



1. This technique was theorized to represent the "spiritualization" of nature by Josef Matthias Hauer, who employed it in his *Nomos*. Another work in this style is the *Wittgenstein Motet* of Elisabeth Lutyens. Because the recapitulation directly follows the exposition in the *Lyric Suite*, it is often considered to be a prime example of this technique. Its basis is a construct with twelve factorial possibilities, which is used in works like *A Survivor from Warsaw* and the works of Webern. It is a form of serialism and is based on a namesake row. For 10 points, name this atonal technique pioneered by Schoenberg, which uses all the notes of the chromatic scale.

ANSWER: **twelve-tone** technique [prompt on **serialism**]

020-12-59-06102

2. Parton distributions can be calculated using the deeply virtual form of this effect. In this effect, the wavelength shift is proportional to one minus the cosine of the angle. Escape of particles undergoing this effect in a scintillator results in a spurious downward peak in the spectrum. Electrons in the gas surrounding galaxies cause CMB photons to undergo an inverse version of this effect, which is used to map clusters. The proportionality constant h over mc is the namesake wavelength of a particle undergoing this process, which is equal to the rest mass-energy of the particle. For 10 points, name this phenomenon in which a photon is inelastically scattered off an electron, causing its wavelength to decrease.

ANSWER: **Compton scattering** [or **Compton effect**]

048-12-59-06103

3. The twenty to thirty remaining Mazaalai bears inhabit this desert. In May 2011, workers unearthed buried vineyards that this desert's sands were protecting from extreme conditions. Plans are underway to create a 2800-mile-long "wall" of forest along the south boundary of this desert. In this desert's Flaming Cliffs region, Roy Chapman Andrews discovered the first fossilized dinosaur eggs. The Altai Mountains lie to the north of this desert, which expands rapidly and experiences temperatures as cold as negative forty degrees Celsius in the winter. For 10 points, name this desert located in northern China and southern Mongolia.

ANSWER: **Gobi** Desert

080-12-59-06104

4. While in Constantinople, this man refuted the ideas of Eutychius, who claimed that the resurrected body would not be visible. This man's works include a *Commentary on Job* called the *Magna Moralia*. He established the Monastery of Saint Andrew on the Caelian Hill before becoming pope, a position he called the "servant of the servants of god." This man angered Byzantium by paying off the Lombards to prevent them from sacking Rome. He famously said "They are not Angles, but angels" after an encounter with some boys at a slave market, which motivated him to send Augustine of Canterbury to convert Britain. For 10 points, name this late sixth century pope who created the medieval papacy.

ANSWER: **Gregory I** [or **Gregory the Great**; or **Saint Gregory**; prompt on **Gregory**]

080-12-59-06105

5. In one section of this work, a lord receives a cloak illustrated with wasps that then come to life and sting the wearer. Early in this work, some gods rub their hands over seeds of coral and kernels of corn and are disappointed when the result is a race of automatons made of wood. Two characters in this work smoke cigars in the House of Gloom, which joins the Houses of Cold, Fire, Knives, and Jaguars in a series of trials culminating in them escaping head-snatching bats commanded by Camazotz. Father Francisco Ximenez saved the manuscript of this work, whose second half focuses on Hunahpu and Xbalanque, who defeat the lords of Xibalba in a ball-game. For 10 points, the Hero Twins appear in what collection of Mayan myths?

ANSWER: Popol Vuh [or Book of the People; or Book of the Community; or Book of Counsel]

020-12-59-06106

6. A young character in this work steals back a weapon he had agreed to take from a character sleeping off his pain. That weapon forms part of this play's significant use of props and scenery, which is rare in its genre. Because of advice from Helenus, Neoptolemus deceives the title character of this play by assuring him that he will take him back to Greece. Neoptolemus later prevents the title character of this play from shooting Odysseus, who wishes to take him away from the deserted Lemnos. For 10 points, name this tragedy by Sophocles that ends with Heracles rising from the dead to command his title student to go to Troy.

