**ACF Regionals 2018**

**Edited by Auroni Gupta, Will Alston, Kenji Shimizu, Will Holub-Moorman, and Stephen Eltinge**

**Packet by Michigan State A (Erik Bubolz, Harris Bunker, Tony Incorvati, Jakob Myers), Carleton University A (Cameron Amini), and Rochester A (John Hayden)**

Tossups

1. This phenomenon is resolved without the help of a theoretical model in costly DNS methods, which numerically solve for the rank-2 tensor appearing in the RANS equations. Werner Heisenberg’s doctoral thesis concerned the appearance of this phenomenon in systems described by the Orr–Sommerfeld equation. When this phenomenon is present in a boundary layer, the Prandtl number relating heat flux and momentum flux is assumed to be close to 1, a result following from the Reynolds analogy. Below the Kolmogorov microscale, kinetic energy associated with this regime is dissipated into heat by viscous forces. The dominance of inertial forces is responsible for the eddies and vortices that appear in this regime. For 10 points, a high Reynolds number indicates the presence of what chaotic flow regime contrasted with laminar flow?

ANSWER: **turbulent** flow [or **turbulence**]

<Physics>

2. This book’s opening word was first rendered in Greek as *mataiotes* (“mah-tah-YO-tays”), which may explain its corruption from an original meaning of “breath.” This book’s final chapter lists times such as “when the keepers of the house tremble” and “when the almond tree blossoms” as times to perform its invocation to “Remember your Creator,” and compares shepherds’ goads to the words of men such as its narrator, an unnamed “Teacher.” John Paul II’s encyclical *Laborem exercens* says “no one on earth… could not apply” words from this book’s discussion of the fruitlessness of labor “under the sun.” This book says “for everything there is a season, and a time for every purpose under heaven” and opens by declaring that all is *hevel* (“HEH-vell”) or “vanity.” For 10 points, name this Bible book consisting of Solomon’s reflections, whose English name is a Greek word for congregations.

ANSWER: ***Ecclesiastes*** [accept ***Kohelet*** or ***Koheleth***]

<Religion>

3. A. C. Bradley argued that this character “is denied the dignity of verse” while performing a certain action. This character exclaims “Hell is murky!” before claiming that “none can hold our power to account.” The Waiting-Gentlewoman refuses to tell the Doctor what this character says without an independent witness. An intentionally pointless question about this character titles the best-known essay by Lionel Knights. This character is described as having “light by her continually” before she laments that “all the perfumes of Arabia” will not mask the smell of blood. Sarah Siddons controversially placed a candle on the ground in her portrayal of this character during a scene in which she sleepwalks and cries “Out, damned spot!” while miming washing her hands. For 10 points, name this Scottish noblewoman who convinces her husband to kill Duncan in a play by William Shakespeare.

ANSWER: **Lady Macbeth** [do not accept or prompt on “Macbeth”; accept “How Many Children Had **Lady Macbeth**?”]

<Miscellaneous Lit>

4. This piece was recorded with an unusually slow tempo in 1971 by Karl Böhm and the Vienna Philharmonic. This piece borrows thematic material from a section of Handel’s *Messiah* titled “And with his stripes we are healed” for the first subject of its second-movement double fugue. It opens with strings accompanying the notes [read slowly] “D C-sharp D E F” played on the bassoons, which are joined by the basset horns playing a fifth higher. A trombone solo occurs in this piece’s *Tuba mirum*, which is in B-flat like its final three movements; however, like Verdi’s piece in the same genre, this piece’s tonic key is D minor. At the request of the composer’s widow Constanze, this piece was completed by Franz Süssmayr. For 10 points, name this mass for the dead by the composer of *Eine kleine nachtmusik* (“EYE-nuh KLY-nuh NAKT-moo-zik”).

ANSWER: Wolfgang Amadeus **Mozart**’s **Requiem** in D minor [or **K**V**626**; prompt on partial answer; prompt on Requiem in D minor]

<Music>

5. A music video by this band incorporates footage from *¡Qué viva México!* by Sergei Eisenstein and is for a song that states “That vulture came to try and steal your name but now you found a gun.” The father of this band’s lead singer was a member of Los Four, a Chicano art collective. Posters asking “Who laughs last?” and “Who is above the law?” by Barbara Kruger appear in a music video by this band that uses the phrase “five-sided fistagon.” This band used a Mel Ramos picture of a boy in a superhero costume as the artwork for *Evil Empire* and parodied Robert Indiana’s *LOVE* sculpture on the cover of their cover album *Renegades*. A photograph of a Vietnamese monk burning himself appears on their debut album, which includes a track that repeats “Fuck you, I won’t do what you tell me.” For 10 points, name this leftist rap-metal band behind “Bulls on Parade” and “Killing in the Name.”

