

Spring Novice (April 17th, 2021)

Edited by Ryan Rosenberg, Katherine Lei, Chris Chiego, and Alex Damisch

Written by Alice Jiang, Aryaman Jaiswal, Angela Lin, Albert Zhang, Collin Ace, Cormac Beirne, Chauncey Lo, David Bass, Drew Benner, Douglas Meeker, Ewan Mitchell, Jeremy Cummings, Jakobi Deslouches, Jason Huang, Kevin Thomas, Lalit Maharjan, Minh-Khanh Phung, Nathaniel Hull, Payton Schubel, Raymond Chen, Rudra Ranganathan, Sean Farrell, William Orr, and Will Yaeger

## Packet 5

1. Pellets of this compound are “blasted” at equipment in an industrial cleaning technique that does not require clean-up. The world's oldest continuous monitoring of this compound occurs at Mauna Loa Observatory. This compound may be hydrogenated over a copper-based catalyst to produce methanol. That reaction is often carried out with a mixture called (\*) syngas that includes hydrogen, carbon monoxide and this compound. Along with water, this compound is a byproduct of combustion. The solid form of this compound is dry ice. For 10 points, name this compound, a gas at room temperature with formula  $\text{CO}_2$ .

ANSWER: carbon dioxide [accept  $\text{CO}_2$  before mention; prompt on dry ice with “what compound is dry ice made of?”]

<SF, Science - Chemistry>

2. One thousand ministers signed the Millenary Petition against this ruler, leading to the Hampton Court Conference. This ruler advocated against witchcraft in the treatise *Daemonologie* (“demon-ology”). This ruler's royal badge was modified to incorporate a thistle into a rose design. England began its first permanent colonies in (\*) North America under this ruler's reign. During this ruler's reign, Robert Catesby orchestrated a plot to blow up the House of Lords with associates like Guy Fawkes. In the Union of the Crowns, this man succeeded a childless Tudor queen and held the Scottish and English thrones. For 10 points, name this first Stuart king, who names an influential version of the Bible.

ANSWER: King James I of England [or King James VI of Scotland; prompt on King James]

<AJai, History - European History>

3. The intensity of this phenomenon in the near field can be evaluated with Cornu spirals. Two approximations for this effect are named for Fraunhofer and Fresnel (“fruh-NELL”). Huygens’s (“HIGH-guns-iz”) principle describes this phenomenon as the result of every point on a wavefront being a source of spherical waves. Two  $d \sin \theta = n \lambda$  according to (\*) Bragg’s law, which describes how x-rays exhibit this phenomenon. This phenomenon results in interference as photons travel through adjacent holes in Young’s double-slit experiment. For 10 points, name this phenomenon in which a wave bends around an obstacle.

ANSWER: diffraction

<DB, Science - Physics>

4. Niels Bohr bought a painting from this art movement by Jean Metzinger and would often use it as an example in lectures. One artist from this movement was suspected of a 1911 art theft alongside Guillaume Apollinaire and depicted the two of them as commedia dell’arte characters playing instruments in his painting *Three Musicians*. This art movement, whose name derives from Georges Braque’s *Houses at L’Estaque* (“luh-STOCK”), also includes a painting with a lightbulb resembling an (\*) eye hanging above a horse with a dagger for a tongue, and a flower growing from the sword of a dead soldier. For 10 points, name this art movement exemplified by Pablo Picasso’s *Guernica* that deconstructs subjects into geometric figures.

ANSWER: Cubism

<SF, Fine Arts - Painting>

5. A poem titled for an object belonging to this person contrasts "vines and olive trees" with "an artificial wilderness / and a sky like lead." The first known use of *ekphrasis* describes this person's shield. A common motif in classical drama depicted this person wounding and healing Telephus. One poem begins "Sing to me, (\*) Muse, of the wrath of" this man, who rages after Agamemnon takes Briseis from him. In revenge for the death of his companion Patroclus, this man orders Hector to be drawn and quartered after defeating him in a duel. For 10 points, name this strongest of the Greek warriors in the *Iliad*, who died when Paris's arrow struck him in the heel.

ANSWER: Achilles

<Ryan, Literature - Poetry>

6. Fanny Mendelssohn's most well-known chamber work, which is in D minor, is for this many musicians. She finished that piece shortly after hearing a work for the same ensemble by Clara Schumann, who wrote a collection of this many romances for violin and piano. This number of whole steps names a dissonant interval in music that historically was linked to the devil. Robert Schumann's symphony of this number is nicknamed the (\*) "Rhenish," and his A minor piano concerto has this traditional number of movements. Brahms is one of this many "B's" in Classical music. For 10 points, how many musicians make up a piano trio?

