

Detroit Country Day Academic Regular Tournament

Packet 11

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1: This woman's first husband, known as either Acerbas or Sychaeus, was killed by her brother Pygmalion. While digging to build a settlement, this sister of Anna found an ox's head and a horse's head. King Iarbas heard about this woman's love for another man from the personified Rumor. Earlier, she cut thin strips of (*) oxhide to demarcate the boundaries of her land. This woman fell in love with a man after taking shelter with him in a cave, but he abandoned her to sail for Italy and later saw her ghost in the Underworld. For 10 points name this lover of Aeneas, the legendary founder of Carthage.

Answer: **Dido** [accept **Alyssa** or **Elissa**] <Mythology, Zhou>

1: This poem describes "the watch-fires of a hundred circling camps" and claims, "his truth is marching on." For 10 points each,

[10] Name this American patriotic song by Julia Ward Howe. It is often sung to the melody of "John Brown's Body," and its chorus references the "Glory, Hallelujah" folk tune.

ANSWER: "**Battle Hymn of the Republic**" (accept "**Mine Eyes Have Seen the Glory**")

[10] "Battle Hymn of the Republic" was written during this war. This war was also the subject of the Allen Tate poem "Ode to the Confederate Dead."

ANSWER: The American **Civil** War

[10] A Boston monument to the leader of the first all-black regiment "sticks as a fishbone in the city's throat" in "For the Union Dead," a poem by this Confessional poet of "Skunk Hour."

ANSWER: Robert **Lowell** [do NOT accept OR prompt on "Amy Lowell"] <US Literature, Gayden>

2: For the Sackur-Tetrode equation to be valid, this quantity divided by particle number times thermal wavelength cubed must be greater than 1. The adiabatic index is the ratio between the heat capacity when pressure is held constant and the heat capacity when this quantity is held constant. In the van der Waals equation, the parameter "b" accounts for this quantity's (*) nonzero value for real gases. Enthalpy is equal to internal energy plus pressure times this quantity, and according to Boyle's gas law it is inversely proportional to pressure. For 10 points, name this quantity measured in liters.

ANSWER: **Volume** [accept Molar **Volume**] <Chemistry, Siddiqui>

2: For 10 points each, answer the following about the Mughal Empire.

[10] This founder of the Mughal emperor was a direct descendant of Genghis Khan and Timur the Lame. He defeated Ibrahim Lodi at the First Battle of Panipat to found the Mughal empire.

ANSWER: **Babur** the Great

[10] Perhaps one of the most well known accomplishments of the Mughals was this building, built out of white marble. This monument was built by Emperor Shah Jahan as a tomb for his dead wife Mumtaz.

ANSWER: **Taj Mahal**

[10] The Taj Mahal sits on the banks of the Yamuna River in this Uttar Pradesh city. This city was the first capital of the Mughal empire.

ANSWER: **Agra**

<World History, Gayden, Ed.>

3: The short story “The Headstrong Historian” tells the story of women who appear mostly in the background of this novel. The title of the sequel to this novel comes from the closing lines of T.S. Eliot’s poem *The Journey of the Magi*. The novel’s protagonist dislikes his son, who assumes the name Isaac, and takes pride in his victory over (*) Amalinze the Cat in a wrestling match. This novel ends when this protagonist kills a court messenger in his home village of Umuofia, where he had earlier killed his adopted son Ikemefuna. For 10 points, the tragedy of Okonkwo is chronicled in what novel by Chinua Achebe?

ANSWER: ***Things Fall Apart*** <World Literature, Liu> [ed.]

3: For 10 points each, name the following about popular children’s characters in anatomy.

[10] The ELMO family of proteins that participate in signalling networks were first discovered in *Drosophila* and in this model organism. This nematode was the first animal to have its genome sequenced.

ANSWER: ***C. Elegans*** [or *Caenorhabditis elegans*]

[10] The POKEMON gene can help cells affected by this condition survive in environments which would normally be lethal. This condition is often treated by chemotherapy and radiation.