ANSWER: **Rage Against the Machine** [or **RATM**]

<Trash>

6. A diplomat from this country controversially approved the deployment of SADF troops against SWAPO while serving as UN Special Representative in Namibia and special envoy for negotiating Kosovo’s status. A Moscow based organization that enforced an agreement signed in this country was founded by Yelena Bonner, the wife of Andrei Sakharov. Principles surrounding the ethics of human experimentation were codified in a declaration signed in this country, which lends its name to a process in which a small country adopts a larger neighbor’s foreign policy prerogatives. Human Rights Watch was founded to enforce ten guidelines from a 1975 declaration signed in this country, which include territorial integrity and self-determination and were approved by Leonid Brezhnev, Gerald Ford, and most European heads of state. For 10 points, name this country where the Helsinki Accords were signed.

ANSWER: **Finland** [or **Suomi**] (The first man referenced is Martti Ahtisaari.)

<European History post-600>

7. Calixarenes with XXYZ or WXYZ substitution patterns in their upper rim are said to possess the “inherent” form of this property. Only molecules with this property can give rise to the cholesteric liquid crystal phase. Cellulose or cyclodextrin-derived stationary phases with this property are used in a type of column chromatography. This property is often introduced into compounds by reacting them with oxazolidinones, BINOL, or other namesake “auxiliaries.” Molecules with this property are classified as D or L, depending on the direction that they rotate plane-polarized light. Differing spatial arrangements of four distinct groups bound to an atom with this property give rise to enantiomers. For 10 points, name this property of molecules that cannot be superimposed upon their mirror images, named after the Greek word for “handedness.”

ANSWER: **chiral**ity

<Chemistry>

8. At the end of this novel, a man imagines teaching a map-reading class in which he overlays a coordinate system over a photo of Betty Grable in a bathing suit. In a moment of defiance in this novel, a man places a single cigarette butt on an immaculately-kept tent floor. A boy smolders with rage ever since the day his father had stolen his kill on a deer hunting trip, as recounted in the second of the “Time Machine” segments that provide the backstory for this novel’s characters. Tallulah Bankhead called the author of this novel “the young man who doesn’t know how to spell fuck,” because this novel uses the word “fug” instead. After intentionally leading Lieutenant Hearn into an ambush, the sadistic Sergeant Croft orders the surviving men of this novel to scale Mount Anaka. For 10 points, a platoon of soldiers fight the Japanese on the island of Anopopei in what World War II novel by Norman Mailer?

ANSWER: *The* ***Naked and the Dead***

<Long Fiction>

9. One of these figures stands between the artist and her pet deer Granizo in the now-lost painting *The Wounded Table*. Another of these figures stands alongside a fertility idol, a straw man on a donkey, and Judas, who are the title *Four Inhabitants* being observed by its artist’s childhood self. One of these figures wears a boa and stands next to her creator at the center of *Dream of a Sunday Afternoon in Alameda Park*. These figures are dressed in gowns and observe another of them giving birth atop a pile of books in a section of José Clemente Orozco’s mural series *The Epic of American Civilization*. The printmaker José Guadalupe Posada created a character of this type named La Calavera Catrina. For 10 points, name these figures popular in Mexican art, which often serve as decorations during Day of the Dead celebrations.

ANSWER: **skeleton**s [or **esqueleto**s; accept **calavera**s until “Calavera” is read; accept **skull**s or **cráneo**s; prompt on dead people or muertos]

<Painting/Sculpture>

10. A history of this non-European empire is structured as a 1400-page letter to a monarch who never read it and is titled *New Chronicle and Good Government*. Some record-keeping documents from this empire were allegedly forged by Clara Miccinelli. This empire’s failure to use stairs to delay horse-riding enemies is noted in a history by Charles Mann, which examines the strife that ensued when one of its rulers died in an epidemic. A history of this empire is the best-known work of the non-poet Garcilaso de la Vega. A defeat for this empire is depicted on the cover of Jared Diamond’s *Guns, Germs, and Steel*. This empire called itself the “Land of Four Corners” or *Tawantinsuyu* (“tah-wan-teen-SOO-yoo”) and kept records on knotted-string devices burned *en masse* during colonial times, called *khipus* (“KEE-poos”). For 10 points, name this empire whose capital was Cusco.

