post-Enlightenment ethical philosophy is incoherent since it has abandoned the concept of *telos*.

ANSWER: **After Virtue**

[E] Alasdair MacIntyre's *After Virtue* helped spur the recent revival of virtue ethics, which is based on the concept of *arete* described in this thinker's *Nicomachean Ethics*.

ANSWER: **Aristotle**

[M] Like MacIntyre, this thinker criticized the incoherence of modern ethics in comparison to Aristotle in her essay "Modern Moral Philosophy." This student of Ludwig Wittgenstein also translated *Philosophical Investigations*.

ANSWER: G. E. M. **Anscombe** [or Gertrude Elizabeth Margaret **Anscombe**]

<French, Philosophy>

11. Elaine Khosrova's popular history of this food argues that it helped spark the Protestant Reformation, since it was banned by the Catholic Church during holy days. For 10 points each:

[E] Name this food that was sold to Germany by Southern European merchants who instead substituted oil for this food. Napoleon III honored the chemist who invented margarine, a substitute for this food.

ANSWER: **butter** [prompt on **dairy**]

[M] It's not in Bourges ("boorz"), but Khosrova described how workers building a cathedral in this region's capital were paid in butter. This region's duke Rollo converted to Christianity after kissing the feet of Charles the Simple.

ANSWER: **Normandy** (Rouen Cathedral contains a "Tower of Butter" named in honor of this practice.)

[H] Martin Luther decried the Pope's ban on butter as a "mockery of fasting" in a 1520 "open letter" to this [emphasize] *two-word* group of people in Germany. That work addressed to this [emphasize] *specific* group attempts to dismantle "three walls" set up to defend Catholic dogma.

ANSWER: **Christian nobility** [accept **Christian nobles** or **Christian noblemen**; prompt on partial answers]

<Raje, European History>

12. The Sahrul festival celebrated by some of these people involves offering flowers of the *sal* tree to deities at sacred groves, sacrificing three roosters, and worshipping ancestors. For 10 points each:

[H] Name or describe this group of people who follow religions including Sarna, Koyapunem, and Donyi-Poloism. Sarna members of this group have protested Christian missionaries depicting Mary as one of these people.

ANSWER: **Adivasi** ("AH-dee-VAH-see") people [or **Scheduled Tribes**; or **Indian tribal** people; or **indigenous Indian** people; prompt on **tribal** or **indigenous** people; reject "scheduled castes" or "Dalits"]

[E] Adherents of Sarna are advocating for census recognition of a separate religious category from this broad one. Indians who aren't Muslim, Christian, Jewish, or Parsi are governed by a Marriage Act named for this majority religion of India.

ANSWER: **Hinduism** [accept **Hindu** Marriage Act]

[M] Some Sarna ancestor-worship is facilitated by homes having two of these spaces: one indoors for ancestors, another outside for their usual function. Gurdwaras also contain large versions of these facilities called *langars*.

ANSWER: **kitchens**

<Karim, Religion>

13. Bolometers (“bo-LOM-uh-ter”) detect changes in this quantity with resistors whose resistance varies with this quantity. For 10 points each:

[M] Name this quantity whose gradient across a conductor generates a current in the Seebeck effect.

ANSWER: **temperature** [or **T**]

[E] An effect named for this scientist, the Seebeck effect, and the Peltier (“pel-tee-AY”) effect are all forms of the thermoelectric effect. This scientist names the SI temperature base unit.

ANSWER: Lord **Kelvin** [or William **Thomson**, or 1st Baron Kelvin]

[H] A form of these statements fundamental to out-of-equilibrium thermodynamics holds between the Seebeck and Peltier coefficients. A Norwegian scientist introduced these statements that claim the linear coefficients relating generalized flows and forces are symmetric.

ANSWER: **Onsager reciprocal** relations [or **Onsager reciprocity** relations; prompt on **reciprocal** relations or **reciprocity** relations]

<Parameswaran, Physics>

14. In a story in this collection, a husband who is “not a bad man” unties his wife’s green ribbon, causing her head to fall off. For 10 points each:

[H] A lesbian writer joins an artists’ colony in “The Resident,” a story from what collection by Carmen Maria Machado?

ANSWER: ***Her Body And Other Parties***

[M] The protagonist of “The Resident” is asked if she ever worries about writing a “trope” based on this female character. A Sandra Gilbert and Susan Gubar study of the “Nineteenth-Century Literary Imagination” is titled for this character, who is the protagonist of *Wide Sargasso Sea*.

ANSWER: the **madwoman** in the **attic** [accept **Bertha** Mason or Bertha **Mason**; accept **Antoinette** Cosway or Antoinette **Cosway**; prompt on **madwoman**; prompt on Mrs. **Rochester**]

[E] Machado’s metamorphosis of the female body is part of a turn towards body-focused feminist work in this genre. Gilbert and Gubar suggest that even normal female flesh often inspires this genre’s characteristic feeling of fright.

ANSWER: **horror** [accept body **horror**; prompt on **Gothic** fiction]

<Karim, Misc. Literature>

15. Answer the following about Japanese forestry methods, for 10 points each.

[E] The Yamaki family preserved a 400-year-old White Pine in this artform that survived the bombing of Hiroshima. Crown and root pruning are used to preserve this artform of miniature trees limited to pots or trays.