ANSWER: three

<JC, Arts - Music>

7. A green wheel designates a series of byways along this river called the Great River Road, which runs through cities like Moline ("moh-LEEN") and Davenport. Reelfoot Lake was created during an event in which this river reportedly flowed backwards after the 1811 New Madrid earthquake. This river was used to power mills at (\*) St. Anthony Falls. This river flows south from Lake Itasca and meets tributaries such as the Ohio and Missouri. For 10 points, name this river that flows from Minnesota through cities like Memphis and New Orleans en route to the Gulf of Mexico.

ANSWER: Mississippi River

<MP, The World - Geography>

8. One work by this thinker identified the "theodicy of fortune and misfortune" as a driving force behind different religious outlooks on economic status. This thinker categorized authority as charismatic, traditional, or rational-legal, with the latter forming the basis of the bureaucracy that leads to an (\*) "iron cage" of rationalization. This thinker defined the state as a monopoly on the legitimate use of force. In this thinker's most famous work, he described the effects of religious traits on a certain economic system. For 10 points, name this German sociologist, the author of *The Protestant Ethic and the Spirit of Capitalism*.

ANSWER: Max Weber

<CA, Social Science - Other Social Science>

9. One leader with this last name emphasized support for anti-poverty programs with the slogan *Garibi Hatao*. A nuclear test known as "Smiling Buddha" took place during the term of a leader with this last name. An official with this last name ran a forced sterilization program during a 21-month state of emergency. After a leader with this last name ordered troops into the Golden Temple, (\*) she was killed by her Sikh bodyguards. That leader with this last name was the daughter of Jawaharlal Nehru. For 10 points, name this last name, shared by the Indian prime minister Indira and an Indian independence leader who was given the honorific "Mahatma."

ANSWER: Gandhi [accept Indira Gandhi or Mahatma Gandhi or Mohandas Gandhi or Rajiv Gandhi]

<KT, History - World History>

10. In a play by this author, a man called “the fox” bribes a foreman to keep railways out of his home. An educated man implies World War II soldiers are committing mass suicide in a play by this author. In that play by this author, a servant assures the Praise-Singer of his commitment to duty with the story of the Not-I bird. After a teacher dances the Dance of the Lost Traveler, (\*) Sidi chooses the old Bale Baroka over Lakunle in a play by this author. Olunde performs ritual suicide in his father's stead after Simon Pilkings arrests Elesin in this author's play *Death and the King's Horseman*. For 10 points, name this Nigerian Nobel laureate and playwright of *The Lion and the Jewel*.

ANSWER: Wole Soyinka [accept Akinwande Oluwole Babatunde Soyinka]

<PS, Literature - Drama>

11. One account compares how the wind blew away a tuft of cotton to how this person rejected Tanha, Arati, and Raga, who were the three beautiful daughters of a demon-king. This person's disciple, Khema, is said to have brought this figure's tooth to Sri Lanka where it is venerated as a sacred relic. After this man saw the (\*) “four sights” of an old man, a diseased man, a dead body, and an ascetic, he decided to become an ascetic himself. While meditating under a bodhi tree, this man achieved enlightenment. For 10 points, name this founder of an Indian religion, who is also known as Siddhartha Gautama.

ANSWER: Buddha [accept Siddhartha Gautama prior to mention]

<KT, Beliefs - Religion>

12. Rangers manager Chris Woodward complained that one of this team's players should not have swung at a 3-0 [“three-and-oh”] fastball with a seven-run lead. In 2020, this team hit a grand slam in all 4 games of a series against the Rangers, including ones hit by Wil Myers and Eric Hosmer. Before the 2020 season, this team changed their color scheme to (\*) brown and gold, hearkening back to the uniforms worn by Tony Gwynn, who spent his entire career with this team. The left side of this team's infield features MVP candidates Manny Machado and Fernando Tatis Jr. For 10 points, name this MLB team nicknamed “the swinging friars,” located 100 miles south of Los Angeles.

ANSWER: San Diego Padres [accept either underlined portion; accept Slam Diego Padres]

<SB, Pop Culture - Sports>

13. Johann Bernoulli solved the brachistochrone (“bruh-KISS-tuh-crone”) problem using the fact that this function of theta is inversely proportional to the square root of y for a cycloid. The Fourier decompositions of odd functions are sums of this function. The hyperbolic form of this function equals one half times the quantity e-to-the-x minus e-to-the-negative-x. This function's Taylor series expansion is the (\*) alternating sum of odd powers of x over factorials of odd integers. The reciprocal of this function is cosecant, and the derivative of this function is cosine. For 10 points, name this trigonometric function that is equal to “opposite over hypotenuse.”