ANSWER: **Inca** empire [or **Incan** empire; accept **Tawantinsuyu** until read]

<Historio/Archaeo>

11. Benjamin O. Lesage reads one of these poems calling life a “breath blown from the vasty deeps” moments before fleeing the sinking *Titanic* without this collection’s original manuscript in Amin Maalouf’s novel *Samarkand*. In one of these poems, pieces belonging to “Men” and “Destiny” are arrayed atop a “Chequer-board of Nights and Days.” A poem in this collection subverts a parable in the Book of Jeremiah by asking, “Who is the potter, pray, and who the pot?” The speaker of the twelfth of these poems exclaims: “Oh, Wilderness were Paradise enow!” upon listing “A Book of Verses underneath the Bough, / A Jug of Wine, a Loaf of Bread– and Thou.” For 10 points, Edward FitzGerald produced the first English translation of what set of quatrains penned by Omar Khayyám?

ANSWER: ***Rubaiyat*** *of Omar Khayyám*

<Non-Epic Poetry>

12. A Montreal-born player of this instrument, often called its “Maharaja,” formed a trio with Herb Ellis and Ray Brown that recorded an album at the Stratford Shakespeare Festival. Another player of this instrument composed a standard whose name comes from its twelve-bar C major chord progression, “C Jam Blues.” Bill Cunliffe based his style on a player of this instrument who was commemorated by another of its players on the song “In Walked Bud.” Bud Powell played this instrument, as did the composer of “Rhythm-a-Ning,” who was touted as the “Genius of Modern Music” by Blue Note Records. Another of its players, Oscar Peterson, cried and gave it up for two months when he thought he couldn’t be as good as Art Tatum. For 10 points, name this primary instrument of the composer of “Round Midnight,” Thelonious Monk.

ANSWER: **piano** [prompt on keyboard]

<Other Art (Jazz)>

13. The parameter theta quantifies how much this phenomenon is size-asymmetric. Joseph Connell said that the “ghosts of [this phenomenon] past” are explained by coevolutionary divergence. This phenomenon makes having a lower value for the R-star parameter more favorable. In a model for this phenomenon, all of the terms in the interaction matrix alpha have positive values. The Beverton–Holt model can be generalized to the “scramble” form of this phenomenon. Georgy Gause (“GYOR-ghee GOW-zee”) concluded that no two species occupying the same niche can coexist due to this phenomenon, a principle called its namesake “exclusion.” To generate Lotka–Volterra phase-plane diagrams, a coefficient named for this phenomenon for one species is divided by the carrying capacity for a different species. For 10 points, name this reduction in fitness in organisms and species due to a conflict over resources.

ANSWER: **competition**

<Biology>

14. Objects used during this activity include so-called “yokes” to be worn at the hip, which are depicted on reliefs at Dainzú (“dah-een-SOO”). In one story, a man invited to take part in this activity has his head turned into a calabash after it is cut off and put into a tree. When challenged to an instance of this activity, some characters journey past rivers of pus and blood to meet the challenge. After being decapitated by the bat god Camazotz, a hero uses his own head as equipment in this activity; with his brother, he is then able to defeat One-Death and Seven-Death, the Lords of Xibalba (“shee-BAL-bah”), in it. Winners of this game would make an object representing the sun go through a stone ring and could be sacrificed to gods like Gukumatz. The Hero Twins played, for 10 points, what ritual sport of Mesoamerica?

ANSWER: the Mesoamerican **ballgame** [or **pok-ta-pok**, or **ōllamaliztli**, or **tlachtli**, or **juego de pelota**; prompt on sports; do not accept or prompt on extremely wrong answers like “soccer” or “baseball”]

<Mythology>

15. A group named for these objects won the Battle of Paper Bridge after its commander sent a letter goading the enemy general to fight and was mostly composed of ethnic Zhuang (“jwong”). Small examples of these things used by samurai and other Japanese troops are called *sashimono*. A system named for these things was supplemented by a so-called “green” corps of ethnic Han. In 1865, Liu Yongfu formed a force named for one of these things that crossed into Vietnam to fight French imperialists; that army is named for a “black” one. The system by which the Qing (“ching”) dynasty organized its Manchu warriors is named for eight of these things. A sacred one of these from the Abbey of St. Denis (“san duh-NEE”) became the royal French one, called the Oriflamme (“oh-ree-flahm”). For 10 points, identify these objects, which title a song that mentions “the rockets’ red glare” sung before sports games.

