CALISTO 2

Head-edited by Justine French. Edited by Dylan Bowman, Robert Condron, Nicholas Dai, Arthur Delot-Vilain, Tasis Gemmill-Nexon, Alistair Gray, Jeffrey Ma, Govind Prabhakar, Shahar Schwartz, William Orr, Rohan Venkateswaran, and Eric Yin. Written by the editors and Yusuf Amanullah, Joy An, Ethan Ashbrook, Vikshar Athreya, Louis Li, Richard Lin, Joel Miles, Alex Moon, Madhumita Narayan, Arjun Panickssery, Nathan Sheffield, Ned Tagtmeier, and Alison Yau.

Packet 6

1. **The column density of this element is low in the Lockman hole. A form of this element is indicated by the Gunn-Peterson trough** ("troff") **in the spectra of distant quasars. Absorption lines of this element distinguish Type II** ("two") **supernovae from those of type I** ("one")**. This element is the *input* to the CNO cycle and the (*)** p-p chain. The Paschen and Balmer series are emission lines of this element, which is the main component of the interstellar medium. In stars, this element's isotope of deuterium is rapidly fused into helium. For 10 points, name this lightest and most abundant element, with atomic number 1.
ANSWER: **hydrogen** [or **H**; accept atomic **hydrogen** or neutral **hydrogen** or **H**I ("H-one")]
<Astronomy — Sheffield> [Edited]

1. This was the official religion in the kingdoms of Alodia and Makuria. For 10 points each:
[H] Name this religion that was brought to both kingdoms by missionaries like Longinus. A nearby kingdom in the Horn of Africa that also practiced this religion was converted by Frumentius during the reign of its king Ezana.
ANSWER: **Christianity** [accept Coptic Orthodox **Christianity**; accept Greek Orthodox **Christianity**; accept Ethiopian Orthodox **Christianity**]
[E] Alodia and Makuria were both kingdoms along this river. The Coptic Church was based in Egypt, primarily in cities along this river.
ANSWER: **Nile** River
[M] The Makurian king Kyriakos later invaded Egypt to free a Christian patriarch imprisoned by this caliphate. This caliphate was founded by Muawiyah I and ruled from Damascus until its fall in the Abbasid Revolution.
ANSWER: **Umayyad** Caliphate
<World History — Prabhakar> [Edited]

2. **William Walton composed works of this type titled *Crown Imperial* and *Orb and Sceptre* for the coronations of British monarchs. Traditionally, the flautists switch to playing piccolo during the "obbligato" solo in the final strain of one of these works. The song "Land of Hope and Glory" adapts the trio section of one of these works often performed at (*)** graduation ceremonies. Those works are titled *Pomp and Circumstance*. American works of this type like "Semper Fidelis" and "The Stars and Stripes Forever" were composed by the "King" of them, John Philip Sousa. For 10 points, name these works frequently performed by military and wind bands to accompany parades.
ANSWER: **march**es [or military **march**es]
<Classical Music — Condron> [Edited]

2. A song in this play implores women to "sigh no more" because "men were deceivers ever." For 10 points each:
[M] Name this Elizabethan comedy. In this play, Don Pedro tricks Benedick and Beatrice into admitting their mutual love, while Don John tricks Claudio into thinking his bride-to-be, Hero, is unfaithful.
ANSWER: ***Much Ado About Nothing***
[H] This actor starred as Benedick in a 1993 film adaptation of *Much Ado About Nothing*, which he also directed. This Northern Irish actor also directed adaptations of *Hamlet* and *Henry V*.
ANSWER: Kenneth **Branagh**
[E] *Much Ado About Nothing*, *Hamlet*, and *Henry V* are by this English Renaissance playwright.
ANSWER: William **Shakespeare**
<Drama — French> [Edited]

3. **Instead of OpenGL, this company uses its own graphics API, named Metal, with its Cocoa native API. This company makes major product announcements at its annual Worldwide Developers Conference. This company began to shift away from using Intel processors in 2020 in favor of its own (*)** "silicon," like the ARM architecture-based M1 chip. "Bionic" chips and Retina displays are recent consumer technology innovations by this company. This company's current CEO, the first Fortune 500 CEO to come out as gay, is Tim Cook. For 10 points, name this tech company founded by Steve Wozniak and Steve Jobs, which produces the iPhone.
ANSWER: **Apple** Inc.
<Current Events — Bowman/Gray> [Ed. Gray]