ANSWER: Philoctetes

105-12-59-06107

7. One of these works was the subject of the Sut Jhally and Justin Lewis book *Enlightened Racism*. In a Jerry Mander book which presents "four arguments for the elimination" of these works, Mander says they have no democratic potential. Raymond Williams has traced the "flow" of these works from one to the next in the course of a day. In his book *Amusing Ourselves to Death*, Neil Postman compared these works to Aldous Huxley's fictional drug soma. Newton Minow notoriously categorized most of these works as part of "a vast wasteland" while he was serving as head of the FCC. For 10 points, name these mass media texts, examples of which include *Sesame Street* on PBS.

ANSWER: television programming [or TV shows or obvious synonyms; or sitcoms; or news shows; or other specific examples of TV shows]

052-12-59-06108

8. This substance is produced in the supraoptic nucleus, and an analog of it upregulates the release of von Willebrand factor from endothelial cells. Inappropriate production of this hormone can be treated by tolvaptan or conivaptan. Pigs contain a similar compound that has a lysine residue instead of an arginine residue. Like ACTH, its overproduction is a symptom of small-cell lung cancer. Diabetes insipidus results from a deficiency of this hormone. It consists of nine amino acids and is produced by the magnocellular neurons of the hypothalamus. It inserts aquaporins into the collecting ducts of the nephron, and like oxytocin is released from the posterior pituitary. For 10 points, name this hormone that helps the kidneys reabsorb water.

ANSWER: anti-diuretic hormone [or ADH; or arginine vasopressin; accept desmopressin]

079-12-59-06109

9. This man was General Alvin Hovey's defense attorney after Lambdin Milligan sued Hovey for false imprisonment. After this man claimed "Providence has given us the victory" in one election, political boss Matthew Quay said "Providence hadn't a damn thing to do with it." One cartoon depicts James G. Blaine as a raven looking down on this man, who is slumped at a desk wearing an enormous hat. During his presidency, the Sherman Antitrust Act was passed by the so-called "Billion-Dollar Congress." This man used a campaign slogan referring to his "grandfather's hat." For 10 points, name this President preceded and succeeded by Grover Cleveland, and himself the grandson of an earlier president.

ANSWER: Benjamin Harrison [prompt on Harrison]

052-12-59-06110

10. The first letters of lines in this poem's third stanza form an acrostic reading, "HEAR." This poem describes how the "hapless soldier's sigh runs in blood down palace walls," and it claims that venereal disease "blasts the newborn infant's tear and blights with plagues the marriage hearse." The speaker of this work claims to hear "mind-forged manacles" in the voice of everyone he meets while wandering through "each chartered street." For 10 points, name this poem from *Songs of Experience* in which William Blake enumerates the afflictions of the title city.

ANSWER: "**London**"

080-12-59-06111

11. In one of this director's films, Cherubini's *Requiem in C Minor* accompanies a murder in a train car, after which the killer gives up his *garmonbozia*. One of his film's opening sequences ends with an extreme close-up of beetles warring in the grass. In another of his films, the opening of a mysterious blue box causes most characters to shift identities. He created a nightclub singer who is ritualistically raped as Jeffrey Beaumont watches from the closet, and he worked with Mark Frost on a popular television series. For 10 points, name this American director of *Mulholland Dr.* and *Blue Velvet* who created *Twin Peaks*.

ANSWER: David **Lynch**

014-12-59-06112

12. A folding function maps this set of numbers onto one of its subsets. Matiyasevich showed that equations that only accepts these numbers as inputs cannot always be solved in a finite number of steps. A Diophantine equation is an equation whose solutions can only be from this set. When the two parts of a complex number are this type of number it called Gaussian. Georg Cantor showed that there is no set with cardinality between this set and the real numbers in the continuum hypothesis. Both the floor and ceiling functions return numbers from this set. If a number can be formed as fraction of these numbers it is called rational. For 10 points, name this set of numbers formed by the union of the natural numbers and the negative natural numbers, denoted with a boldface Z.