ANSWER: **banner**s [or battle **standard**s; or **flag**s; accept Black **Flag** Army or Eight **Banner**s or Star-Spangled **Banner**; accept any specific flags/banners]

<Other History>

16. Convection in this region is measured by a set of 35 antenna arrays that form the SuperDARN network. Sq- and L-variations are caused by air movement in this region’s “dynamo,” which hosts the narrow eastward-flowing EEJ band. The lower boundary of this region creates a waveguide that hosts extremely low-frequency modes called Schumann resonances. Solar flares can trigger namesake “sudden disturbances” in this region. The outermost F region is the only portion of this layer that exists at night. That portion, also known as the Appleton–Barnett layer, lies above the Kennelly–Heaviside layer. This atmospheric layer is responsible for most reflection and refraction of radio signals. For 10 points, name this layer of the atmosphere in which solar radiation creates a high concentration of charged particles.

ANSWER: **ionosphere** [accept **D** region until “F region”; accept **E** region or **F** region until “waveguide”; accept **Appleton–Barnett** layer or **Kennelly–Heaviside** layer until “waveguide”; prompt on magnetosphere, Earth’s magnetic field, Earth’s atmosphere, mesosphere, thermosphere, or exosphere]

<Other Science (Earth Science)>

17. In a novel by this author, a character who thinks he has been poisoned when he is served locally-grown coffee is overthrown in a coup that anticipated a series of real-life coups in this author’s home country later the same year. A woman quips under her breath about her husband’s “guns that never shot,” prompting him to actually fire a gun at her, in a novel by this author that was the inaugural entry of an influential series published by Heinemann. At a 1962 conference, this author controversially proclaimed that the “national literature” of his “and of many other countries” “is, or will be, written in English.” This author wrote about the corrupt Minister of Culture Chief Nanga in *A Man of the People*, and penned the essay “An Image of Africa,” in which he declared that Conrad’s *Heart of Darkness* was racist. For 10 points, name this author who wrote about Okonkwo in *Things Fall Apart*.

ANSWER: Chinua **Achebe** [or Albert Chinụalụmọgụ **Achebe**]

<Long Fiction>

18. During a referendum on moving this state’s capital, Marcus Daly’s firm campaigned to keep it in a company town. This state’s leading industry gave “rustling cards” to disruptive workers, who were organized by Frank Little, who was lynched here. The late 19th-century politics of this state were dominated by the three “Copper Kings.” It elected the only representative to vote against both World Wars. The Nez Perce (“nezz purse”) Chief Joseph was captured in this state’s Bear Paw Mountains. This state elected the first female representative in US history, Jeanette Rankin. An oligarchy of mining companies in this state controlled its town of Butte, as well as the *Missoula Herald* and the *Billings Gazette*. For 10 points, name this Western state whose capital is Helena.

ANSWER: **Montana**

<US History>

19. The brother of Julian Barnes, Jonathan Barnes, has written about this school of thought in works titled for its “toils” and “modes.” A thinker associated with this school of thought described an artist flinging a sponge at a painting of a horse to illustrate the unexpected sources of “tranquility.” This school of thought rejected the concept of *katalepsis* in favor of one based on “incomprehensibility,” or *acatalepsia*. It’s not phenomenology, but a member of this school of thought discussed the use of *epoche* (“eh-po-KAY”) to induce *ataraxia* in a work that criticizes the “Academics” and the “Dogmatics.” Sextus Empiricus promoted this school of philosophy in his *Outlines of Pyrrhonism*.For 10 points, identify this Greek philosophical school that cast doubt on humans’ ability to gain knowledge about the world.

ANSWER: **Skepticism** [accept **Pyrrhonism** until read; accept Academic **Skepticism**]

<Philosophy>

20. In the introduction to one book, this thinker rhetorically asked why it was “more audacious to review Moses than Blackstone, the Jewish code of laws than the English code of jurisprudence?” In an essay, this thinker argued that a certain group should not “stand aside and see ‘Sambo’ walk into the kingdom first.” This thinker’s best-known work argues that because women “make the voyage of life alone… they must know something of the laws of navigation.” This thinker collaborated with Matilda Joslyn Gage on a critique of the subservience of females in Christian theology, *The Woman’s Bible*, and resigned the leadership of NAWSA with a speech arguing for the title “solitude of self” as a rationale for women’s suffrage. For 10 points, name this 19th-century suffragist who frequently collaborated with Susan B. Anthony.

ANSWER: Elizabeth Cady **Stanton**

<Social Science>

Bonuses

1. A pioneering study of these places by Stanton and Schwartz influenced a book by Erving Goffman that analyzes the “tinkering trades” associated with them, as well as the “moral careers” of their inhabitants. For 10 points each:

[10] Name these places. As part of his namesake experiment, David Rosenhan and others faked symptoms of schizophrenia in order to gain admittance to these places.