ANSWER: **cancer** [accept any more specific answer, such as **leukemia** or **lymphoma**]

[10] The protein called NEMO activates the transcription factor NF-κB [En-Ef-kappa-Bee], a type of this class of proteins. These enzymes are involved in the transferral of phosphate groups.

ANSWER: **kinases** [prompt on **phosphotransferases** or EC **2.7**] <Biology, Siddiqui>

4: Following the accidental death of her husband, one woman from this family designed Tuileries Palace. A member of this family founded the Platonic Academy and exiled two rival families in the Signoria. The Piagnoni supported an enemy of this family who condemned its rule at the Bonfire of the Vanities; that man was (*) Girolamo Savonarola. Pope Sixtus IV endorsed the assassination of this family’s member Giuliano by Francesco Pazzi. This family was the patron of artists like Michelangelo, Leonardo da Vinci, and Sandro Botticelli during its rule of Florence. For 10 points, name this Florentine banking dynasty that included Cosimo and Lorenzo.

ANSWER: House of **Medici** <European History, Gayden, Ed.>

4: This work’s movement “The Hut on Hen’s Legs” depicts the evil witch Baba Yaga. For 10 points each,

[10] Name this work by Modest Mussorgsky inspired by Viktor Hartmann paintings. A troubadour is depicted singing in front of the title building in the “Old Castle” movement of this work.

ANSWER: ***Pictures at an Exhibition***

[10] This composer orchestrated *Pictures at an Exhibition*, as well as his own piano suite *Le Tombeau de Couperin*.

ANSWER: Maurice **Ravel**

[10] The “Ballet of Unhatched Chicks” movement of *Pictures at an Exhibition* was inspired by this Marius Petipa ballet based on a Charles Nodier novella.

ANSWER: ***Trilby*** <Auditory Fine Arts, Sun>

5: The Huincul fault forms the northern boundary of this region, which is home to the Cave of Hands. Many Welsh immigrants settled this region’s Chubut Valley in the 1870s. This region is native to guanaco. Mount Fitz Roy is the tallest peak in this region, which contains the (*) Perito Moreno Glacier. Antonio Pigafetta wrote that this region was named for its “Giant” inhabitants by Ferdinand Magellan, who also names a Strait separating this region from Tierra Del Fuego. For 10 points, name this cold and windy region encompassing much of Argentina and Chile that shares its name with an American clothing company.

ANSWER: **Patagonia** <Geography, Sumanth and Gayden> [Ed.]

5: This economist and Edmund Phelps generated a theory of statistical discrimination postulating that inequality is the result of economic agents' imperfect access to information. For 10 points each:

[10] Name this economist who worked with Gerard Debreu to create a namesake model used to prove the existence of general equilibrium.

ANSWER: Kenneth **Arrow**

[10] Arrow is best known for this namesake theorem, which was first outlined in *Social Choice and Individual Values*. This theorem was later extended by the Gibbard-Satterthwaite theorem.

ANSWER: Arrow's **impossibility** theorem

[10] Arrow's impossibility theorem concerns this practice, stating that systems of this practice cannot satisfy fairness criteria. Elections often feature this practice.

ANSWER: **voting** <Social Science, Liu>

6: The notes [read slowly]"D D turn on C, B B turn on C" open a well-known minuet in G by a composer from this country. One composer from this country made heavy use of the B-A-C-H motif in his atonal *St Luke's Passion* and utilized tone clusters for a work composed for 52 strings. This country is home to a composer whose *Variations on La Ci Darem La Mano* prompted Robert Schumann to famously announce (*) "hats off gentlemen, a genius". That composer from this country composed four *Ballades*, as well as the "Revolutionary" Etude and many nocturnes, mazurkas, and polonaises. For 10 points, name this country home to Krzysztof Penderecki and Frederic Chopin.

ANSWER: **Poland** <Auditory Fine Arts, Sun>

6: The first story in a collection written by this man ends with the line "save the children..." For 10 points each,

[10] That story, "A Madman's Diary," is featured in this man's collection *Call to Arms*. He rose to prominence in the aftermath of the May Fourth Movement.