ANSWER: sine [do not accept “cosine”; accept sin(x) or (“sine of x”) sin(theta) (“sine of theta”); accept sinh (“cinch” or “shine”) or hyperbolic sine]

<DB, Science - Other Science - Math>

14. One system developed by this thinker relies on whether things are “said-of” and “present-in.” This thinker laid out ten basic types of “things that are said without any combination” in his work *Categories*, which comprises the first book in his collection *Organon*. He argued in favor of subjugating “natural slaves” as part of his theory of war, possibly encouraging the (\*) conquests of his most famous student. This man defined a certain branch of philosophy as “being qua being” in the follow-up to his treatise *Physics*. For 10 points, name this ancient Greek philosopher, the author of *Metaphysics* and tutor of Alexander the Great.

ANSWER: Aristotle

<CA, Beliefs - Philosophy>

15. **The Hamilton rating scale determines the severity of this condition. Martin Seligman applied electric shocks to dogs in an experiment that originated the “learned helplessness” model of this condition. Dysthymia is a long-term form of this condition. The self, the world, and the future make up Aaron Beck's (\*) “cognitive triad”, which was developed to better understand the beliefs of people with this condition. New mothers may develop a "postpartum" form of this condition. This condition is treated with SSRIs like Zoloft and Prozac. For 10 points, name this disorder whose symptoms include loss of pleasure, extended sadness and low mood.**

ANSWER: **depression** [accept specific types of depression such as **major depressive disorder**; do not accept or prompt on "manic depression" or "bipolar disorder"]

<DM, Social Science - Psychology>

16. **The protagonist of this story notes that he has not taken a sick day in 15 years, so calling in sick would raise an alarm. The chief clerk comes to check on the protagonist of this story, who has not gotten out of bed before seven o'clock. This story's protagonist interrupts his sister who is playing the (\*) violin for their three lodgers. The protagonist of this story eats the rotten food his family leaves for him and dies after being severely wounded by an apple lodged in his back. For 10 points, name this Franz Kafka novella in which Gregor Samsa awakes to find himself transformed into a monstrous insect.**

ANSWER: "The **Metamorphosis**" [or "Die **Verwandlung**"]

<WO, Literature - Short Fiction>

17. **In a story from the 14th century, the arrival of Christianity quells fighting begun after this deity quarreled with Loki over Brisingamen (“BRIS-en-gah-men”). When Thrym steals Mjolnir (“m’YOHL-neer”), Thor disguises himself as this deity in order to retrieve it. A giant offers to build an impenetrable wall to protect the gods in Asgard in exchange for marrying this deity. At Aegir’s feast in the Lokasenna, Loki accuses this deity of sleeping with her (\*) brother before her father, Njord, defends her. This deity is said to weep tears of red gold and rides a chariot pulled by cats. For 10 points, name this Norse goddess of love, the twin sister of Freyr.**

ANSWER: **Freya** [or **Freyja**; do not accept "Frigga"]

<RR, Beliefs - Mythology>

18. **Glyphs resembling this island’s namesake system of hieroglyphics were found on an object discovered by Luigi Pernier known as the Phaistos Disc. The downfall of a civilization on this island who wrote in Linear A is thought to have been triggered by the Thera (\*) eruption. A fresco depicting a leaping bull was discovered on this island’s palace complex at Knossos, which Sir Arthur Evans identified with the labyrinth. For 10 points, the story of Atlantis was likely inspired by the fall of the Minoan civilization centered on what largest Greek island?**

ANSWER: **Crete** [or **Kriti**]

<KT, History - Ancient History>

19. **In a novel by this author, a tenant refuses to punish his son for poaching because his landlord was lambasted by an editorial in *The Trumpet*. Another character created by this author attempts to pay a hundred-pound loan by selling the horse Wildfire but steals the money instead. William Dane’s accusation of theft causes the title character to move from Lantern Yard to (\*) Raveloe in a novel by this author. In another novel by this author, Dr. Lydgate treats Edward Causabon, whose will forbids Will Ladislaw from marrying his widow Dorothea Brooke. For 10 points, name this author of *Silas Marner* and a novel subtitled "a study of provincial life," *Middlemarch*.**

ANSWER: George **Eliot** [accept Mary Ann **Evans**]