ANSWER: mental **asylum**s [accept equivalents like insane **asylum**s, **mental hospital**s, and **psychiatric hospital**s; prompt on hospitals]

[10] Rosenhan studied under this Scottish psychiatrist and founder of Kingsley Hall, who criticized the medicalization of schizophrenia in works such as *The Politics of Experience and the Bird of Paradise*.

ANSWER: R. D. **Laing** [or Ronald David **Laing**]

[10] Laing’s work was a key source of inspiration for the “schizoanalysis” advocated by Félix Guattari and this French philosopher in their books *Anti-Oedipus* and *A Thousand Plateaus*.

ANSWER: Gilles **Deleuze** (“jeel duh-LOOZ”)

<Social Science>

2. The lower half of this photograph is chiefly occupied by women wearing shawls, while the upper half includes most of the men. For 10 points each:

[10] Name this black-and-white photograph that depicts numerous lower-class passengers on board the *SS Kaiser Wilhelm II*.

ANSWER: *The* ***Steerage***

[10] The photographer of *The Steerage*, Alfred Stieglitz, worked in this city where he founded the 291 Gallery along Fifth Avenue. Other photographs of this city’s lower class were collected in Jacob Riis’s (“reese’s”) *How the Other Half Lives*.

ANSWER: **New York** City [or **NYC**]

[10] The many photographs of Stieglitz’s abstract series *Equivalents* primarily depict this subject matter. Late in life, Georgia O’Keeffe painted a 24-foot-wide canvas of this subject matter, which now hangs in a stairwell at the Art Institute of Chicago.

ANSWER: **cloud**s [or the **sky**; prompt on weather] (The painting is *Sky Above Clouds IV*.)

<Other Art (Photography)>

3. Answer the following about the Zoroastrian concept of the afterlife, for 10 points each.

[10] Zoroastrianism was the first major religion to describe the afterlife as one of these places, much like Islam, since the Arabic word *jannah* refers to one of these. Jesus prayed in one in Gethsemane (“geth-SEH-muh-nee”).

ANSWER: **garden**s

[10] The Chinvat Bridge to paradise is guarded by three figures: Sraosha, Rashnu, and this *yazata*. Persian traditions around this figure were corrupted into a religion centered around a scene of a bull-slaying, or tauroctony (“tor-OK-tuh-nee”), in which Sol Invictus is often depicted.

ANSWER: **Mithra** [or **Mithras**]

[10] Zoroaster taught that one takes the first footsteps into paradise with three “good” things. Name [emphasize] *two* of those three things, which are called *humata*, *hukhta*, and *hvarshta* in Avestan.

ANSWER: **thought**s AND/OR **word**s AND/OR **deed**s

<Religion>

4. This critic argued that a “system of civil and economical prudence” could be constructed from the collected plays of Shakespeare in a 1765 “preface” to the Bard’s work. For 10 points each:

[10] Name this English literary critic who also published his social and literary criticism in his own weekly periodical, *The Rambler*.

ANSWER: Samuel **Johnson**

[10] In the 60th issue of *The Rambler*, Johnson argued for a realistic approach to writing works of this type, opposing what he thought was the overly praiseful style of authors such as Plutarch. James Boswell wrote a famous work of this type about Samuel Johnson himself.

ANSWER: **biography** [or a **life**; or **lives**]

[10] Johnson penned a 1744 biography of this English poet and convicted murderer best-known for writing *The Wanderer* after befriending and accompanying him on his famous nighttime walks around London.

ANSWER: Richard **Savage** [accept *The Life of Mr Richard* ***Savage***]

<Miscellaneous Lit>

5. Odd customs from these islands recorded by ancient writers include dismembering dead bodies with wooden knives and marriages in which the bridegroom was the last in his family to sleep with his wife. For 10 points each:

[10] Name this group of islands home to the Megalithic Talaiotic (“tah-lah-YOT-ic”) civilization, named after large stone towers found here.

ANSWER: **Balearic** Islands [or Islas **Baleares**; or **Majorca** and **Minorca**; or **Mallorca** and **Menorca**; or **Gymnesian** islands]

[10] Similar to the *talayot* on the Balearic Islands are the Megalithic *nuraghi* (“noo-RAH-ghee”) found on this Italian island, as well as the *torri* found on Corsica, this island’s French-owned counterpart to the north.

ANSWER: **Sardinia** [or **Sardegna**]

[10] The “passage” type of these structures in Neolithic art was first described by Spanish archaeologists and later found to be commonplace in Neolithic cultures near the Atlantic. Dolmens are examples of these structures, whose namesake “goods” are commonly interpreted as votive offerings.