ANSWER: **Lu Xun** (accept **Zhou Shuren**)

[10] Lu Xun's story "A Madman's Diary" was inspired by a similarly titled story from this other writer, who wrote of Major Kovalyov losing the title body part in a different story.

ANSWER: Nikolai **Gogol**

[10] Lu Xun wrote in this language. Older works of literature originating from this country include *Journey to the West* and *Water Margin*.

ANSWER: Mandarin **Chinese** [accept **zhōngwén**] <World Literature, Liu>

7: The European presence in this country began with the Portuguese landing in Elmina. An empire based in this modern day country was led by Prempeh I, and fought a war against Frederick Hodgson. The capital of that empire based in this country was sacked by Garnet Wolseley. An empire in this country based in this country's city of (*) Kumasi built a throne called the Golden Stool; that was the Ashanti Empire. During the colonial era, this country was referred to as the Gold Coast. For 10 points, name this country, whose first leader was Kwame Nkrumah, and whose capital is Accra.

ANSWER: Republic of **Ghana** <World History, Pavlou, Ed.>

7: For 10 points each, name these things that might be of interest to a slave on an American plantation taking their chances with an escape.

[10] The slave could make their way to a free state through this network of secret routes and safe houses. Despite its name, there were typically no trains involved.

ANSWER: **Underground Railroad**

[10] The slave might keep a lookout for these textiles whose patterns may have communicated information to escaping slaves.

ANSWER: **quilts**

[10] Even after the slave escapes to a free state, they might be turned into the authorities by the locals due to this law that was passed as part of the Compromise of 1850.

ANSWER: **Fugitive Slave Act** <US History, Gayden, Ed.>

8: Tuttle and Bowen categorized this rock into hypersolvus and subsolvus forms based on the water pressures at which it crystallizes. A rock produced by endoskarn alteration called Greisen is composed of pegmatite and this rock's S-type. This rock is found in the top left region of the plutonic QAPF diagram. This rock's extrusive analogue is called (*) rhyolite, and potassium feldspar in this rock can give it a distinctive color. This rock is mainly composed of feldspars and up to 60% quartz. For 10 points, name this often pink rock that makes up most of the continental crust.

ANSWER: **granite** <Other Science, Siddiqui>

8: This neighborhood's namesake "Voice" newspaper was co-founded by Norman Mailer. For 10 points each, [10] Name this lower Manhattan neighborhood famed for its counterculture. This neighborhood was the focus of an effort by Jane Jacobs to prevent its demolition to build an expressway.

ANSWER: **Greenwich Village** [prompt on The Village or Village Voice]

[10] A less successful effort to oppose highway construction in New York City was led by Lillian Edelstein in this borough. This diverse borough is the only one to be located on the mainland US.

ANSWER: the **Bronx**

[10] Both of those highways were planned by Robert Moses, who also built the Triborough Bridge from Bronx and Manhattan to this large island, which contains the boroughs of Queens and Brooklyn.

ANSWER: **Long Island** <Geography, Gayden>

9: A company with this name investigated Senator Roger Wicker after he was spotted with his mask down to his chin. The hashtag #EndSARS trended on social media after a video of a cop shooting a motorist in a Nigerian state with this name went viral. A hurricane with this name left Louisiana buildings without power 6 weeks after Hurricane Laura. An (*) airline with this name led by CEO Ed Bastian announced in 2020 that it would retire its fleet of Boeing 777s. A 2020 hurricane in the American Southwest and the second largest airline in the world were both named after, for 10 points, what Greek letter with a triangle shape?

ANSWER: **delta** [accept **Delta** Airlines or **Delta** State or Hurricane **Delta**] <Current Events, Gayden, Ed.>

9: The Andrussow Process uses methane and ammonia to produce molecules consisting of this ion and hydrogen. For 10 points each,

[10] Name this toxic anion that contains a triple-bond. It is the simplest ligand in the most widely manufactured form of Vitamin B12, and in organic contexts it is also known as a nitrile group.