ANSWER: **bonsai**

[H] This method of planting developed in 15th-century Japan is used to create forests of cedar wood with no knots. This technique inspired by bonsai results in vertical trees growing out of palms.

ANSWER: **daisugi**

[M] Supposedly, lumber from cedar trees created using daisugi was the only type approved by Sen-no-Rikyu to build houses for performing this activity.

ANSWER: **tea** ceremony [or **chadō** or **sadō** or **cha-no-yu**; or **wabi-cha**; accept any answers involving drinking **tea**]

<Evans, Other Academic>

16. John Yau's 1988 essay "Please Wait by the Coatroom" analyzes the implications of this painting having been installed outside a museum's coatroom for decades. For 10 points each:

[H] Name this Surrealist painting whose crowded canvas depicts a mass of tall figures with crescent-shaped faces among sugarcane stalks. Its artist aspired to be a "Trojan horse" who would "disturb the dreams of the exploiters."

ANSWER: *The **Jungle*** (by Wifredo Lam)

[E] The antagonist of Yau's essay is William Rubin, a curator at this New York museum named for its emphasis on 20th-century art.

ANSWER: **Museum of Modern Art** [or **MoMA**]

[M] Yau dissects a blurb by Rubin comparing *The Jungle* to this painting by Lam's mentor, which now hangs by Henri Rousseau's *The Dream* at the MoMA. It was inspired by a visit to an African exhibit at the Palais du Trocadéro ("pah-LAY du trock-ah-day-ROH").

ANSWER: *Les **Demoiselles d'Avignon*** ("lay dum-wah-ZELL dah-veen-YAWN") [or *The **Young Ladies of Avignon***] (by Pablo Picasso)

<R. Keyal, Painting and Sculpture>

17. Bdelloidea ("DELL-oy-dee-ah") is a class of ancient asexuals within this phylum of microscopic animals with bilateral symmetry. For 10 points each:

[M] Name this phylum whose members have a mastax with jaw-like structures called trophi. Its members propel food into their mouths with a corona whose motion resembles a rotating wheel.

ANSWER: **rotifers** [or ***Rotifera***]

[E] The coronas with which rotifers filter feed consist of a ring of these structures. In many organisms, these structures beat to sweep material across tissues, unlike flagella, which provide locomotion.

ANSWER: **cilia** [or **cilium**]

[H] Bdelloids are desiccation tolerant, but remarkably do so without this sugar. In many anhydrobiotic organisms like tardigrades, this sugar replaces water to form a glassy matrix that protects biomolecules and membranes.

ANSWER: **trehalose**

<Settle, Biology>

18. In this country, revolutionaries against the colonial elite were defeated at the Battle of Montgomery's Tavern. For 10 points each:

[M] Name this modern-day country home to an anti-democratic elite called the Family Compact.

ANSWER: **Canada**

[H] The Upper Canada Rebellion led the British to commission a report commonly named after this politician, which recommended a merger of Upper and Lower Canada and sparked a movement towards self-governance.

ANSWER: Lord **Durham** [or the 1st Earl of **Durham**, or John **Lambton**; accept **Durham** Report]

[E] The Durham Report was criticized by speakers of this minority language concerned about cultural assimilation. This language widely spoken in Lower Canada is now the majority language of Quebec.

ANSWER: **French** [or **Français**; accept **French** Canadians]

<Raje, Other History>

19. The design of this object consists of a fiberglass shell seat attached to a single aluminum stem, designed to look like they are the same material. For 10 points each:

[M] Name this futuristic-looking model of chair designed by Eero Saarinen (“AIR-oh SAH-ree-nen”) that gained popularity after it was used in *Star Trek*.

ANSWER: **Tulip** chair

[E] Noboru Nakamura designed the high-backed Poäng chair for this Swedish furniture retailer with a blue-and-yellow logo.

ANSWER: **IKEA**

[H] This designer created a five-legged oak frame for an expressionist *African Chair*, which had backing woven by Gunta Stözl (“SHTULT-sul”). This member of the Bauhaus took inspiration from bicycle handlebars to use tubular steel in his *Wassily Chair*.

ANSWER: Marcel **Breuer** (“BROY-er”)

<French, Other Arts>

20. In a 2014 play, race and class tensions escalate between Rose, Sam, and Avery while they work at a rundown one of these facilities in Massachusetts. For 10 points each:

[H] Give this setting of that Pulitzer-winning three-hour play by Annie Baker. After many bell rings and scene resets, the couple in David Ives’s *Sure Thing* finally call for a waiter so that they can leave for one of these places.

ANSWER: a movie **theater** [or the **movies**; accept **movie palace**; accept **cinema**]

[M] Baker’s commentary on labor automation in *The Flick* parallels this author’s discussion of diminishing factory jobs in her 2017 play *Sweat*, which garnered this author of *Ruined* her second Pulitzer Prize.

ANSWER: Lynn **Nottage**

[E] Baker also adapted Anton Chekhov’s play about this aging man, who feels he has wasted his life managing his brother-in-law’s estate. A Christopher Durang play is about this uncle and his siblings Sonia and Masha.

ANSWER: Uncle **Vanya** [accept **Vanya and Sonia and Masha and Spike**]

<R. Keyal, Drama>