ANSWER: **integers**

064-12-59-06113

13. This event was followed by the Informbiro period in one of the relevant countries. Supporters of one side were sent to the prison island Goli otok, and Traicho Kostov and László Rajk were both executed for their alleged support of the other. One man in this event became angry at the other for that man's impolitic involvement in the Greek Civil War and attempts to incorporate Trieste into his country. This event was made official with a 1948 resolution that accused another country's Communist party of splitting with Marxist-Leninism and expelled it from Cominform. For 10 points, name this cooling of relations between the leaders of Yugoslavia and the Soviet Union.

ANSWER: Josip Broz **Tito**-Joseph Vissarionovich **Stalin split** [accept in either order; accept equivalent answers; accept Josip **Broz** for Tito; accept Ioseb **Dzugashvili** for Stalin; or **Yugoslav-Soviet split** before mentioned]

121-12-59-06114

14. A set of recently-constructed tunnels connects this structure to the Struthion Pool. A Duke of Arabia named Pangar was executed for refusing to destroy this structure at Vespasian's behest. At any given time, portions of this structure contain thousands of tzetels. Muslims believe that Muhammad tied his steed to a portion of this structure during the Night Journey, giving it the Arabic name al-Buraq. Visitors to this structure often slip prayerful notes into its crevices and mourn the destruction of a proximate building. For 10 points, name this final remaining fragment of the Holy Temple in Jerusalem, a sacred site for Jews.

ANSWER: **Western Wall** [or **Wailing Wall**; or **Kotel**]

117-12-59-06115

15. One of this author's characters whistles "The Last Rose of Summer" and wants to grow roses when he retires. In another of this author's novels, the obese Count Fosco betrays and is murdered by an Italian group called the "Brotherhood." He wrote a work in which art teacher Walter Hartright discovers Laura Fairlie resembles an asylum escapee named Anne, while in another work Godfrey Ablewhite is murdered after pocketing the title object. This author of *Armadale* collaborated with his friend Charles Dickens in writing the story "A House to Let." In one of his novels, the title object is a stolen diamond eventually returned to India. For 10 points, name this British author, who pioneered detective fiction in *The Woman in White* and *The Moonstone*.

ANSWER: William Wilkie **Collins**

052-12-59-06116

16. This man ends his most famous work by stating that "All things excellent are as difficult as they are rare." According to this man, no two substances can be distinguished by their "affections," and therefore no two substances can have the same attributes. This man also stated that to be free means that something exists "solely from the necessity of its own nature" and that it acts on its own. This man defined a substance as "that which is in itself and is conceived through itself." He also claimed that "God, or that is Nature," is the only substance in the universe. One of this man's works, which contains the section "Of Human Bondage," is divided up into definitions, axioms and propositions. For 10 points, name this author of *Ethics*.

ANSWER: Baruch **Spinoza**

149-12-59-06117

17. Two answers required. One war between these two countries saw the March of the Iron Will conducted as an assault on a capital city. The Hoare-Laval pact was an attempt to end that war between them, which also included the Christmas Offensive. These two countries fought a battle where queen Taytu Betul commanded a decisive contingent. They fought two wars after crossings of the Mareb River, the first of which occurred due to linguistic disputes regarding the Treaty of Wichale. These countries fought the Battle of Adowa. For 10 points, name these two nations, one an African power led by Menelik II, and the other a European country.

ANSWER: **Italy** and **Ethiopia** [accept in either order; accept **Abyssinia** for Ethiopia]

040-12-59-06118

18. A statue of one of these figures shows fire rising from his head as he is "at the moment of victory." Four of these figures face the four cardinal directions at the heart of the Ananda Temple. The Mogao Caves are sometimes known as the "Caves of the Thousand" of these figures. Statues of these figures often have long ear lobes, a topknot called the *ushnisha*, and hair in curls resembling snail shells. Gigantic statues of these figures carved out of sandstone in Bamiyan, Afghanistan were destroyed by the Taliban. For 10 points, name these beings depicted in Southeast Asian art, who include Maitreya, Amitabha, and Siddhartha Gautama.