ANSWER: **cyanide**

[10] Cyanide binds with this metal in the pigment Prussian Blue. This ferromagnetic element is commonly found in magnetite and hematite.

ANSWER: **iron** [or **Fe**]

[10] Cyanide is dangerous because it inhibits this protein's oxidase, which disrupts the electron transport chain. The release of this protein from the mitochondria helps to trigger apoptosis.

ANSWER: **cytochrome c** [or **cyt c**, Prompt on "cytochrome"] <Chemistry, Siddiqui>

10: This author described "tears from the depth of some divine despair" in a poem that was part of his larger work *The Princess*. In a different poem by this author, the speaker cries "I am weary, weary, I would that I were dead." This author of *Mariana* and *Tears, Idle Tears* wrote a poem whose speaker "will drink life to the lees" and resolves (*) "to strive, to seek, to find, and not to yield." This author's most famous poem describes six hundred soldiers that ride into "the Valley of Death." For 10 points, name this English poet of *Ulysses* and *Charge of the Light Brigade*.

ANSWER: Alfred, Lord **Tennyson** <British Literature, Siddiqui>

10: In one painting, Jack Dempsey and Luis Angel Firpo engage in this sport. For 10 points each, Name this sport. In the painting *Stag at Sharkey's*, a man with a brown hat smokes on a cigar while he watches two men engaging in this activity.

ANSWER: **boxing** [prompt on **fighting**]

Both Members of this Club and *Stag at Sharkey's* are paintings by George Bellows, a member of this art movement dedicated to depicting scenes of daily city life. Another member of this art movement, Robert Henri, wrote *The Art Spirit*.

ANSWER: **Ashcan** school [prompt on The **Eight**]

The Ashcan school is an art movement from this city. Bellows' painting *The Cliff Dwellers* depicts the tenement buildings of this city's Lower East Side, and this city is also home to MOMA and the Met.

ANSWER: **New York** City [accept **NYC**] <Visual Fine Arts, Sun>

11: Sam Moyers' sculptures *Doors for Doris* are located near this place. The sculpture *Angel of the Waters* stands atop a fountain in this location. 7,503 nylon gates were installed in this location by Christo. Frederick Roth's statue of (*) Balto is located here, and Belvedere Castle is located north of the Strawberry Fields and Sheep Meadow in this location. One of the obelisks known as Cleopatra's needle is located in this location, which was designed by Calvert Vaux and Frederick Law Olmsted. For 10 points, name this large park located in Manhattan.

ANSWER: **Central Park** [Prompt on **New York City**] <Other Fine Arts, Sun>

11: This country had an especially strong showing at the 2020 NBA Draft, with two of its top players selected on draft night. For 10 points each:

[10] Deni Avidja was the first top 10 overall pick from this country, and his fellow countryman Yam Madar was also selected. Both players played in this country's city of Tel Aviv.

ANSWER: **Israel**

[10] Yam Madar was drafted by this team, where he could play with All-Star point guard Kemba Walker.

ANSWER: **Boston Celtics** (accept either underlined portion)

[10] The 2020 Israeli Basketball Premier League Finals MVP was Amar'e Stoudemire, who also recently became an Israeli citizen. In the NBA, Stoudemire played for the New York Knicks alongside this All-Star forward, who is known for wearing hoodies.

ANSWER: Carmelo **Anthony** <Sports, DL>

12: During this conflict, one side's victory was spoiled by six generals who were executed for being unable to save a group of drowning sailors. A historian during this conflict wrote, "the strong do what they can and the weak suffer what they must." A general during this war was charged for defacing statues and eventually switched sides. A leader during this conflict succumbed to the plague and built the Long (*) Walls connecting his city with the Port of Piraeus. The losing side during this conflict lost at Aegospotami and the Delian League was abolished. For 10 points, name this conflict that pitted Sparta and Athens.

