

2014 Brookwood Invitational Scholars Bowl

Round 1

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Moderator note: On this tossup's third sentence, just read the individual letters, pausing slightly between the commas.

1. The Steinmetz solid is formed by the intersection of these shapes. Archimedes' hat-box theorem equates the lateral area of a cross-section of a sphere with one of these shapes. A differential volume element in this shape's coordinate system is "r, d r, d theta, d z." The shell method of integration sums up volume contributions by these hollow shapes. Its (*) coordinate system is the 3D analog of polar coordinates. This shape results from rotating a rectangle around an axis that it touches. Its surface area equals two pi times radius times the sum of radius and length. For 10 points, name this shape formed by translating a circle into three dimensions.

ANSWER: right circular cylinder

2. During this man's reign, construction of the Esagila temple sitting atop Etemenanki was finally finished. This ruler beat down Necho II at the Battle of Carchemish during his campaign against Egypt. This king allied with Jehoiakim, then replaced him with Zedekiah, then imprisoned Zedekiah. He allied with the Medians by marrying (*) Amytis. This son of Nabopolassar was stricken with insanity for seven years of his reign. His forces destroyed the First Temple, leading to the Diaspora. This king constructed the Ishtar Gate, and to soothe his wife's nostalgia, planted the Hanging Gardens for her. For 10 points, name this great king of Babylon.

ANSWER: Nebuchadnezzar II [or Nebuchadnezzar the Great]

3. In April 2014, the Canadian government agreed to sell 110 million shares of stock in this company. Delphi supplies this corporation. Rick Wagoner was forced to step down as CEO of this company and was replaced by Frederick Henderson. This company's current leader was criticized for backing lawyer Mike Millikin, and explained that a failure to make 57-cent payments was "deeply disturbing" in (*) Capitol Hill testimony. It underwent the largest-ever industrial Chapter 11 filing in US history in 2009. Its CEO Mary Barra has been grilled for defective ignition switches. For 10 points, name this Big 3 automaker, bailed out in 2009, which owns Chevrolet.

ANSWER: General Motors [or GM]

4. Maxim Gorky's play *The Lower Depths* ends with the announcement that a character with this profession has hanged himself. A group of fictional characters with this profession impossibly emerge from barrels aboard a pirate ship. Konstantin Treplyov loves a woman with this job named Nina, in *The Seagull*. A person with this job torments (*) Rosencrantz and Guildenstern in a play by Tom Stoppard. *Six Characters in Search of an Author* begins with these people practicing. The Stanislavski technique for people with this profession is also known as "the method." For 10 points, name this job held by people who perform the works of Chekhov.

ANSWER: actors [or actresses; or acting or other word forms; or players or word forms; or tragedians]

5. A piece by this composer begins with a series of C-sharp minor chords in the brass crescendoing up to a resolution. In incidental music for his brother-in-law's play on death, this composer included his "Valse Triste." In a tone poem this composer included in *The Four Legends*, the English horn represents the title (*) bird. This composer borrowed from his country's mythology in his *Kullervo* and *Lemminkainen* suites, the latter of which includes "The Swan of Tuonela." He protested Russian censorship by writing his homeland's national song. For 10 points, name this composer of "Finlandia."

ANSWER: Jean Sibelius

6. Seven days after these events, a sheep is slaughtered in the rite of aqiqah in Islam. In Hinduism, a mixture of gold, ghee, and honey called jatakarma is eaten right after these events. Zechariah regains the ability to speak soon after one of these events. The ritual of b'rit milah occurs eight days after these events. Sarah (*) laughed after being told about one of these events by God. The Mennonites refuse to give a particular sacrament right after this event. The Annunciation foretold one of these events in the Bible. For 10 points, name this event which usually occurs a few days before circumcision or Catholic baptisms.