3. A protein isolated from this genus called Protein A is valued in biochemistry for its ability to bind to antibodies in techniques like affinity chromatography. For 10 points each:
[H] Name this genus of Gram-positive bacteria whose species can be differentiated depending on whether or not they produce clumping factor in the coagulase test.
ANSWER: ***Staph**ylococcus*
[E] Industrial protein production often defaults to using this well-studied species of bacteria. This rod shaped model organism and frequent cause of food poisoning was used in the Hershey-Chase and Meselson-Stahl experiments.
ANSWER: ***E**scherichia **coli*** [or ***E. coli***]
[M] Another bacterially derived and useful protein is *Cas9*, which was isolated from *S. pyogenes* for use in this gene editing pathway. Charpentier and Doudna won the Nobel in Chemistry in 2020 for developing this procedure.
ANSWER: **CRISPR**/Cas9 gene-editing [or **clustered regularly interspaced short palindromic repeat**s]
<Biology — Schwartz> [Edited]

4. **A character in this novel declares that he would rather betray the world than let the world betray him after accidentally killing his father's blood brother. A southern barbarian chieftain in this novel is captured and released seven times before submitting. Three men in this novel declare that although they were not born on the same day, they seek to die on the same day in the (*)** Peach Garden Oath. A strategist "borrows" the east wind to aid fire ships in this novel's dramatization of Battle of Red Cliffs. For 10 points, name this Chinese novel by Luo Guanzhong fictionalizing the fall of the Han Dynasty and the ensuing standoff between the states of Wei, Shu, and Wu.
ANSWER: ***Romance of the Three Kingdoms*** [or ***Sanguoyanyi***; prompt on *sanguo*; do NOT accept or prompt on "*Records of the Three Kingdoms*" or "*Sanguozhi*"]
<Long Fiction — Ma> [Edited]

4. According to Hindu belief, Shiva created this substance out of his own body to cool himself down after drinking the Halahala poison during the Churning of the Ocean of Milk. For 10 points each:
[H] Name this substance. During the Hindu festival Maha Shivratri, adherents often consume *bhang*, a beverage which is produced from this substance.
ANSWER: **marijuana** [or synonyms like **cannabis** or **pot** or **weed**]
[M] Marijuana in the form of *bhang* may also be consumed during this holiday, where participants throw bright colorful powder onto each other.
ANSWER: **Holi**
[E] Marijuana is often used in the Hindu Ayurvedic form of this practice, which is often considered pseudoscientific due to its use of placebos. Other "alternative" forms of this practice include acupuncture.
ANSWER: **medicine** [or synonyms like **healing** or **therapy**]
<Religion — Dai> [Edited]

5. **A kingdom in this region was dominated for a time by a faction known as the Sarim. That kingdom from this region was home to a research institute known as the Hall of Worthies and was dominated by an elite class known as the *yangban*. A military commander employed by a kingdom in this region designed so-called (*)** "turtle ships" to counter the forces of Toyotomi Hideyoshi; that commander was Yi Sun-Sin. Sejong the Great ruled the kingdom of Joseon, which dominated this region for five centuries. For 10 points, name this region now split between two countries governed from Pyongyang and Seoul.
ANSWER: **Korea**n peninsula [accept South **Korea** or Republic of **Korea** or North **Korea** or Democratic People's Republic of **Korea** or **Hanguk** or **Joseon**]
<World History — Prabhakar> [Edited]

5. The Italian city of Ravenna is home to many ancient Christian works in this art form, including ones at the Mausoleum of Galla Placidia and at the Basilica of San Vitale. For 10 points each:
[H] Name this art form common in both Classical and Christian art. The House of the Faun was once the site of a work in this art form depicting the Battle of Issus.
ANSWER: **mosaic**
[E] The *Alexander Mosaic* was discovered on the floor of the House of the Faun in this city. Many mosaics have been preserved in this city because, like Herculaneum, it was buried in ash by the 79 AD eruption of Mt. Vesuvius.
ANSWER: **Pompeii**
[M] Like Ravenna, this city is home to many Christian mosaics, including one depicting the ascended Christ in front of a starry blue sky. Those mosaics are found in this city's Basilica of Saint Mark.
ANSWER: **Venice**
<Misc. Art — French> [Edited]