ANSWER: **Peloponnesian** War

<Ancient/Other/Mixed History, Pavlou, Ed.>

12: The Cantor Set is one of these objects that is created by repeatedly removing the middle third of each line segment. For 10 points each:

[10] Name these mathematical objects that are self similar, such as the Koch Snowflake.

ANSWER: **Fractals**

[10] This fractal is formed by repeatedly dividing each triangle into 4 new equilateral triangles and removing the central triangle. It is named after a Polish mathematician.

ANSWER: **Sierpinski** Triangle [Accept **Sierpinski** Gasket or **Sierpinski** Sieve]

[10] This mathematician coined the term “fractal”. He wrote the paper “How Long is the Coast of Britain?” to discuss fractals with Hausdorff dimension between 1 and 2.

ANSWER: Benoit B. **Mandelbrot** <Math, Siddiqui>

13: This author created a man who travels to his house to destroy love letters he sent to an ugly woman, but gets arrested on the way. That man, Mirek, is the subject of a section titled “Lost Letters” in a 7 section novel by this author. The phrase “A return after long wanderings” is inscribed on the tombstone of a character in a novel by this author who has an affair with (*) Sabina, a painter who hates kitsch. This author of *The Book of Laughter and Forgetting* depicted the couple Tomas and Tereza escaping Prague but eventually dying in a car accident. For 10 points, name this author of *The Unbearable Lightness of Being*.

ANSWER: Milan **Kundera** <European Literature, Siddiqui>

13: Charles Neville and Thomas Percy led a rebellion in support of this deposed ruler. For 10 points each:

[10] Identify this ruler that the Rising of the North was intended to place on the throne. This monarch was strongly supported by many Catholics.

ANSWER: **Mary, Queen of Scots**

[10] The Rising of the North was intended to depose this ruler from her throne. This “Virgin Queen” was later targeted by the Babington Plot. This ruler should not be confused with a later queen of the same name who is the longest-serving monarch in British history.

ANSWER: **Elizabeth I**

[10] One man from this family served as Queen Elizabeth’s envoy to Mary, Queen of Scots. Another more famous member of this family led a namesake Catholic conspiracy to free Mary, Queen of Scots and have her replace Elizabeth on the English throne.

ANSWER: **Throckmorton** family

<European History, Liu, Ed.>

14: These devices have jumps in their mode spectrum if their temperature is not kept stable. The first pure Bose-Einstein condensate was created by using these devices to cool a dilute vapor of rubidium-87.

Q-switching can be used to pulse the output of these devices by inducing a (*) population inversion. Theodore Maiman developed the first one of these devices, which used a synthetic ruby crystal as a gain medium. A simple design for these devices uses two mirrors arranged in an optical cavity. For 10 points, name these devices that emit coherent beams of light via stimulated emission.

ANSWER: **lasers** [accept **L**ight **A**mplification by **S**timulated **E**mission of **R**adiation] <Physics, Sun>

14: Extraterrestrials and UFOs have been of religious interest, especially in the last 100 years. For 10 points each:

[10] Raelism, the “largest UFO religion in the world,” was founded in this country in 1974. After a revolution in this country Maximilien Robespierre promoted the Cult of the Supreme Being.

ANSWER: **France**

[10] This predominantly African American religion believes that UFOs are manmade and interprets imagery from the Book of Ezekiel as referring to UFOs. Malcolm X was once a devotee of this religion.

ANSWER: **Nation of Islam** [or **NoI**; do NOT prompt or accept just “Islam”]

[10] This man has written a steady volume of literature dubbed “space opera” and has claimed that all humans have had innumerable past lives, including those as members of the ancient alien society of Helatrobos.

ANSWER: L. Ron **Hubbard** <Religion, Suh>

15: The central figure wears this color in Piero della Francesca's portrait of the Duke of Urbino. Cochineal insects were frequently used in Renaissance art to make pigment of this color. Mercury wears this color while pointing a caduceus towards the sky in one painting, and the Horae of Spring holds a drape of this color in another painting by the same artist. The central figure of (*) Titian's *Venus of Urbino* lounges on a couch of this color while holding flowers of this color. In Sandro Botticelli's painting *Primavera*, the central figure, Venus, is draped in this color. For 10 points, name this color, often worn by Renaissance popes and cardinals to represent the blood of Christ.