ANSWER: birth [or obvious equivalents; prompt on pregnancy]

7. This author wrote the line, “Oh, what a tangled web we weave, when first we practice to deceive!” This author created an extremely popular character named Jeanie Deans who appeals the murder charges placed upon her sister Effie. Another of his female characters is engaged to Lord Aethelstane but falls in love with Desdichado at a (*) tournament. This author made his fame with the novel *Waverley*. Richard the Lionhearted, disguised as a Black Knight, helps the son of Cedric the Saxon marry Lady Rowena, in another of his books. For 10 points, name this Scottish author of *Ivanhoe*.

ANSWER: Sir Walter Scott

8. This person pointed out that, “We didn’t land on Plymouth Rock. The rock was landed on us” in a speech given on Easter Sunday. This man’s grandson killed this man’s wife, Betty Shabazz. He led meetings of the OAAU at the Audubon Ballroom. This man compared the JFK assassination to “chickens coming home to roost” and contrasted the (*) “ballot” and the “bullet” for achieving political change. He broke with Elijah Muhammad, and left the Nation of Islam; as a consequence, Alex Haley wrote this man’s autobiography after his 1965 assassination. For 10 points, name this civil rights activist who replaced his last name with an “X”.

ANSWER: Malcolm X [or Malcolm Little; or El-Hajj Malik El-Shabazz before “Shabazz” is read]

9. The alphabetical components of term symbols share the same notation as these objects. These objects are named according to spectroscopic characteristics like *sharp* and *diffuse*. The degeneracy of these objects equals two times “L” plus one, and they have “N - 1” total radial and angular nodes. A list of these objects is presented in an (*) electron configuration. The N + L rule governs how these objects are filled, to correct the Aufbau rule for them. The mixing of these objects is called hybridization. They each hold 2 electrons. For 10 points, name these regions of electron probability in atoms which have s, p, and d types.

ANSWER: atomic orbitals [do not accept or prompt on “molecular orbitals” or “MOs”; do not accept or prompt on “shells” or “subshells”]

10. This process is a consequence of market, resource, IT, and ecological imperatives in a book contrasting it with retribalization, by Benjamin Barber. Joseph Stiglitz criticized the IMF in a book titled for this phenomenon and “its discontents”. The N30 in Seattle in 1999 kicked off a protest movement against this phenomenon. Ten factors, including (*) insourcing, outsourcing, Netscape, and the fall of the Berlin Wall resulted in this process, according to Thomas Friedman’s *The World is Flat*. McWorld criticizes how this phenomenon spreads fast food. For 10 points, name this process by which the world is gradually becoming more homogeneous.

ANSWER: globalization [or word forms; prompt on commercialization; prompt on free trade until “Friedman” is read]

11. This country levied the unpopular alcabala tax. A 16th century revolt in this nation was spurred by a new king’s reliance on Flemish advisors. A king of this country defeated France at the Battle of Pavia with the help of troops called tercios. Painful gout forced a Holy Roman Emperor and king of this country to abdicate in 1556. The sixteenth century (*) Dutch Revolt was against this country. The founder of the Jesuits was born here. Before it ruled Austria, the Hapsburg Empire’s center of strength was in this country, which was led by Charles V and his son Philip II. For 10 points, name this Catholic country which sent an Armada to invade England.

ANSWER: Kingdom of Spain [or Espana]

12. Herman Cain used this nation’s economic policy as a model for his proposed privatization of pension funds. The Mapuche people lived in this country’s region of Araucania. The most powerful earthquake on record struck Valdivia in this country in 1960, though a weaker 2010 earthquake in this nation (*) trapped 33 men near Copiapo for 69 days. This country exports more copper than any other country. The *moai* sculptures are owned by this nation on the island of Rapa Nui. The Atacama Desert is in its north. For 10 points, name this skinny nation that runs the length of South America’s Pacific coast.

ANSWER: Republic of Chile

13. A character in this novel observes, “The sunshine does not love you. It runs away and hides itself!” and often wonders why another character always keeps his hand over his heart. According to this book’s first chapter, founders of a new settlement always start with a prison and a cemetery. Four characters in this novel watch a (*) meteor from atop a scaffold. This novel’s antagonist pretends to be an Indian doctor treating the reverend of a heart condition, but really leeches him dry. Chillingworth learns that Dimmesdale fathered Pearl in this novel. For 10 points, name this book about adulteress Hester Prynne, written by Nathaniel Hawthorne.