ANSWER: **Buddhas** [or statues of **Buddhas**; prompt on statues of **Siddhartha** Gautama]

080-12-59-06119

19. This author wrote a story in which a drunken Ulysses S. Grant confuses Robert E. Lee for Robert Browning at Appomattox. In another of this man's works, the title character says "Puppy biscuit" out loud while going into the A&P store. That title character says, "To hell with the handkerchief," as he is about to be shot at the end of the story. This author wrote about Mr. Martin's plot to get rid of obnoxious Dodgers fan Ulguine Barrows in "The Catbird Seat." In his most famous story, the title character imagines himself as a flying ace and a brilliant surgeon. For 10 points, name this humorist, who wrote "The Secret Life of Walter Mitty."

ANSWER: James **Thurber**

052-12-59-06120

20. The origin of a phenomenon that affects one part of these constructs was solved using the beta plane approximation by Henry Stommel. One part of these constructs is faster, deeper and narrower due to the Coriolis effect being stronger at the poles, which gives rise to an off-center hill of water. Charles Moore brought attention to an area caused by one of these constructs known as the Great Pacific Garbage Patch. That phenomenon is westward intensification, which affects western boundary currents such as the Kuroshio current and the Gulf Stream. For 10 points, identify these constructs which consist of flow around the periphery of an ocean basin.

ANSWER: geostrophic subtropical ocean **gyres** [prompt on ocean **currents**]

066-12-59-06121

21. A form of small angle scattering often used in tandem with small angle x-ray scattering uses these particles to analyze structures on the order of nanometers. The asymmetry term in the liquid drop model is taken account when there is an overabundance of these particles. They can be captured rapidly in the R-process or more slowly in the S-process. Magnetars are a class of stars composed of these particles that are kept from collapsing by quantum degeneracy pressure. Control rods are composed of elements that can effectively absorb this particle. In beta minus decay, one of these particles decay into an electron and an electron antineutrino. For 10 points, name this particle discovered by James Chadwick found in the nucleus alongside the proton.

ANSWER: **neutron**

064-12-59-06122

22. The dukes of this city were the leaders of a party that opposed the Treaty of Troyes and that was called the Armagnacs. After John Talbot's failed assault on this city, St. Loup was captured. One army laying siege to this city was resupplied after Charles of Bourbon lost to John Fastolf at the Battle of the Herrings. William de la Pole took over that army after Thomas Montacute died while laying siege to this city. Jean de Dunois left this city in the hands of La Hire and a woman who was burnt at the stake after she crowned Charles VII at Rheims. For 10 points, Joan of Arc was known as the Maid of what city after relieving its siege during the Hundred Years' war?

ANSWER: **Orleans**

149-12-59-06123

23. The protagonist of this work is brought to tears by a Chopin impromptu mentioned by another character in a letter sent from Mexico. In this novel, the "lady in black" remains silent and the Farival twins play the piano for guests. The protagonist collapses into her porch hammock after learning how to swim, and later, she strips herself naked before drowning. Mrs. Highcamp invites this novel's protagonist to attend the races with her and Alcee Arobin. The resort called Grand Isle is the setting for much of this novel, in which Doctor Mandelet suspects that Leonce's wife is having an affair with Robert Lebrun. For 10 points, name this novel about Edna Pontellier written by Kate Chopin.

ANSWER: *The **Awakening***

124-12-59-06124



1. Prior to this crisis, the Russian Minister Isvolsky met with the Austro-Hungarian minister Aehrenthal at Buchlau, with each agreeing to support the other's interests. For 10 points each:

[10] Name this 1908 crisis that arose after Austria-Hungary attempted to annex Ottoman territory it had occupied since the 1870s. This crisis served to bring the snubbed parties, Russia and Serbia, closer together.

ANSWER: **Bosnian Crisis** [or the **First Balkan Crisis**; prompt on **Balkan Crisis**]

[10] Problems in the Balkans eventually led to the assassination of this heir to the Hapsburg throne in Sarajevo in 1914.

ANSWER: **Franz Ferdinand** [or **Francis Ferdinand**]

[10] The First Balkan War erupted in 1912 after the Ottoman Empire showed its weakness in losing Libya to this country. This country was part of the Triple Alliance with Germany and Austria-Hungary.