ANSWER: **red** <Visual Fine Arts, Pavlou and Sun>

15: The corrections officer P.R. Deltoid visits this novel's protagonist after he is arrested for murdering a lady by hitting her with a bust of Beethoven. For 10 points each,

[10] Name this novel whose "ultraviolent" protagonist Alex undergoes the Ludovico technique as part of an experimental treatment.

ANSWER: A **Clockwork Orange**

[10] *A Clockwork Orange* is by this author, who wrote of the writer Kenneth Toomey in his *Earthly Powers*.

ANSWER: Anthony **Burgess**

[10] Burgess wrote a novel with four movements titled this man's symphony. GK Chesterton wrote a novel about Auberon Quin titled after this man "of Notting Hill."

ANSWER: **Napoleon** Bonaparte. <British Literature, Siddiqui>

16: A song whose title ends with this word was inspired by a Richard Brautigan book, and is the second track on its artist's album *Fine Line*. That song repeats, "breathe me in, breathe me out. I don't know if I could ever go without" this word. A band performs at (*) L.A. weddings in a music video for a song titled for this word. The singer of that song from the album *V* remarks, "I really don't care where you are. I just wanna be there where you are, I gotta get one little taste" of *this* title substance. Harry Styles sang about a watermelon type of, for 10 points, what substance that also names a song by Maroon 5?

ANSWER: **sugar** [accept watermelon **sugar**; prompt on your watermelon sugar] <Popular Music, AG>

16:This character laments that he must put on his costume and laugh despite his pain in the aria "Vesti la giubba". For 10 points each,

[10] Name this character, who stabs his wife Nedda and her lover Silvio at the end of the opera in which he appears.

ANSWER: **Canio**

[10] Canio appears in this Ruggero Leoncavallo opera about a troupe of clowns. This opera is frequently performed alongside Pietro Mascagni's *Cavalleria Rusticana*.

ANSWER: ***I Pagliacci***

[10] Canio is a role for this vocal range. Luciano Pavarotti was a member of a group of three singers with this highest male vocal range, which lies above the baritone.

ANSWER: **tenor** <Other Fine Arts, Sun>

17: A little girl remarks, "Sometime they'll give a war and nobody will come" during a troop parade in a poem from this author's *The People, Yes*. Passengers ask a conductor in "two years, ten years" "What place is this? Where are we now?" in a poem by this author whose title entity repeats "Shovel them (*) under and let me work." The subject of another of his poems has the "stormy, husky, brawling laughter of Youth," and is described as "Hog Butcher, Tool Maker, Stacker of Wheat, Player with Railroads and Freight Handler to the Nation. For 10 points, name this American poet of "Grass" and "Chicago."

ANSWER: Carl (August) **Sandburg** <US Literature, Gayden, Ed.>

17: In this work, one man falsely claims that he was executed for his pacifism. For 10 points each,

[10] Identify this play in which Garcin is condemned to a room in Hell with Inez and Estelle. The three are to be each others' torturers in this play.

ANSWER: *No Exit* [or *Huis Clos*]

[10] This French philosopher wrote *No Exit*. He is the source of existentialist quotes like "hell is other people" and "existence precedes essence."

ANSWER: Jean-Paul Sartre

[10] In *No Exit*, Inez offers to be one of these objects for Estelle. That offer is reflective of the ontological struggle of each character's perception in their own eyes and the eyes of others.

ANSWER: mirror <European Literature, Liu>

18: Cytokinin can be used to induce artificial parthenocarpy in these structures. Caryopses are examples of the simple type of these structures, and aggregate types of these structures are composed of individual drupelets. Pomace made from these structures can be used to extract pectin, and a hardened (*) pericarp is characteristic of nuts, which are examples of these structures. These structures are formed from the mature ovaries of flowers, and they are the means by which angiosperms disseminate seeds. For 10 points, name these structures, examples of which include apples and oranges.