ANSWER: The Scarlet Letter

14. This god kills a stablehand, then begins a *flyting* at a feast taking place at the bottom of the ocean, in a poem from the Codex Regius. This god borrows a coat of falcon feathers, and barely outflies an eagle, while he’s carrying some golden apples disguised as a nut. He disguises himself as a mare to prevent an architecturally-minded stallion from building walls, then gives birth to an (*) eight-legged horse. Earthquakes are caused when a venomous snake drips poison onto this god. This deity convinces a blind god to throw a spear of mistletoe, killing his brother Baldr. For 10 points, name this trickster god in Norse mythology.

ANSWER: Loki [do not accept “Utgard-Loki”]

15. The UVB system classifies objects based on this property, and quantifies it by B-V values. This property of a thin film varies with its thickness if the incident light is broadband. Fluorite minimizes an aberration named for this property. Electronic transitions in d metal complexes and in some highly conjugated molecules give them this property. Because index of refraction varies with this property, dispersion separates (*) light into rays differing in this property. This property varies with temperature for stars. This property corresponds to the wavelength of light reflected by an object. For 10 points, name this property quantified in the RGB model.

ANSWER: color [or chromatism or chromatic or other word forms; prompt on wavelength before it is read]

16. A difficult upper-register violin “fantasy” based on this musical work was composed by Pablo de Sarasate. A character in this opera enters to an aria based on a descending chromatic scale, which warns that, “If you do not love me, I love you! Take guard yourself.” A character in this opera sings in an (*) inn about how much he loves hearing the crowds cheer, in “Votre toast.” Several characters in this opera join a band of smugglers, abandoning their jobs at a cigarette factory. This opera’s protagonist sings the Habanera, and is stabbed by Jose at a bullfighting match fought by Escamillo. For 10 points, name this Georges Bizet opera.

ANSWER: Carmen

17. The speaker of a poem by this author wants to smash a bronze war statue and replace it with a statue of a man who feeds people, instead of butchering them. This author of “Ready to Kill” wrote the lines, “Yes, it is true I have seen the gunman kill and go free to kill again.” This author wrote, “Pile the bodies high at Austerlitz and Waterloo” to begin his poem, (*) “Grass.” In another poem, this author of a three-part biography of Abraham Lincoln praised “the stormy, husky, brawling laughter of youth,” and called his subject the “city of Big Shoulders” and “Hog Butcher for the World.” For 10 points, name this American poet of “Chicago.”

ANSWER: Carl Sandburg

18. The final person to hold this office lost the Battle of Jenne. The first person to have this title, who was born a cripple, set his capital at Niani after winning a battle with the help of an arrow topped with a rooster’s spur. An ex-slave who usurped this position, named Sakura, interrupted its Keita dynasty. Another holder of this title, the son of Kankou, ordered the construction of the (*) Sankore Madrasa. Traditionally, the occupant of this office would go on hajj; during such a trip, the greatest man to hold this office conquered Gao and Timbuktu. For 10 points, name this title held by leaders of the Mali empire, such as the gold-giving emperor Musa.

ANSWER: mansa [or emperor of Mali, or king of Mali, or other such answers before “Mali” is read]

19. The Paris Salon rejected this artist’s bird’s-eye-view painting of the Boulevard des Capucines. Louis Leroy said that a “preliminary drawing for a wallpaper pattern” would be superior to one of this artist’s paintings. He sat at St. Thomas Hospital on the Thames for the viewpoint of his Houses of Parliament series. This man painted the (*) Rouen Cathedral at different times of the year. A Japanese bridge appears in a painting he made at his studio in Giverny. A boat and a bright, orange circle appear in this artist’s seascape *Impression: Sunrise*. For 10 points, name this French artist known for painting haystacks and water lilies.