<PS, Literature - Long Fiction>

20. **One work by this author begins with the story of a man dangled off the Pali Lookout after dropping a pipe, which is recounted by Gramps and interrupted by Toot. Another work by this man details how he read Marx and Marcuse as well as Fanon and Gwendolyn Brooks to impress women while at Occidental College. This author's 2020 book, *A (\*) Promised Land*, ends in May 2011 after detailing the decision to order Operation Neptune Spear. An earlier work by this man, *Dreams From My Father*, describes his community organizing experience in the South Side of Chicago. For 10 points, name this author and first African-American president of the United States.**

ANSWER: Barack Obama

<EM, The World - Current Events>

21. **This band was featured alongside Pussy Riot in the title track of Dorian Electra's album *My Agenda*. A different song by this band begins with the lyrics "body - wanna feel my body?" and references a newspaper ad reading "Macho Types Wanted." In response to the George Floyd protests, this band's lead singer asked Donald Trump to stop using that song, (\*) "Macho Man," at his rallies. The most famous song by this band has a dance with four arm poses that imitate letters; that song tells a "young man" that "there's no need to feel down." For 10 points, name this disco band whose members dress as construction workers and cowboys, best known for their gay anthem "Y.M.C.A."**

ANSWER: The Village People

<AJJ, Pop Culture - Pop Music>

22. **Protecting groups such as Boc or Fmoc are used in a process to join these molecules together. The phi and psi angles of these compounds are plotted on a Ramachandran plot. Naturally-occurring examples of these compounds are found mainly in the L-configuration rather than the D-configuration. The "kink" produced by one of these compounds tends to disrupt (\*) alpha-helices. Nine of these molecules cannot be synthesized by the body and thus are considered "essential." These compounds differ from each other only at their side chains or R groups. For 10 points, name these compounds such as proline and methionine that are connected by peptide bonds to make up proteins.**

ANSWER: amino acids

<RC, Science - Biology>

23. **A strike of workers in this industry in Lawrence popularized the phrase "bread and roses." Samuel Slater was branded as a traitor for memorizing plans for inventions in this industry and bringing them to America. Frances Perkins investigated an incident in this industry in which Max Blanck and Isaac Harris were acquitted for (\*) locking their workers in the facility during a fire. 146 workers in this industry were killed in the Triangle Shirtwaist Factory fire. For 10 points, name this industry centered around mill towns like Lowell, whose productivity was boosted by Eli Whitney's cotton gin.**

ANSWER: textile industry [or garment industry or cloth industry or clothing industry; prompt on shirtwaist industry with "what general class of objects are shirtwaists?"]

<JD, History - American History>

24. **Wim Wenders used this technique when shooting scenes from the perspective of angels in his 1987 film *Wings of Desire*. In *Memento*, scenes presented in reverse-chronological order are intersected with scenes filmed using this technique, which was also used by Alfonso Cuaron for every scene in his 2018 film (\*) *Roma*. Another film shot mostly in this style follows a German industrialist who protects Jewish refugees during the Holocaust. For 10 points, identify this filming technique used for much of *Schindler's List*, as well as in almost all movies made prior to the development of Technicolor film.**

ANSWER: filming in black and white [accept monochrome or sepia]

<CB, Arts - Other Arts - Film>

## Bonuses

1. At the end of the novel he appears in, it is noted that this character “has not earned the light, he has earned peace.”

For 10 points each:

[10h] Name this character who wrote a novel about Pontius Pilate and the trial of Yeshua Ha-Nostri. After his book is lambasted by the literary establishment, this character tries to burn his manuscript and is committed to an asylum.

ANSWER: the **Master**

[10m] In *The Master and Margarita*, this character comes to Moscow disguised as Professor Woland. In another literary appearance, this character is frozen in ice up to his chest, and chews on Brutus in one of his three mouths.

ANSWER: the **Devil** [or **Satan**]

[10e] Woland is accompanied by Behemoth, a massive black cat who plays this board game. In *Through the Looking Glass*, Alice starts off as a pawn in this game but becomes a queen after reaching the other end of the “board.”

ANSWER: **chess**

<RC, Literature - Long Fiction>

2. Charles Elton introduced these diagrams which consist of interlinking food chains. For 10 points each:

[10e] Name these diagrams with arrows representing “who eats whom.”

ANSWER: **food web**

[10m] On a food web, humans are this type of species. These species have no natural consumers and occupy the highest trophic level.

ANSWER: **apex predator** [accept **top predator**, accept **tertiary consumer**, accept **quaternary consumer**; prompt on partial answers like **predator**]

[10h] This specific term refers to species that have a disproportionate effect on ecosystem biodiversity when disturbed, such as sea otters in kelp forests. Apex predators often act as this type of species in their ecosystems.