ANSWER: fruits [accept any specific type of fruit, including berries] <Biology, Sun>

18: This city's police chief John Drake oversaw the investigation into a December 2020 attack in its downtown area. For 10 points each,

[10] Name this Southern city, where a bomb exploded inside a parked RV on Christmas Day.

ANSWER: Nashville, Tennessee

[10] The blast took place near the colloquially named "Batman Building," which is actually named after this company.

ANSWER: AT&T Inc.

[10] AT&T's CEO Randall Stephenson quit in July 2020, citing regret over the company's disastrous acquisition of this broadcast satellite service provider.

ANSWER: DirectTV <Current Events, Gayden, Ed.>

19: A work from this school of thought notes that "If a man does not keep pace with his companions, perhaps it is because he hears a different drummer." Members of this school often published their works in *The Dial*. A thinker from this school of thought argued that moral intuition was preferable to religious doctrine in an address at Harvard Divinity School. That author from this school of thought compares himself to a (*) "transparent eyeball," when in a state that lets individuals truly appreciate natural beauty. *Nature* and *Self-Reliance* are two works from this school of thought. For 10 points, name this American school of thought to which Henry David Thoreau and Ralph Waldo Emerson belonged.

ANSWER: transcendentalism [prompt on romanticism] <Philosophy, Liu>

19: 5G cellular internet has taken the world by storm due to its high speeds. Answer the following questions about the technology, for 10 points each.

[10] 5G is transmitted via this radiation. These waves are the longest on the electromagnetic spectrum.

ANSWER: radio waves

[10] The radio waves used to transmit 5G typically have a higher value of this quantity. The Fourier transform converts between the time domain and *this* domain.

ANSWER: frequency

[10] 5G internet is based on orthogonal frequency-division multiplexing, a method of performing this action of varying a periodic waveform. This process is performed on amplitude or frequency to encode messages in radio waves.

ANSWER: modulation [prompt on AM or FM] <Physics, Sun>

20: During a battle near this city, Joshua Barney was captured and William Winder was defeated, leading to an event that occurred due in part to the ransacking of York. Bayard Rustin helped plan one event in this city, the site of a protest against unemployment led by Jacob Coxey. Ralph Abernathy organized the (*) Poor People's Campaign in this city. After the Battle of Bladensburg, Dolly Madison saved a portrait of George Washington during the burning of this city in the War of 1812. Martin Luther King declared "I Have a Dream" during a march on, for 10 points, what capital city of the United States?

ANSWER: Washington, D.C. [accept either underlined portion] <US History, Gayden, Ed.>

20: This man was captured by General Frederic Funston in the aftermath of the Battle of Tirad Pass. For 10 points each,

[10] Name this revolutionary leader who was brought back to his country by Admiral George Dewey after the Battle of Manila Bay. This man was the first president of a country that would later gain independence due to the Tydings-McDuffie Act.

ANSWER: Emilio Aguinaldo y Famy

[10] Aguinaldo was a member of the Katipunan Society, which fought for the independence of this Pacific island country with capital at Manila.

ANSWER: Republic of the Philippines [accept Republika ng Pilipinas]

[10] Emilio Aguinaldo lost the first election of the Commonwealth of the Philippines to this man, who led a government in exile during World War II.

ANSWER: Manuel Luis Quezon y Molina

<World History, Gayden, Ed.>

Tiebreaker: **Hans Driesch proved the totipotent and pluripotent capacity of embryonic cells in an experiment utilizing one organism from this phylum. Organisms in this phylum have Tiedemann's bodies in their ring canals. Some organisms in this phylum possess a dental apparatus known as Aristotle's lantern. Water enters these organisms through the (*) madreporite into their water vascular system. While organisms in this phylum exhibit bilateral symmetry as larvae, they develop pentaradial symmetry at adulthood. For 10 points, name this aquatic phylum that includes starfish and sea urchins.**

ANSWER: Echinodermata [prompt on sea urchins before "phylum"] <Biology, Sun>