ANSWER: Claude Monet

20. **Dipalmitoyl-phosphatidyl-choline is secreted by septal cells in this organ to reduce surface tension. Small-cell carcinomas usually originate in this organ. The right side of a sigmoid saturation curve usually corresponds to this organ, where pO₂ is the highest. In frogs and humans, this organ operates using positive (*) pressure. This organ is surrounded by the pleural membrane. Intercostal muscles and the diaphragm permit proper function of this organ. The bronchi split off to form small sacs called alveoli in this organ. For 10 points, name this organ where gas exchange occurs due to breathing.**

ANSWER: lungs

TB: Thrust faults called lobate scarps completely cover the surface of this body. The rate of precession of this body differs from Newtonian prediction by about 43 arcseconds per year, which Einstein used to justify general relativity. This object is in a 3:2 spin-orbit resonance with the Sun, though it's not gravitationally locked. The (*) MESSENGER mission studies this planet. This planet has the lowest axial tilt and the highest orbit eccentricity. The giant impact hypothesis proposes a way this planet was formed. It has the shortest year of any planet. For 10 points, name this terrestrial planet which lacks satellites, the smallest and innermost planet.

ANSWER: Mercury

1. Julio Cortazár and Carlos Fuentes were members of this literary movement. For 10 points each:

[10] Name this flourishing of Latin American literature beginning in the 1960s.

ANSWER: Latin American **Boom** [or El **Boom**]

[10] This Colombian author, who died in 2014, exemplified the Boom in novels like *One Hundred Years of Solitude*.

ANSWER: Gabriel **García Márquez**

[10] García Márquez, Isabel Allende, and many other Latin American authors, as well as foreigners like Salman Rushdie, embraced this genre: the inclusion of some fantastical elements within an otherwise normal setting.

ANSWER: **magical realism** [or **realismo magico**]

2. Hugo Grotius argued that this concept held even in the absence of a benevolent God. For 10 points each:

[10] Name this concept which is normally invoked in theories of common law. This type of law has its basis in human intellect and reason, not due to any specific judicial protection.

ANSWER: **natural** law

[10] This other philosophical tract explains nineteen laws of Nature, including “seek peace, and follow it”, as well as “By all means we can, defend our selves.” This 1651 work calls the state of nature *bellum omnium contra omnes*.

ANSWER: **Leviathan** or *The Matter, Forme and Power of a Common Wealth Ecclesiasticall and Civil*

[10] This Englishman wrote *Leviathan*.

ANSWER: Thomas **Hobbes**

3. A vote for cloture to end a Senate filibuster requires this fraction of the members to agree. For 10 points each:

[10] Name this number, the amount that a single slave counted toward the population for representation in the House, right up until the 14th Amendment was passed.

ANSWER: **$\frac{3}{5}$** of a person [or **three-fifths**; or **60%**; or **0.6**]

[10] For a monoatomic ideal gas undergoing this type of process, volume times pressure raised to the three-fifths power is a constant. Isentropic processes must be reversible and have this property.

ANSWER: **adiabatic** [or the **heat** change is **zero**; prompt on **polytropic** processes or **polytropes**]

[10] The only US state in which males make up more than 60% of the population is this one, which also has the lowest unemployment rate after a recent oil boom. This state’s largest city is Fargo.

ANSWER: **North Dakota**

4. A ratio determined by this technique can be used to measure the purity of a nucleic acid sample. For 10 points each:

[10] Name this technique which measures the concentration of a sample placed in a cuvette by calculating the amount of light which is transmitted versus absorbed.

ANSWER: **spectrophotometry** [or word forms; or **UV-visible light spectroscopy**; prompt on **spectroscopy**]

[10] The sample’s absorbance is proportional to the concentration and this geometrical factor of the cuvette by Beer’s Law. This factor is usually symbolized b or L and is often measured in millimeters or centimeters.

ANSWER: linear **path length** of the cuvette [prompt on the **diameter** of the cuvette; prompt on partial answer]

[10] The concentration given in Beer’s Law is usually this measurement equal to moles of solute divided by liters of solution. This measure of concentration is often symbolized with square brackets, unlike molality.