ANSWER: **keystone** species

<AZ, Science - Biology>

3. Description acceptable. A relief found at one of these locations in El Tajin (“tah-HEEN”) depicts the decapitation of an athlete and the manufacturing of the fermented beverage *pulque*. For 10 points each:

[10h] Name these locations which contained stone rings anchored to the wall. Athletes who competed in a sport held in these locations used their hips to hit a rubber object.

ANSWER: Mesoamerican **ballcourts** [accept, but *do not reveal* Mayan **ballcourts**; accept descriptive answers like the **location** where the Mesoamerican **ballgame** is **played**]

[10e] This Yucatan civilization played the ball game in courts at Palenque and Copan. This civilization was the earliest to have an explicit numeral for zero, and they developed the Long Count calendar.

ANSWER: **Mayan** civilization [accept K’iche **Maya** and Yucatec **Maya**]

[10m] A so-called “Great Ballcourt” is located in this Mayan city. This city is also the location of the temple El Castillo, whose staircase casts shadows that mimic the image of the feathered serpent Kukulkan (“koo-kool-KAHN”).

ANSWER: **Chichen Itza**

<KT, History - Ancient History>

4. This country's intense 2019 to 2020 wildfire season was dubbed its "Black Summer." For 10 points each:  
[10e] Name this country where Prime Minister Scott Morrison was criticized for going on vacation in December 2019 amidst major fires near Sydney. Those fires also killed tens of thousands of koalas.

ANSWER: Commonwealth of **Australia**

[10m] Over 28 percent of the Pantanal wetlands in this country were burned by wildfires in 2020. This country's President, Jair Bolsonaro, claimed that reports of the fires' destruction were a "disinformation campaign."

ANSWER: **Brazil** [or Federative Republic of **Brazil**; or República Federativa do **Brasil**]

[10h] The fires in the Pantanal and those in Siberia and other parts of the Arctic in 2020 were fueled in large part by this substance that leads to slow-burning, methane-producing fires that can last underground for months.

ANSWER: **peat**

<CC, The World - Current Events>

5. Virginia Woolf writes about two poets with this surname from the perspective of their dog in *Flush: a Biography*. For 10 points each:

[10h] Give this surname of two married poets. The husband wrote about a woman who had a "heart too soon made glad", while the wife wrote "Yes, call me by my pet-name!"

ANSWER: **Browning** [accept Robert **Browning** or Elizabeth Barrett **Browning**]

[10m] In Sonnet 43 of Elizabeth Browning's *Sonnets from the Portuguese*, the speaker says "Let me count the ways" they feel this emotion. Shakespeare wrote that this emotion does not "alter when it alteration finds."

ANSWER: **love** [accept "How do I **love** thee? Let me count the ways." and "**Love** is not love which alters when it alteration finds"]

[10e] Many of Robert Browning's works, including "My Last Duchess" and "Porphyria's Lover," are in this poetic form. This type of poetry involves a single speaker giving a speech to an audience.

ANSWER: dramatic **monologue** [accept **soliloquy**]

<RC, Literature - Poetry>

6. Napoleon Chagnon called a tribe from this region "the fierce people" and emphasized their violence. For 10 points each:

[10m] Name this region home to the Yanomamo people. Indigenous peoples in this region have been threatened recently by severe droughts and deforestation due to the lumber industry.

ANSWER: **Amazon** rainforest [accept **Amazon** river basin; prompt on **South America**]

[10h] This French anthropologist did his early fieldwork in the Amazon. His study *The Savage Mind* contrasts the engineer, who engages in scientific construction, with the *bricoleur*, who works with whatever is at hand.

ANSWER: Claude **Lévi-Strauss**

[10e] Daniel Everett claims that the structure of Pirahã ("pee-rah-HAH"), one of these things used in the Amazon, disproves Noam Chomsky's notion of a "universal grammar." These things are studied in linguistic anthropology.

ANSWER: **languages**

<DM, Social Science - Other Social Science>

7. Answer the following about Islamic mysticism, for 10 points each.

[10m] Which tradition of Muslim mysticism played an important role in spreading Islam to North Africa and Asia? The Persian poet Rumi was an adherent of this tradition.

ANSWER: **Sufism** [or **Sufis**]

[10h] What term is used for members of the Sufi tradition? This term is commonly applied to the Turkish Mevlevi order of Sufism, who practice a unique spinning form of meditative dancing.