6. **A short story by this author ends with a psychologist watching "vultures… dropping down" while checking up on a family in the "Happylife Home." In that story by this author, Peter and Wendy lock their parents in an autonomous nursery, where they are eaten by lions. This author of "The Veldt" wrote a novel in which the protagonist memorizes lines from the Book of (*)** Ecclesiastes. In that novel by this author, the protagonist meets up with the former professor Faber before escaping Captain Beatty's mechanical hounds. For 10 points, name this author who wrote about the book-burning fireman Guy Montag in the novel *Fahrenheit 451*.
ANSWER: Ray **Bradbury** [or Ray Douglas **Bradbury**]
<Other Literature — Moon> [Ed. Orr]

6. Sir Charles Wyville Thomson predicted the existence of one of these features after detecting a great temperature disparity between parts of the Faroe-Shetland channel. For 10 points each:
[M] Name these long chains of elevated seafloor. Seafloor spreading causes these features to form in the middle of oceans, including in the Mid-Atlantic.
ANSWER: **ridge**s [accept Mid-Atlantic **Ridge** or mid-ocean **ridge**s or Wyville Thomson **Ridge**; prompt on underwater **mountain**s or underwater mountain **range**s or submarine **mountain**s or submarine mountain **range**s; do NOT accept or prompt on "seamount chains"]
[E] The Gakkel Ridge is a mid-ocean ridge in this body of water. The Wyville Thomson Ridge separates the deep waters of this polar ocean from the Atlantic Ocean to its south.
ANSWER: **Arctic** Ocean [or **Arctic** Mediterranean Sea]
[H] The Mid-Atlantic Ridge is mostly underwater, but reaches almost eight thousand feet above sea level at Mount Pico in this archipelago. This archipelago is the site of a triple junction of the Eurasian, North American, and African plates.
ANSWER: **Azores** [or ***Açores***]
<Geography — French> [Edited]

7. **Because he believes it will increase personal liberty, this system of government is advocated by Curtis Yarvin, who is also known as Mencius Moldbug. Robert Filmer's argument for this system of government based on the life of Adam is refuted in John Locke's *First Treatise*. Only this system of government can prevent a "war of all against all" according to (*)** Thomas Hobbes' *Leviathan*. The European belief that this system is justified by an inalienable "divine right" contrasts with the Chinese belief in a revocable "Mandate of Heaven." For 10 points, there are constitutional and absolute varieties of what system of government based on a single ruler, often a king or queen?
ANSWER: **monarchy** [accept constitutional **monarchy** or absolute **monarchy**; prompt on autocracy]
<Philosophy — French> [Edited]

7. These objects were constructed from overlapping planks of split wood fastened with iron rivets in a method known as "lapstrake" or "clinker." For 10 points each:
[H] Name these objects, examples of which have been excavated from burial mounds at Oseberg and Gokstad. Variants of these objects include *skeids* and *karves*.
ANSWER: **longship**s [or **longboat**s; prompt on **ship**s or **boat**s; prompt on but DO NOT REVEAL Viking ships]
[E] These seafaring Scandinavian people made heavy use of longships to conduct trade and carry out raids during the Middle Ages.
ANSWER: **Viking**s [or **Norse** people or **Norsemen**]
[M] This Viking explorer probably used a *knarr*, a type of Norse cargo vessel similar to a longship, in his expeditions to Vinland. This explorer is believed to be the first European to travel to North America.
ANSWER: **Leif** Erikson [or Leif **Erikson** or **Leiv** Eiriksson or **Leif** the Lucky]
<European History — Sheffield> [Edited]

8. **Fluorescence can be introduced into this compound by tagging it with intercalating agents like acridine orange and ethidium bromide. S-adenosyl methionine donates methyl groups to CpG sites located in this compound. Chargaff's rules can be used to determine the melting temperature of this compound because one pair of its subunits has (*)** three hydrogen bonds while the other purine-pyrimidine pair has only two. Photo 51 is a photo of this compound that was taken using X-ray crystallography by Rosalind Franklin before Francis and Crick modeled this compound in 3D. For 10 points, thymine is contained in what two-stranded nucleic acid whose structure is a double helix?
ANSWER: **DNA** [or **deoxyribonucleic acid**]
<Biology — Schwartz> [Edited]