ANSWER: **molarity** [or **molar concentration**]

5. George McDuffie illustrated the negatives of this legislation with his “forty bale” theory. For 10 points each:

[10] Name this law signed by JQ Adams, which installed the highest import/export tax rate in US history. *The South Carolina Exposition and Protest* was written in opposition of this bill, which sparked the Nullification Crisis.

ANSWER: the **Tariff of Abominations** [or the **Tariff of 1828**]

[10] *The South Carolina Exposition and Protest* was written by John Calhoun, who served as vice president for both John Quincy Adams and this president. This man known as “Old Hickory” won the Battle of New Orleans.

ANSWER: Andrew **Jackson**

[10] Andrew Jackson ended the Nullification Crisis by threatening to enact this possibly illegal act. This law would have allowed the president to use any means to enforce the implementation of tariffs.

ANSWER: the United States **Force** Bill [or “An **Act further to provide for the collection of duties on imports**”; or the **Force** Act]

6. This character promises to “put a girdle around the earth in forty minutes” in order to find a magical flower whose juice causes people to fall in love with the first person that they see. For 10 points each:

[10] Name this character who, in the play’s closing lines, tells the audience to pretend the entire play was a dream while he promises to “restore amends.”

ANSWER: **Puck** [or **Robin** Goodfellow]

[10] Puck is a trickster in this Shakespearean comedy set outside Athens. It includes the hilarious play-within-a-play “Pyramus and Thisbe.”

ANSWER: A ***Midsummer Night’s Dream*** [do not accept “*A Midsummer’s Night Dream*”]

[10] The juice causes both Demetrius and Lysander to fall in love with this homely character, instead of chasing after the much-prettier Hermia.

ANSWER: **Helena**

7. These objects are on the right side of the Hubble tuning fork diagram. For 10 points each:

[10] Name these objects which have lots of stars inside of the central bulge, which is surrounded by a rotating disc which makes up their “arms”.

ANSWER: **spiral galaxies** [prompt on **galaxies**]

[10] This class of spiral galaxies are found on the bottom branch of the tuning fork diagram and have a namesake rectangular structure appearing to emerge from the central bulge.

ANSWER: **barred** spiral galaxies [or **bars**]

[10] This barred spiral galaxy has a radio source called Sagittarius A* at its center. It’s also the galaxy you live in.

ANSWER: the **Milky Way**

8. The Company of One Hundred Associates monopolized trade of this commodity. For 10 points each:

[10] Name this resource which the French traded for with First Nations people in Canada, leading to the extinction of many beavers.

ANSWER: **furs** [or **pelts**]

[10] This term, which literally translates as “runners of the woods”, referred to French-Canadians who lived with the First Nations tribes, often without a license, trading cultures as well as furs.

ANSWER: **coureur des bois** [prompt on partial answer]

[10] French possessions in Canada, once known as New France, were incorporated into this British colony in the Constitutional Act of 1791. It included Quebec and Labrador, and, despite its name, was actually north of Ontario.

ANSWER: **Lower** Canada

9. There are conspiracies everywhere in some TV shows. For 10 points each:

[10] On this TV show which claims that “The truth is out there”, a pair of FBI agents discover that a group called the Syndicate, whose members include the Smoking Man, is helping a race of aliens take over the earth.

ANSWER: ***The X-Files***

[10] This British series pitted the title Time Lord against an alien race called the Silence, who have ruled Earth for millennia via hypnotic suggestion. The protagonist is usually busy traveling on the TARDIS with his companions.

ANSWER: ***Doctor Who***

[10] This TV character was experimented on by the Blue Sun Corporation in order to turn her into an assassin. She and her brother Simon eventually take shelter aboard the *Serenity* while being pursued by a pair of blue-handed men.

ANSWER: **River Tam** [accept either underlined answer]

10. This city’s main church’s altarpiece is a painting of Christ wearing a bright red robe as he is being disrobed. For 10 points each:

[10] Name this city. A late 16th century landscape depicts this city on a tree-covered hillside underneath dark, menacing clouds.