ANSWER: **dervishes** [accept **whirling dervishes**]

[10e] Historically, the vast majority of Sufi orders have belonged to what largest branch of Islam? Adherents of this sect view Abu Bakr as the rightful successor of Muhammad, while those of the Shi'a sect consider Ali as such.

ANSWER: **Sunni** Islam

<WY, Beliefs - Religion>

8. Name some things about one of Renaissance art's favorite subjects, David, for 10 points each.

[10e] Perhaps the most famous depiction of David is this man's marble statue located in the Galleria dell'Accademia in Florence. This artist also painted the ceiling of the Sistine Chapel.

ANSWER: **Michelangelo** di Lodovico Buonarroti Simoni

[10h] Donatello also sculpted a marble David, but far more famous is his version made with this material in the mid-15th century. Cellini's *Perseus with the Head of Medusa* was also made of this material.

ANSWER: **bronze** [prompt on **metal**]

[10m] This artist created a marble statue depicting David in the midst of slaying Goliath, unlike other masters' frontal depiction. This artist also depicted an angel about to spear the title saint in *The Ecstasy of Saint Teresa*.

ANSWER: Gianlorenzo **Bernini**

<DM, Arts - Sculpture>

9. The transition zone divides this layer of the Earth into its upper and lower regions. For 10 points each:

[10e] Name this layer of the Earth between the crust and the outer core.

ANSWER: **mantle**

[10m] Water stored in the transition zone may come from this process by which sections of the lithosphere sink into the mantle. This process's namesake "zones" have increased seismic and volcanic activity.

ANSWER: **subduction**

[10h] This process causes subducted slabs of the lithosphere to descend into the mantle. This process, by which hot matter travels to cooler areas, is primarily responsible for movement within the mantle.

ANSWER: mantle **convection**

<DB, Science - Other Science - Earth Science>

10. After his death, this hero was laid on a funeral pyre that burned away his mortal half, transforming him into a god. For 10 points each:

[10e] Name this hero from Greek mythology, who was married to Deianira. This legendarily strong hero performed twelve labors for King Eurystheus.

ANSWER: **Heracles** [or **Hercules**]

[10h] Heracles was fatally poisoned after the centaur Nessus tricked Deianira into smearing this substance onto Heracles's tunic.

ANSWER: centaur **blood** [or Nessus's **blood**]

[10m] For his ninth labor, Heracles was tasked with retrieving the belt of Hippolyta, the queen of these people.

ANSWER: **Amazons** [or **Amazones**]

<RR, Beliefs - Mythology>



11. During this conflict, the Paxton Boys murdered twenty Susquehannocks at the Conestoga Massacre before being dispersed by Benjamin Franklin. For 10 points each:

[10h] Name this 1763 war which included the Battle of Bloody Run. This war was named for an Ottawa leader who led the Siege of Fort Detroit.

ANSWER: **Pontiac's** War [or **Pontiac's** Rebellion, accept reasonable equivalents mentioning **Pontiac**]

[10e] Jeffrey Amherst ordered the use of blankets infected with this disease against Pontiac's forces during the siege of Fort Pitt. Edward Jenner developed the vaccine for this disease.

ANSWER: **smallpox**

[10m] The slave Onesimus introduced the process of inoculation against smallpox to a member of this family, which helped stem a 1721 outbreak of smallpox in Boston. Both Cotton and Increase were theologians from this family.

ANSWER: **Mather** family [accept Cotton **Mather** or Increase **Mather**]

<NH, History - American History>

12. A story arc featuring this superhero is called *Born Again*, referencing his Catholicism. For 10 points each:

[10m] Name this superhero who was blinded by a radioactive substance that gave him his powers. He practices law as his alter ego, Matt Murdock, and was played by Charlie Cox in a recent Netflix show.

ANSWER: **Daredevil**

[10e] Daredevil is also known as the devil of this Manhattan neighborhood. This is also the name of a Gordon Ramsay TV show with a pitchfork in its logo.

ANSWER: **Hell's Kitchen**

[10h] Daredevil's chief antagonist is this heavy-set crime lord who wears a white suit and holds a cane. A 1995 comedy with the same name features an Amish bowler mentored by an alcoholic with a prosthetic hand.

ANSWER: **Kingpin** [or Wilson **Fisk**]

<AJai, Pop Culture - Other Pop Culture>

13. In a story by this author, various iterations of computers spend eons trying to answer if entropy can be reversed. For 10 points each:

[10m] Name this author. The Cosmic AC remakes the universe with the declaration "Let there be light!" in this author's story "The Last Question." This author also created the civilization of Trantor in the *Foundation Trilogy*.