ANSWER: **grave**s [or **tomb**s; accept **grave good**s or **passage grave**s or **passage tomb**s or **burial mound**s; prompt on mounds; do not accept or prompt on “graveyards” as these are almost always tombs for one individual or family]

<Historio/Archaeo>

6. Due in large part to its integration with the “Life with Playstation” client on many PS3s, this project became the first computing system of any kind to reach a performance level above one petaFLOPS. For 10 points each:

[10] Name this distributed computing system, developed by Vijay Pande at Stanford, that allows users to contribute idle processing time to determining how proteins attain their three-dimensional conformation.

ANSWER: **folding@home**

[10] Folding@home enabled the identification of a beta-hairpin structure important to the misfolding of amyloid beta in this neurodegenerative disease, the predominant cause of dementia.

ANSWER: **Alzheimer**’s disease [or **AD**]

[10] A similar project called rosetta@home takes this computational approach, which predicts the structure of a protein complex given individual protein structures as inputs.

ANSWER: protein–protein **dock**ing [accept any answer that contains the word **dock**ing or any word forms thereof]

<Biology>

7. While employed in this profession, an author collected dozens of three- to six-line surrealistic poems about nature in his volume *Micrograms*. For 10 points each:

[10] Identify this non-literary profession held by the Ecuadorian poet Jorge Carrera Andrade and, until his resignation in response to the Tlatelolco Massacre, by Octavio Paz.

ANSWER: **diplomat** [or **ambassador**; or **attaché**; or **consul**; or **envoy**; accept other synonyms; accept specific countries if they are mentioned]

[10] Before embarking on a string of consulships throughout Asia and in Spain, this Chilean Communist poet published his *Twenty Love Poems and a Song of Despair*.

ANSWER: Pablo **Neruda** [or Ricardo Eliécer Neftalí **Reyes** Basoalto]

[10] While stationed in Madrid, Neruda became a primary witness to the carnage of the Spanish Civil War, which is the subject of this poem that he ends by thrice inviting the reader to “Come and see the blood in the streets!”

ANSWER: “**I Explain a Few Things**” [or “**I’m Explaining a Few Things**”; or “A **Few Things Explained**”; or “**Explico algunas cosas**”]

<Non-Epic Poetry>

8. Answer the following about piracy in the Indian Ocean, for 10 points each.

[10] A pirate colony called Libertatia was founded on this large island, which was settled by migrants from Indonesia whose descendants comprise the Malagasy people.

ANSWER: **Madagascar**

[10] For defeating pirate Chen Zuyi, who raided ships entering the Indian Ocean, Zheng He (“jung huh”) was honored with incense in this city. Seized by Portugal in 1511, this city controlled trade through a nearby waterway of the same name.

ANSWER: **Malacca** [accept Strait of **Malacca**]

[10] Tons of this ruler’s treasure was stored on the armed ship *Ganj-i-Sawai*, which was captured by pirate Henry Avery in an incident that almost dragged the British East India Company into war.

ANSWER: **Aurangzeb** Alamgir [or **Muhi ud-Din Muhammad**; prompt on Muhammad]

<Other History>

9. The four Maxwell relations are the statements of equality between the second derivatives of these quantities. For 10 points each:

[10] Give this term for scalar quantities, such as internal energy, enthalpy, and Helmholtz free energy, that provide information about the state of a system.

ANSWER: thermodynamic **potential**s [or **fundamental function**s]

[10] The final potential is the “free energy” named for this scientist, which indicates the spontaneity of a reaction.

ANSWER: Josiah Willard **Gibbs**

[10] When writing the definition of each thermodynamic potential, a pair of these variables is held constant. For example, entropy and volume serve as variables of this type in the expression for internal energy.

ANSWER: **natural** variables

<Chemistry>

10. This character prophecies that Deirdre (“DEER-drah”) will long for a man who has hair like a raven, a description matched by the beautiful youth Naoise (“NEE-shuh”). For 10 points each:

[10] Name this character from the court of King Conchobar. By some accounts, he prophesied to Queen Nessa that it was an auspicious day for begetting a king, after which he lay with her and became Conchobar’s father.

ANSWER: **Cathbad** (“KATH-vath”) [or **Cathbhadh**]

[10] Cathbad is an example of this kind of Celtic priest. Julius Caesar recorded them practicing the “wicker-man” ceremony in Gaul.

ANSWER: **druid**s [or **druides**]

[10] Druids supposedly fought a spiritual battle with Saint Patrick upon this hill, where High Kings of Ireland were traditionally crowned at the Stone of Destiny.