ANSWER: **Toledo** [or ***View of Toledo***; or ***Vista de Toledo***]

[10] *View of Toledo* was painted by this Mannerist. This Spanish painter, who was born in Crete, also made *The Burial of the Count of Orgaz*.

ANSWER: El **Greco** [or Domenikos **Theotokopoulos**]

[10] Picasso’s *Les Femmes d’Alger* was based, in part, on this other El Greco painting. In it, St. John wears a baggy robe to the left and gestures toward the heavens.

ANSWER: ***The Opening of the Fifth Seal*** [or ***The Vision of St. John***; or ***The Fifth Seal of the Apocalypse***]

11. Phi and psi dihedral angles can be defined because all six atoms adjacent to one of these bonds must be coplanar due to resonance. For 10 points each:

[10] Name this type of amide linkage which occurs between amino groups and carboxylic acids. They are formed in dehydration synthesis reactions inside of the ribosome during translation.

ANSWER: peptide bonds

[10] Polypeptides are then linked together to form these macromolecules, which consist of amino acids. The central dogma states, “DNA to RNA to” this class of macromolecule.

ANSWER: proteins

[10] This first protein to be crystallized had its structure solved by John Kendrew after it was isolated from sperm whales. This monomeric oxygen-binding protein does not have allosteric binding, and it’s mostly found in muscle.

ANSWER: myoglobin

12. This object is taken from Madame Forestier’s black satin case for Mathilde to use at the Minister of Education’s ball. For 10 points each:

[10] Name this object which, according to the last line of the story, “was worth at the very most five hundred francs!”

ANSWER: “The Necklace” [or the diamond necklace; or “La Parure”]

[10] This Frenchman wrote “The Necklace” and a debut story set during the Franco-Prussian War entitled “Ball of Fat.”

ANSWER: Henri René Albert Guy de Maupassant

[10] “Ball of Fat” was published in a collection entitled *Soirees of Sedan*, along with this author’s “The Attack on the Mill.” This naturalist author made Étienne Lantier the protagonist of a novel about a coal miners’ strike.

ANSWER: Émile Zola

13. The Attic standard governed the value of these objects. For 10 points each:

[10] Name these objects which included the *drachma* in ancient Greece. The use of these objects originated in Lydia.

ANSWER: coins [or coinage; prompt on money or equivalents]

[10] The most famous ancient Athenian coins were inscribed with this animal, a symbol of Athens. Made of silver mined in Laurium, the coins inscribed with this animal were tetradrachmas.

ANSWER: owls [or Athenian Owls]

[10] Greek coins minted in Syracuse, on this island, were especially prized. Alcibiades advocated an expedition to this large Italian island during the Peloponnesian War.

ANSWER: Sicily [or the Sicilian Expedition]

14. In this work’s first book, all but 1 of the 24 movements end with a Picardy third. For 10 points each:

[10] Name this instructional work for solo keyboard, in which a prelude and fugue is written in all 24 keys.

Gounod’s “Ave Maria” is based upon the melody from this work’s first prelude from Book 1.

ANSWER: *The* Well-Tempered Clavier [or *Das* Wohltemperierte Klavier]

[10] *The Well-Tempered Clavier* was written by this German Baroque composer of *Toccatto and Fugue in D minor* and many other works for organ.

ANSWER: Johann Sebastian Bach [prompt on “Bach”]

[10] A work by Bach in this form was arranged by August Wilhelmj into “Air on the G string.” These works were divided into movements written in the style of popular dances. Examples of them include Handel’s *Water Music*.

ANSWER: orchestral suites [or Baroque suites]

15. Rebels captured this nation’s oil hub of Bentiu in April 2014. For 10 points each:

[10] Name this nation which is wrought by civil war between the Dinka and the Nuer, a war that started when this country’s president made a paranoid dismissal of his prime minister in 2013.

ANSWER: Republic of South Sudan [do not accept or prompt on “Sudan”]

[10] Sudan isn’t a whole lot better, especially in this western region where Janjaweed militia fight against the JEM. Sudanese president Omar al-Bashir was tried for crimes against humanity taking place in this region.