ANSWER: Isaac **Asimov**

[10e] Asimov is also known for a book titled for these humanoid machines that describes three laws of their operation. Karel Čapek ("CHAH-peck") coined the term for these machines in his play *R.U.R.*

ANSWER: **robots**

[10h] In a story by this other sci-fi author, the stars all go out after Tibetan monks transcribe "The Nine Billion Names of God." This author wrote a book in which HAL 9000 kills David Bowman's crew to avoid lying.

ANSWER: Arthur C. **Clarke** [or Sir Arthur Charles **Clarke**] (The book is *2001: A Space Odyssey*.)

<PS, Literature - Short Fiction>

14. This dynasty used the Eight Banners system to structure its military and social life. For 10 points each:

[10m] The boy emperor Puyi was the last ruler of this Manchu dynasty.

ANSWER: **Qing** Dynasty

[10e] The Qing Dynasty was forced to cede Hong Kong to the British after their loss in the first of two wars fought over the illegal importation of this drug derived from the poppy plant.

ANSWER: **opium**

[10h] The Opium Wars were ended by treaties described by this word, part of China's "century of humiliation." Many of the treaties described by this word involved land concessions to Western powers.

ANSWER: **unequal** [accept the **Unequal** Treaties]

<MP, History - World History>

15. Tommy Flanagan's poor piano solo on this album's title track was due in part to his assumption that it would be a ballad, leading him to rehearse it at a much slower tempo. For 10 points each:

[10h] Name this 1960 album whose title stems from the large leaps played by the bass on its title track. This album includes the tunes "Mr. P.C." and "Naima."

ANSWER: ***Giant Steps***

[10m] This saxophonist released the album *Giant Steps*, which uses a chord progression known as his namesake "changes."

ANSWER: John (William) ***Coltrane***

[10e] John Coltrane said that his favorite track to record was a cover of "My Favorite Things," a song from this musical. Another song from this musical teaches children the notes of the major scale.

ANSWER: *The ***Sound of Music****

<CL, Arts - Jazz>

16. David Wallace expanded on a theory named after these entities by arguing that decoherence can give a satisfactory answer to the preferred basis problem. For 10 points each:

[10m] Name these entities, which are plausible states of existence that could have happened. The character of Pangloss in *Candide* is fond of saying that we are in the best of all possible ones of them.

ANSWER: possible ***worlds***

[10e] Pangloss is a satire of this German philosopher, who originated the idea of the possible world. He also discovered calculus contemporaneously with Isaac Newton.

ANSWER: Gottfried ***Leibniz***

[10h] The philosopher David Lewis developed an approach to possible worlds, that he deemed a "modal" type of this philosophical position. Broadly, this position holds that things exist independent of the mind.

ANSWER: philosophical ***realism*** [accept modal ***realism***]

<AJJ, Beliefs - Philosophy>

17. This character recounts how Mother Elizabeth told her to live "as other girls lived" and go out to parties in order to decide if she wanted to be a nun. For 10 points each:

[10h] Name this character in a play who develops a morphine addiction after giving birth to Edmund. At the end of the play, this character sits at the piano while wearing her wedding dress.

ANSWER: ***Mary*** Tyrone [prompt on ***Tyrone***]

[10m] Mary is the matriarch of the Tyrone family, who appear in this Eugene O'Neill play. Doctor Hardy diagnoses Edmund with tuberculosis in this play.

ANSWER: ***Long Day's Journey Into Night***

[10e] After Mary relapses on morphine, Jamie makes an allusion to Ophelia's mad scene from this play by Shakespeare. The title character of this Shakespearean play laments "alas, poor Yorick" while in a graveyard.

ANSWER: ***Hamlet***

<WO, Literature - Drama>

18. The Mexican city of Zacatecas was founded near a major source of this material from the Cerro de la Bufa. For 10 points each:

[10h] Name this resource whose extraction from the Valenciana mine was documented by Alexander von Humboldt. The Spanish adapted the Incan *mit'a* labor system to mine this substance from the Cerro Rico mountain.

ANSWER: **silver** [or **Ag**]

[10e] Cerro Rico is part of the city of Potosi in this modern-day country, which has capitals at Sucre and La Paz. This country and Paraguay are the only landlocked countries in South America.

ANSWER: **Bolivia** [or **Mborivia**; or **Wuliwya**; or **Puliwya**]

[10m] Bolivia has struggled to mine its enormous reserves of lithium, because the lithium is found mixed with this material and water underneath the evaporated crust of large “flats” of this material at places like Uyuni.