8. In a novel in this genre, a character tries to explain how an "*inn-sewer-ants polly-sea*" works to the inept wizard Rincewind. For 10 points each:
[E] Name this genre. Frodo Baggins destroys the One Ring in *The Lord of the Rings*, a J.R.R. Tolkien trilogy of novels in this genre.
ANSWER: **fantasy** [accept epic **fantasy** or high **fantasy**]
[M] Twoflower, accompanied by a magical chest named The Luggage, hires Rincewind as his guide in this author's novel *The Colour of Magic*. Four elephants who stand on a giant turtle carry the world on their backs in this author's *Discworld* series.
ANSWER: Terry **Pratchett** [or Sir Terence David John **Pratchett**]
[H] Shadow's dead wife Laura returns to the physical world after he throws a gold coin into her grave in this fantasy novel. After leaving jail, Shadow joins the mysterious Mr. Wednesday in this novel by Neil Gaiman.
ANSWER: *American Gods*
<Long Fiction — Lin> [Edited]

9. **This city's MLB ballpark had a slope in center field called Tal's Hill that was removed in 2016. This city was nicknamed "Clutch City" after its NBA team came back from 0-2 down in the playoffs against the Suns, eventually defeating the Patrick Ewing-led Knicks in the finals. (*)** George Springer won the World Series MVP for this city's MLB team in 2017, before the discovery that the team cheated during the season by illegally stealing signs and banging on a trash can to warn of opponents' upcoming pitches. In 2021, the Brooklyn Nets traded for James Harden from this city's NBA team. For 10 points, name this city home to MLB's Astros and the NBA's Rockets.
ANSWER: **Houston** [accept **Houston** Astros or **Houston** Rockets]
<Pop Culture — Amanullah> [Edited]

9. The kinetic isotope effect describes how this value for a reaction will change based on which isotopes of the atoms involved are being used. For 10 point each:
[M] Name this proportionality constant. The half life of substances undergoing radioactive decay equals the natural log of 2, divided by this quantity.
ANSWER: **rate** constant [prompt on "k̲"]
[H] This approximation is commonly used to derive a rate equation for a reaction whose first step occurs much faster than its second step. This approximation assumes the rate of production and rate of consumption of an intermediate are equal.
ANSWER: **steady-state** approximation
[E] Steady-state approximations allow chemists to assume this quantity is constant for an intermediate. The reaction rate of first order reactions depends on the rate constant and this quantity, forms of which include molarity and molality.
ANSWER: **concentration**
<Chemistry — Schwartz> [Edited]

10. **The death of Bogislaw XIV during this war resulted in one belligerent annexing his state under the Treaty of Stettin. The War of the Mantuan Succession was a part of this larger conflict which featured the brutal sack of Magdeburg. The Treaty of Lübeck ended Christian IV's involvement with one side in this war. Count Tilly won the battle of (*)** White Mountain during this war's Bohemian phase, which began after Ferdinand II's representatives were thrown out of a window in the Second Defenestration of Prague. For 10 points, what large European war between Catholic and Protestant forces was ended by the Peace of Westphalia after three decades of fighting?
ANSWER: **Thirty Years'** War
<European History — Condron> [Ed. Prabhakar]

10. In one letter, Vincent Van Gogh said, "these waves are claws, the boat is caught in them, you can feel it," while describing a print by this artist. For 10 points each:
[M] Name this artist. In that print by this artist, fishermen hang onto three boats as they get swept up by the title *Great Wave*.
ANSWER: Katsushika **Hokusai** [or **Hokusai** Katsushika]
[E] *The Great Wave off Kanagawa* is the first entry in a series of *ukiyo-e* prints by Hokusai depicting *Thirty-six Views of* this mountain. This volcano is the tallest mountain in Japan.
ANSWER: Mount **Fuji** [or **Fuji**san; accept *Thirty-six Views of Mount **Fuji***]
[H] This print is the second entry in *Thirty-six Views of Mount Fuji* after *The Great Wave off Kanagawa*. This print is also known as *Red Fuji* because it depicts clouds around a distinctly red Mount Fuji.
ANSWER: ***Fine Wind, Clear Morning*** [or ***Fine Wind, Clear Weather*** or ***South Wind, Clear Sky*** or ***Gaifū kaisei***]
<Painting — Venkateswaran> [Edited]