ANSWER: Darfur

[10] Al-Shabaab, a terrorist group from this other East African nation, murdered more than 60 people in a Kenyan shopping mall in 2013. This nation is now at peace, but its pirates threaten shipping around Africa's Horn.
ANSWER: Federal Republic of **Somalia**

16. This novel begins, "We were somewhere around Barstow on the edge of the desert when the drugs began to take hold." For 10 points each:

[10] Name this novel subtitled "A Savage Journey to the Heart of the American Dream." Its main plot involves Raoul Duke and Dr. Gonzo taking a lot of drugs.

ANSWER: **Fear and Loathing in Las Vegas**

[10] Hunter S. Thompson, the novel's author, was a member of the "New" school of this subject, along with writers like Joan Didion and Norman Mailer. The "gonzo" label was applied to Thompson's work in this medium.

ANSWER: **journalism** [or word forms]

[10] A decade earlier, this Beat author revolutionized novel-writing with his own counter-culture drug-filled fantasy titled *On the Road*.

ANSWER: Jack **Kerouac**

17. Answer the following about artistic representations of the Great Depression, for 10 points each:

[10] This photographer's work for the Farm Security Administration led to famous depictions of the hardships of the Depression, such as *Migrant Mother*.

ANSWER: Dorothea **Lange**

[10] This singer-songwriter inscribed "This machine kills fascists" on his guitar and wrote "Roll On, Columbia, Roll On" in response to the TVA's work. He also wrote "This Land is Your Land."

ANSWER: **Woodrow Wilson** "Woody" **Guthrie** [prompt to distinguish him from his son Arlo]

[10] The *Four Freedoms* series by Norman Rockwell was inspired by a speech made by this president. A portrait of this man by Elizabeth Shoumatoff was left unfinished after his 1945 death.

ANSWER: **Franklin Delano Roosevelt** [or **FDR**; prompt on "Roosevelt"]

18. Answer the following about demographic trends of medieval and early modern Europe, for 10 points each:

[10] Europe's population went down, roughly thirty or forty percent, in the fourteenth century thanks to this pandemic brought along the Silk Road by flea-infested rats.

ANSWER: the **Black Death** [or the bubonic **plague**]

[10] Famine was also common, due in no small part to this gradual cooling of temperatures for much of the late Middle Ages. This period of miserably cold winters didn't end until the 19th century.

ANSWER: **Little Ice Age** [prompt on **ice age**]

[10] Roughly thirty percent of Germany's population perished in the first half of this century due to the outbreak of the Thirty Years' War. The General Crisis began in this century.

ANSWER: **17th** century [or the **1600s**]

19. The Michelson-Morley experiment expected these things to "shift" by around 0.4, but they didn't. For 10 points each;

[10] Name this pattern formed when plane waves of light diffract through a slit or grating, forming alternating bands of light and dark on a far screen.

ANSWER: interference **fringes** [prompt on **interference** pattern]

[10] Therefore, the Michelson-Morley experiment proved that this quantity was constant regardless of direction, disproving the luminiferous aether.

ANSWER: **speed of light** [or **c**]

[10] The constancy of the speed of light is one of the major tenets of special relativity, which this physicist first theorized in one of his 1905 Annus Mirabilis papers.

ANSWER: Albert **Einstein**

20. And I would have gotten away with it, too, if it wasn't for you meddling Olympian gods! For 10 points each:

[10] This Titan attempted to steal fire from the Olympians and give it to mankind. Luckily for him, he got off easy, since he just gets strapped to a mountain with an eagle eating out his liver every night.

ANSWER: **Prometheus**

[10] This mortal trickster convinced Thanatos into chaining himself with unbreakable chains, thus preventing anyone from dying. As a result, he got to spend eternity rolling a boulder up a hill.

ANSWER: **Sisyphus**

[10] This king of Arcadia attempted to serve the flesh of his son Nyctimus. It didn't work--Zeus killed fifty of his sons, turned this king into a wolf, and then sent the Deucalion flood for good measure.

ANSWER: **Lycaon**