ANSWER: **salt** [accept **sodium chloride**; prompt on **brine**]

<MP, The World - Geography>

19. Vision is blurrier in the dark because this phenomenon is exacerbated when pupils expand to allow more light to enter the eye. For 10 points each:

[10h] Name this phenomenon in which a blurry image results from rays of light that do not all intersect at the same point.

ANSWER: **spherical aberration** [prompt on partial]

[10e] Spherical aberration can be avoided by using mirrors in the shape of this curve because all rays of light parallel to the principal axis will be reflected through the focal point. The graph  $y$  equals  $x$ -squared forms this curve.

ANSWER: **parabola** [accept **parabolic** mirror or **paraboloidal** mirror]

[10m] An object placed between a parabolic mirror and its focal point results in this type of image. This type of image, contrasted with a real image, is produced when light rays converge behind a mirror.

ANSWER: **virtual** image

<DB, Science - Physics>

20. One of this explorer’s voyages was intended to search for the mythical Christian king Prester John. For 10 points each:

[10m] Name this explorer. He was the first European to discover the Cape of Good Hope, which he originally named the Cape of Storms. His countryman Vasco da Gama continued voyaging in the Indian Ocean and reached India.

ANSWER: Bartolomeu **Dias**

[10e] Bartolomeu Dias and Vasco da Gama were both explorers for this country. This country’s Prince Henry the Navigator was a patron of much of its exploration.

ANSWER: Kingdom of **Portugal**

[10h] Prince Henry funded the development of this type of ship that was used in Dias and da Gama's voyages. This ship was smaller and faster than other European ships of the time, and could uniquely sail into the wind.

ANSWER: **caravel** [or **caravela**]

<NH, History - European History>

21. The vestibular type of these abilities is controlled by organs in the inner ear. For 10 points each:

[10e] Name these abilities, which in humans include proprioception and thermoception in addition to five major types.

ANSWER: **senses** [or **sensation**]

[10m] This faculty interprets sensory information. This faculty uses top-down processing, which draws on prior experience, or bottom-up processing, where we integrate new information into a larger framework.

ANSWER: **perception**

[10h] This school of psychology developed principles of human perception such as the figure-ground relationship, and emphasized perceptions of whole patterns rather than individual parts.

ANSWER: **Gestalt** psychology

<CB, Social Science - Psychology>

22. In this show, the main character has a dog named Flipper and a fish named Qwerty. For 10 points each:

[10h] Name this TV show in which a cybersecurity engineer named Elliot Alderson helps a group of hackers named “fsociety” take down E Corp. Sam Esmail created this show and directed many of its episodes.

ANSWER: **Mr. Robot**

[10m] This actor portrayed Elliot Alderson, which won him an Emmy. He became the first actor of Egyptian descent to win an Oscar for his performance in 2018’s *Bohemian Rhapsody*.

ANSWER: Rami **Malek**

[10e] Rami Malek is slated to play Safin in *No Time to Die*, the upcoming entry in this film series. This will be Daniel Craig’s last appearance as 007 (“double-oh-seven”) in this series.

ANSWER: James **Bond**

<AJai, Pop Culture - Movies/TV>

23. This substance inspired Telemann to write a piece in ten movements, most of which depict different deities of this substance. For 10 points each:

[10h] Name this substance that also lends its name to three suites by another composer, which are most famous for the second’s “Alla Hornpipe” movement.

ANSWER: **water**

[10e] This composer wrote the *Water Music* suites for King George I’s concert on the River Thames. This German-born composer also wrote the *Messiah* oratorio.

ANSWER: George Frideric **Handel**

[10m] George II requested there be “no fiddles” in his commission of another D major Handel suite intended to accompany one of these displays. That suite is titled “Music for the Royal” one of these displays.

ANSWER: **fireworks** [accept *Music for the Royal* **Fireworks**]

<JC, Arts - Music>

24. Jurin’s law states that the maximum height reached by this process in a tube is inversely proportional to the diameter of the tube. For 10 points each:

[10m] Name this process that is caused by adhesion and can result in the formation of a meniscus.

ANSWER: **capillary** action [accept **capillarity**, **capillary** motion, or **capillary** effect; prompt on **wicking**]

[10e] One form of this lab technique separates solutes as a solvent travels up a piece of paper via capillary action. This analytic technique is named for how it can separate components of a solute by color.

ANSWER: paper **chromatography**

[10h] In paper chromatography, the paper acts as this component. This component is a column with adsorbent material in HPLC, and is hydrophobic in reversed-phase chromatography techniques.

ANSWER: **stationary** phase [do not accept “mobile phase”]

<DB, Science - Chemistry>