11. **These compounds can be selectively oxidized by either pyridinium chlorochromate or sodium dichromate depending on whether the desired product is an aldehyde or a carboxylic acid. One of these compounds is toxic because a dehydrogenase oxidizes it to produce formic acid instead of the intended product acetaldehyde. It is difficult to purify one of these compounds past 96% because it forms an (*)** azeotrope with water during distillation. The primary ingredient in many disinfectants is a type of these compounds named "isopropyl." For 10 points, name these compounds which contain an -OH group and include methanol and ethanol.
ANSWER: **alcohol**s [accept **hydroxyl**s, accept isopropyl **alcohol**, prompt on methanol or ethanol by asking "what more general class of compounds is that a part of"]
<Chemistry — Yin> [Ed. Schwartz]

11. In this state, police officer John Burns formed a political coalition including the Communist Party, the longshoremen's union, and veterans of the 442nd Regimental Combat Team. For 10 points each:
[H] Name this state where strikes led to a so-called "Peaceful Revolution" in 1954. Prior to that, this state's government was dominated by the Republican Party, which was backed by a "Big Five" group of corporations.
ANSWER: **Hawai'i** [or Moku'āina o **Hawai'i**]
[E] That 1954 "revolution" resulted in the rise to power of this national party. Daniel Inouye was a prominent member of this party in Hawai'i, which still dominates Hawai'ian politics and opposes the Republicans.
ANSWER: **Democrat**ic Party [or **Democrat**ic Party of Hawai'i or the **Democrat**s]
[M] The pre-revolution Hawaii Republican Party was dominated by plantation owners, like the "Big Five" sugar-growing companies and companies growing this crop. James Dole introduced this crop to Hawaii.
ANSWER: **pineapple**s [or ***Ananas comosus***]
<American History — Gray> [Edited]

12. **One painting from this movement depicts a bunch of grapes resting on a checkered tablecloth above a copy of *Le Journal*. The "crystal" form of this movement was promoted by artists like Juan Gris. A portrait from this movement depicts the artist's lover Dora Maar with her cat. It's not Fauvism, but Louis Vauxcelles accidentally coined the name of this movement while making fun of *Houses at L'Estaque* by (*)** Georges Braque. A lightbulb is seen above a screaming horse in one painting from this movement that depicts a bombing in the Spanish Civil War, *Guernica*. For 10 points, name this art movement co-founded by Pablo Picasso that depicted scenes using basic geometric shapes.
ANSWER: **Cubism** [accept Analytic **Cubism** or Synthetic **Cubism** or Crystal **Cubism**]
<Painting — Miles> [Edited]

12. In a poem by an author of this ethnicity, the speaker sees "Milkflower petals on a black dog / like pieces of a girl's dress." For 10 points each:
[H] Name this ethnicity of the author of the poem "Aubade with Burning City." Another author of this ethnicity wrote about a "man of two minds" in the novel *The Sympathizer*.
ANSWER: **Vietnamese**-American [prompt on <u>Asian</u>-American] (*The Sympathizer* is by Viet Thanh Nguyen.)
[E] Ocean Vuong's "Aubade with Burning City" incorporates lyrics from a song in which the singer dreams "of a white [this holiday]." In *The Sympathizer*, that song about this holiday which features "sleigh bells in the snow" is played during the fall of Saigon.
ANSWER: **Christmas** [or **Christmas** Day or **Christmas** Eve; accept the **birth** of **Jesus** or **Nativity** or "White **Christmas**"] (The song is "White Christmas" by Irving Berlin.)
[M] This author often wrote about the Vietnam War in books like *Going After Cacciato*. Jimmy Cross burns Martha's letters after Ted Lavender is killed in the title story of this author's collection *The Things They Carried*.
ANSWER: Tim **O'Brien** [or William Timothy **O'Brien**]
<Other Literature — Lin> [Ed. Orr]