ANSWER: Hill of **Tara**

<Mythology>

11. Several categories for these documents were created under the 1965 Immigration Act. For 10 points each:

[10] Identify these documents, whose somewhat controversial H1-B type is designed to allow foreign employers to fill specialized occupations.

ANSWER: **visa**s [accept **H1-B visa**s]

[10] Today, visa programs generally require that workers be paid this kind of wage, defined as the hourly wage paid to local skilled labor. Paying this kind of wage on all federal contracts was mandated by the Davis–Bacon Act.

ANSWER: **prevailing** wage

[10] This guest worker program, established in 1942, brought many Mexican manual laborers to work on US farms and railroads. Its use declined in the 1960s after participating employers were required to offer the same non-wage benefits to participants as to US workers.

ANSWER: **Bracero** program

<US History>

12. This document asserts that the title figure is the civilized world’s “merciless enemy and continues to inhabit it with only one purpose—to destroy it.” For 10 points each:

[10] Name this 1869 manifesto written by the Nihilist philosopher Sergey Nechayev shortly before he was expelled from the First International.

ANSWER: ***Catechism of a Revolutionary*** [accept similar answers that include both the words **catechism** and **revolutionary**, such as *The* ***Revolutionary Catechism***]

[10] Nechayev wrote *Catechism of a Revolutionary* under the tutelage of this Russian anarchist and author of works like *God and the State*.

ANSWER: Mikhail **Bakunin**

[10] Bakunin wrote that the Marxist push for a “dictatorship” of this social class was flawed because “no dictatorship can have any other aim but that of self-perpetuation.” In Marxist theory, this social class [emphasize] *does not* own the means of production.

ANSWER: **proletariat** [or **proletarian**]

<Philosophy>

13. One of these characters has a recurring dream of a coffin containing piles of clothes laid atop the bodies of her male relatives. For 10 points each:

[10] Identify the collective nickname of the sisters Minerva, Patria, and Mate (“MAH-tay”), who are strangled, clubbed, and thrown in a Jeep that is pushed off a cliff by the henchmen of a dictator in a 1994 novel.

ANSWER: **butterflies** [or **butterfly**; prompt on Mirabal sisters; the novel is *In the Time of the Butterflies* by Julia Alvarez]

[10] The aforementioned dictator, Rafael Trujillo (“troo-HEE-yo”), inflicts a supernatural curse called a *fukú* upon the family of an overweight Dominican teen who is struggling to lose his virginity in this author’s novel *The Brief Wondrous Life of Oscar Wao*.

ANSWER: Junot **Díaz**

[10] Trujillo orders his goons to execute anyone with a non-standard pronunciation of the Spanish word for “parsley” in *The Farming of Bones*, a novel by this Haitian author of *Breath, Eyes, Memory*.

ANSWER: Edwidge **Danticat** (“ed-WEEJ don-tee-KAH”)

<Long Fiction>

14. The name of this quantity derives from the fact that it generates an SU(2) (“S-U-two”) symmetry. For 10 points each:

[10] Name this quantity, whose third component is defined as half the difference between the number of up and down quarks in a particle.

ANSWER: **isospin** [or **isotopic spin**; or **isobaric spin**; do not accept or prompt on “spin” or “weak isospin”]

[10] The concept of isospin was originally introduced to explain the similar mass of these two particles composed of up and down quarks. These two particles, one charged and one neutral, make up the nuclei of atoms.

ANSWER: **proton**s AND **neutron**s

[10] Isospin accounts for only a small sector of the larger six-dimensional symmetry described by this property, whose different components include strangeness, charm, and bottomness.

ANSWER: quark **flavor**

<Physics>

15. Both Johannes Brahms’s third piece in this genre and Charles Ives’s second piece in this genre quote the opening motif of Beethoven’s Fifth Symphony multiple times. For 10 points each:

[10] Name this genre of a long one-movement B minor piece that exhibits “double function form” by exhibiting overall unity as well as several distinctly identifiable sections.

ANSWER: **piano sonata** [prompt on sonata]

[10] This Hungarian virtuoso composed the Piano Sonata in B minor, as well as the *Mephisto Waltzes*.

ANSWER: Franz **Liszt** [or **Liszt** Ferenc]

[10] The *lassan* (“LAW-shawn”) section of this piano piece by Liszt begins in the tempo *Lento a capriccio* (“LEN-toh ah kah-PREE-cho”) with a C-sharp major chord, but rapidly establishes the main key of C-sharp minor.

ANSWER: **Hungarian Rhapsody No. 2** in C-sharp minor [accept **S. 244/2**; prompt on *Hungarian Rhapsodies*]

<Music>

16. This mathematician introduced the root test for convergence of infinite series. For 10 points each:

[10] Identify this French mathematician who names a formula for the remainder of a Taylor series that is not the Lagrange formula.