13. **Among this monarch's early reforms was the consolidation of the Hermandad police force under the crown. This monarch's position was secured against a rival relative after the Battle of Toro. This monarch's advisor Tomás de Torquemada was appointed to head one institution originating in this monarch's realm. This (*)** mother of Juana the Mad conquered the kingdom of Granada and, along with her husband, expelled all Jews from their lands through the Alhambra Decree. This monarch and her husband also sponsored Christopher Columbus' voyages to the New World. For 10 points, name this wife of Ferdinand of Aragon and co-ruler of a united Spain.
ANSWER: **Isabella** I of Castile [or **Isabel** I]
<European History — Prabhakar> [Edited]

13. Smugglers have taken advantage of European regulations of these chemical products by selling cheap and illegal HFCs instead of newer alternatives like R-441A and R-410A. For 10 points each:
[H] Name these working fluids which transfer heat by undergoing controlled evaporation and condensation phase transitions.
ANSWER: **refrigerant**s [or **coolant**s]
[E] Refrigerants are used in heat pumps and these other devices, which effectively function as backwards heat pumps. These devices cool air to lower the temperatures in buildings and vehicles.
ANSWER: **air conditioner**s [or **air conditioning** units or **AC**]
[M] In heat pipes, working fluids are used because they efficiently operate via this type of heat transfer where the flow of a fluid moves the thermal energy.
ANSWER: **convection**
<Physics — Condron> [Ed. Bowman]

14. **In one poem, this author remarked, "to die is different from what any one supposed, and luckier." The phrase "the sea whisper'd me" concludes a poem by this author in which a mockingbird mourns the death of its mate. This author's "Calamus" poems include several explicit passages describing sexual love between (*)** men. This author of "Out of the Cradle Endlessly Rocking" declared, "I sound my barbaric yawp over the roofs of the world" in a poem that begins "I celebrate myself, and sing myself." For 10 points, name this American poet who included "Song of Myself" in his collection *Leaves of Grass*.
ANSWER: Walt **Whitman**
<Poetry — Moon> [Ed. French]

14. Moshe Safdie's Habitat 67, which is built in this style, consists of 354 identical concrete modules in various configurations. For 10 points each:
[H] Name this functionalist architectural style that emerged in the 1950s and fell out of favor in the 1970s. It is characterized by monochrome geometric forms and use of large concrete and steel blocks.
ANSWER: **Brutalism**
[M] A Brutalist building of this type at the University of California, San Diego consists of several cantilevered levels with continuous windows. Two lions named Patience and Fortitude flank one of these buildings in New York.
ANSWER: **libraries**
[E] An offshoot of Brutalism designated by this prefix combines Brutalist designs with lush plant life. Environmentally conscious actions are sometimes called "[this three letter prefix]-friendly."
ANSWER: **eco** [accept **Eco**-brutalism]
<Architecture — An> [Edited]

15. **In one work, policemen sing "tarantara" as members of this profession shout "With Cat-Like Tread, Upon Our Prey We Steal." In an opera, a character sings "it is, it is a glorious thing" to be this profession's king. In that opera, after Ruth mishears her instructions, she indentures Frederic to this profession until his (*)** 21st birthday. A man introduces himself to these people with a song claiming he can write "a washing bill in Babylonic cuneiform." That character from an opera titled for these people declares "I Am the Very Model of a Modern Major-General." For 10 points, name these characters from a Gilbert and Sullivan opera that terrorize the coasts of Penzance.
 ANSWER: **pirate**s [accept The **Pirates** of Penzance]
<Musicals — Sheffield> [Edited]

15. In one segment, this comedian remarked "or so the Germans would have us believe" after every statement to set up a joke about German shepherds working as police dogs. For 10 points each:
[H] Name this comedian who anchored *Saturday Night Live*'s Weekend Update from 1994 to 1997. He died of cancer in September 2021.
ANSWER: Norm **Macdonald**
[M] Allegedly, Macdonald's firing from *SNL* was due to joking about this friend of NBC executive Don Ohlmeyer. The *Seinfeld* character Jackie Chiles is a parody of this person's lawyer, Johnnie Cochran, who in *South Park* uses the "Chewbacca Defense."
ANSWER: O. J. **Simpson** [or Orenthal James **Simpson** or **O.J.**]
[E] As an *SNL* cast member, Macdonald played Burt Reynolds in a recurring sketch parodying the "celebrity" version of this show. That parody of this game show also featured Darrell Hammond as Sean Connery and Will Ferrell as Alex Trebek.
ANSWER: *Jeopardy!* [accept *Celebrity Jeopardy!*]
<Popular Culture — French> [Ed. Gray]

16. **This person introduced the discovery doctrine, which held that the United States could lay claim to Native American-owned land that was originally 'discovered' by European colonial powers. This person ruled that the Supreme Court could not constitutionally issue a writ of mandamus, preventing (*)** "midnight judges" from taking office. Andrew Jackson reportedly said "now let him enforce it" in response to this judge's ruling defending Native American tribal sovereignty in *Worcester v. Georgia*. For 10 points, name this Supreme Court chief justice who introduced judicial review with his opinion in the case *Marbury v. Madison.*
ANSWER: John **Marshall**
<US History — Amanullah> [Edited]

16. At the end of a novel set in this city, the law student Fahmy is shot while participating in a student protest. For 10 points each:
[H] Name this city. Amina is hit by a car and breaks her collarbone in this city, but she is kicked out of the house by her husband for leaving home without permission.
ANSWER: **Cairo** [or **Al-Qāhirah**]
[M] Fahmy is shot in this author's novel *Palace Walk*, which, along with *Palace of Desire* and *Sugar Street*, make up this Nobel Prize winner's *Cairo Trilogy*.
ANSWER: Naguib **Mahfouz** [or Najīb **Mahfūz**]
[E] *The Cairo Trilogy* was written in this language. This language has Modern Standard, colloquial, and Classical varieties, the last of which was used to write the Qur'an.
ANSWER: **Arabic**
<Long Fiction — Lin> [Ed. Condron]

17. **For three intersecting segments inside one of these shapes, the butterfly theorem says their intersecting point is the midpoint of a new, generated segment. The distance from a point to the perimeter of one of these shapes is given by the power of a point theorem. One of these shapes that passes through nine special points can be constructed for every triangle. Constructing a square with the same (*)** area as one of these shapes is impossible because pi is transcendental. A segment whose endpoints lie on one of these shapes is called a chord. For 10 points, name these shapes which consist of all points equidistant from their center and have an area equal to pi *r*-squared.
ANSWER: **circle**s
<Math — An> [Ed. Bowman]

17. Susan Reverby uncovered American-led experiments in which Guatemalan citizens were purposefully infected with this disease. For 10 points each:
[H] Name this disease. The director of the Guatemalan experiments, John Charles Cutler, had earlier worked on a similar study on this disease in the United States that was initially funded by the Rosenwald Fund.
ANSWER: **syphilis**
[M] That unethical study on syphilis infected hundreds of Black men and was named for this Alabama university. A group of Black airmen who trained at this university during World War II was the first Black flying group.
ANSWER: **Tuskegee** [or **Tuskegee** Institute or **Tuskegee** University or **Tuskegee** syphilis study or **Tuskegee** Airmen or **Tuskegee** experiment]
[E] In 2010, this Secretary of State formally apologized for the Guatemala syphilis experiments. Previously, a formal apology for the Tuskegee experiment had been issued by this politician's husband, Bill.
ANSWER: **H**illary **Clinton** [or **H**illary Rodham **Clinton** or **HRC**; prompt on Clinton; prompt on Hillary]
<American History — Delot-Vilain> [Edited]

18. **The peel of the yuzu fruit, salt, and one kind of this food form Japanese *yuzukosho* paste, often used to augment *miso* soup. A sauce using the *piri piri* kind of this food is central to some dishes from African former Portuguese colonies. *Prik kee noo* is a kind of this food used in Thai cuisine nicknamed "mouse dropping" or (*)** "bird's eye." The New Mexico group of types of this food contains the Hatch and Pueblo varieties. A dish named for being *relleno*, or stuffed, often uses the *poblano* variety of this food. The Carolina Reaper kind of this food has very high capsaicin levels. For 10 points, serranos and jalapeños are types of what spicy food?
ANSWER: chile **peppers** [or chili **peppers** or **chile** or **chili**; do not accept or prompt on "bell peppers"]
<Geography — Gray> [Edited]