ANSWER: Augustin-Louis **Cauchy** (“koh-SHEE”)

[10] Cauchy was a pioneer of the rigorous treatment of this subfield of mathematics. The root test is a useful result in its “real” branch, while Cauchy’s integral formula is central to its “complex” branch.

ANSWER: **analysis** [accept real **analysis** or complex **analysis**]

[10] Cauchy introduced the condensation test, which states that a series with non-negative, non-increasing terms *a*-sub-*n* converges if and only if a certain other series does. Give the first four terms of that other series.

ANSWER: ***a*-sub-1** plus **2 *a*-sub-2** plus **4 *a*-sub-4** plus **8 *a*-sub-8** and so on

<Other Science (Math)>

17. Answer the following about panoramic works of art, for 10 points each.

[10] Many panoramic Chinese paintings, such as the Song Dynasty masterpiece *Along the River During the Qingming Festival*, were created on these objects made from paper or silk.

ANSWER: hand**scroll**s

[10] Claes Visscher, who made a panoramic engraving of London, also created one of these works that shows the rough outline of a lion. A massive one of these works hangs on the back wall of Jan Vermeer’s *The Art of Painting*.

ANSWER: **map**s of the Low Countries

[10] An often-computerized method of constructing panoramas is named for Giovanni Paolo Panini, whose paintings often depicted this subject matter. In addition to etching fantastical prisons, Giovanni Battista Piranesi made several “views,” or *vedute*, of this subject matter.

ANSWER: ancient Roman **ruin**s [or **ancient building**s; accept answers that indicate **old** or **destroyed building**s; prompt on Roman buildings]

<Painting/Sculpture>

18. Strasbourg is home to a “barrage” named for this person that embanks the Ill River. For 10 points each:

[10] Name this man who developed the technique of ricochet firing, in which projectiles were counterintuitively launched at lower angles and lower power. The city of Lille (“leel”) is home to one of his many star-shaped designs.

ANSWER: Sébastien Le Prestre de **Vauban**

[10] Vauban both designed and broke forts for this French king during the many wars he fought during his 72-year reign, the longest of any monarch in history.

ANSWER: **Louis XIV** [prompt on Sun King or le Roi Soleil]

[10] Vauban was responsible for expanding this city’s fortress on the Bock promontory, which was nicknamed the “Gibraltar of the North.” An 1867 “crisis” over the area around this city led to its establishment as a neutral zone.

ANSWER: **Luxembourg**

<European History post-600>

19. Answer the following about clocks whose hands run counterclockwise, for 10 points each.

[10] As part of a campaign to move away from European norms, an anti-clockwise clock was installed in the legislative building in this capital city, which overlooks Plaza Murillo. Its other attractions include a Witches’ Market that sells herbal medicine.

ANSWER: **La Paz**, Bolivia [or Nuestra Señora de **La Paz**; or **Chuqi Yapu**; or **Chuquiago**]

[10] Paolo Uccello (“oo-CHELL-oh”) painted an anti-clockwise clock with twenty-four divisions for this city’s cathedral, whose dome was designed by Filippo Brunelleschi. This Tuscan city was the hometown of Dante.

ANSWER: **Florence** [or **Firenze**]

[10] This city’s Jewish Town Hall includes separate clocks with Roman and Hebrew numerals, the latter running anti-clockwise. However, the Orloj (“OR-loy”) astronomical clock in this city’s Old Town Square runs normally.

ANSWER: **Prague** [or **Praha**]

<Other Academic>

20. In this play, an elaborate scheme is hatched in which Waitwell is to woo Lady Wishfort so another character can marry Millamant for her fortune. For 10 points each:

[10] Name this William Congreve play that ends with Mirabell revealing that he already controls the fortune of Mrs. Fainall.

ANSWER: *The* ***Way of the World***

[10] *The Way of the World* and George Etherege’s *Love in a Tub* are both examples of “comedies of manners” from this era of British history during the reign of Charles II.

ANSWER: English **Restoration** [accept **Restoration comedies**]

[10] Examples of these fashionable stock characters in Restoration comedies include Friendall in Thomas Southerne’s *The Wives’ Excuse* and Sir Novelty Fashion in Colley Cibber’s (“SIB-er’s”) *Love’s Last Shift*. Cibber played a role named for this type of character in John Vanbrugh’s (“VAN-bruh’s”) *The Relapse*.

ANSWER: **fop**s [accept Lord **Fop**pington; prompt on beaus]

<Drama>