18. A 2012 book by Daron Acemoglu and James Robinson titled *Why [these things] Fail* contrasts inclusive and extractive institutions which regulate human activity in these things. For 10 points each:
[E] Name these things. Elements of modern institutional economics can be found in the Adam Smith treatise title for *The Wealth of* these things.
ANSWER: **nation**s [accept *Why **Nation**s Fail* or *The Wealth of **Nation**s*]
[H] Institutional frameworks use the evolution of institutions over time to explain this phenomenon. The Solow-Swan model attempts to model this phenomenon, and the "endogenous" theory is a common explanation of it.
ANSWER: economic **growth**
[M] Extractive institutions in one place may serve as push factors that encourage this action, which in turn may increase the labor supply in places whose inclusive institutions serve as pull factors.
ANSWER: **immigration** [or **migration** or **emigration**; accept word forms like **immigrate** or **migrate** or **emigrate**; prompt on moving or relocating]
<Economics — Condron>

19. **One hero from this country's myth performs the salmon-leap to reach the home of a warrior so he can learn weaponry. A beautiful woman elopes with a man with a love-spot on his forehead despite agreeing to marry a hero from this country. The story about Grainne and her lover is narrated by the son of that hero from this country, the bard (*)** Oisín ("oh-SHEEN"). Another hero from this country's myth defeats the attacking forces of Queen Medb ("mayv") at the Cattle Raid of Cooley. One hero from this country burns his thumb while cooking the Salmon of Knowledge, as recounted in the Fenian Cycle. For 10 points, name this home country of Cu Chulainn ("koo koo-lin") and Finn MacCool.
ANSWER: **Ireland** [or Republic of **Ireland** or **Éire** or **Airlann**; accept Northern **Ireland**]
<Mythology — Venkateswaran> [Edited]

19. Although *Miller v. California* would change the definition of this kind of speech, the decision in *Roth v. United States* defined this kind of speech as that which "appeals to the prurient interest." For 10 points each:
[M] Name this class of speech. Justice Potter Stewart said "I know it when I see it" in reference to this broad class of speech, which is not in general protected.
ANSWER: **obscenity** [or **obscene** speech; prompt on pornography]
[E] The three-prong *Miller* test is the current standard for separating obscenity from pornography in general. This constitutional amendment's protection of free speech is held to apply to pornography but not obscenity.
ANSWER: **First** Amendment [or **First** Amendment to the United States Constitution]
[H] The first of this set of laws was an 1873 one which prohibited mailing obscenity, thus sparking the legal need for a definition. These laws were advocated for by the New York postal inspector and censor that they're named for.
ANSWER: **Comstock** Laws [accept the **Comstock** Act or Anthony **Comstock**]
<Other — Gray> [Edited]

20. **In a novel by this author, the narrator compares her life to a branching fig tree while at the United Nations Headquarters. In a poem by this author, the speaker addresses a figure with a "brute heart" who has "a cleft in [his] chin instead of [his] foot." A character created by this author befriends Doreen while at an internship with the magazine (*)** *Ladies' Day*. A poem by this author begins with the repeated phrase "you do not do." In that poem by this author, the speaker exclaims, "you bastard, I'm through," to the title man who has a "Meinkampf look." For 10 points, name this author who depicted Esther Greenwood in *The Bell Jar* and wrote the poem "Daddy."
ANSWER: Sylvia **Plath** [or Victoria **Lucas**]
<Other Literature — Orr> [Edited]

20. Types of this resource are often categorized into a "hierarchy" whose levels correspond to different points on the tradeoff between speed and size. For 10 points each:
[E] Name this resource whose capacity might be measured in megabytes or gigabytes. RAM is the random-access kind of this resource, which in general stores data for computers.
ANSWER: computer **memory** [accept random-access **memory**]
[M] This level of memory is faster but smaller than RAM, and is used to temporarily store data the CPU expects to soon use. In web browsers, an analogous structure stores previously-visited pages.
ANSWER: **cache** [accept L1 **cache** or L2 **cache**; accept word forms like **caching**]
[H] These computer components fill the relatively large, slow role of secondary memory. These components usually use NAND flash cells, and might connect to a motherboard through NVMe.
ANSWER: **SSD**s [or **solid-state drive**s]
<Computer Science — Gray> [Edited]