ANSWER: **Italy** [or **Italian Republic**; or Repubblica **Italiana**]

080-12-59-06201

2. Answer these questions about the Latin verb "dico," for 10 points each.

[10] The form "dico" is in this person, and is thus translated as "I say."

ANSWER: **first** person

[10] Verbs of saying or relating, like "dico," are often used to introduce these clauses. The main verb of these clauses remains infinitive to indicate situations of reporting or quotation without marks.

ANSWER: **indirect** discourse [or **indirect** statement]

[10] The subject in an indirect discourse clause is in this noun case, which is usually used for direct objects. For example, in the sentence "Dico te bonum esse," "te" is in this case.

ANSWER: **accusative** case

104-12-59-06202

3. Name some of the men the goddess of the dawn Eos spirited away, for 10 points each:

[10] Zeus granted Eos' wish for this man to become immortal, but she forgot to ask for eternal youth, so this man turned into a cicada at old age.

ANSWER: **Tithonus**

[10] Earlier, Eos had also abducted this figure, who was later taken away by Zeus to become Zeus' cupbearer.

ANSWER: **Ganymede**

[10] Eos also had an affair with this hunter, who was already married to Procris at the time he was abducted. Eos allowed him to return, but cursed him so that he ended up hurling a javelin into a bush where Procris was hiding and thus killed her.

ANSWER: **Cephalus** [or **Kephalos**]

140-12-59-06203

4. Early in this work, the protagonists encounter an old man, who laments that no one will exchange youth for his age. For 10 points each:

[10] Name this story, part of a larger work, in which three men seek to “slay this false traitor Death.” As they set out on their way, they find some gold, and end up killing each other to claim the gold.

ANSWER: “The **Pardoner’s Tale**”

[10] “The Pardoner’s Tale” is one of the many stories told by pilgrims on the way to the shrine of Thomas Becket in this collection of verse stories by Geoffrey Chaucer.

ANSWER: *The **Canterbury Tales***

[10] This man printed an edition of *Canterbury Tales* from his press in Westminster in the 1470s. He is considered the first man to introduce a printing press into England. He printed the first book in the English language, *Recuyell of the Historyes of Troye*, in 1473 from Bruges.

ANSWER: William **Caxton**

052-12-59-06204

5. This artist's only dated work, which depicts a woman in front of a laurel tree, is *Laura*. For 10 points each:

[10] Name this artist of *Sleeping Venus*, *Three Philosophers*, and *The Tempest*.

ANSWER: **Giorgione**

[10] The painting *Pastoral Concert* is attributed both to Giorgione and this younger Venetian artist, who painted the *Venus of Urbino*.

ANSWER: **Titian**

[10] Giorgione's *Castelfranco Madonna* is an example of this genre. These paintings depict Mary and the baby Jesus amidst a group of saints.

ANSWER: **sacra conversazione** [or **sacred conversation**]

080-12-59-06205

6. At short wavelengths, this law gives anomalous predictions that give rise to the ultraviolet catastrophe. For 10 points each:

[10] Name this doubly eponymous law that gives the radiance of a blackbody at all wavelengths using the predictions of classical physics.

ANSWER: **Rayleigh-Jeans** law

[10] The Rayleigh-Jeans law was corrected by this man, who arrived at a correct result by treating radiation as quantized. His equation also makes use of his namesake constant.

ANSWER: Max **Planck**

[10] This law states that the wavelength of maximum thermal emission from a black body is inversely proportional to the temperature.

ANSWER: **Wien**'s displacement law

127-12-59-06206

7. It has been suggested that all subsequent earthquakes in this seismic zone are aftershocks of an 1811 earthquake. For 10 points each:

[10] Name this seismic zone, the home of the Reelfoot rift, that is the site of intense intraplate earthquakes. A series of four earthquakes occurred in this seismic zone over the course of three months in 1811 and 1812.

ANSWER: **New Madrid** Seismic Zone [or **NMSZ**]

[10] The county of New Madrid is located in this section of Missouri, which extends below the 36° 30' parallel. A similarly named region in New Mexico contains the Hachita valley.

ANSWER: **bootheel**

[10] This highland area dominates southern Missouri and much of northern Arkansas. The St. Francois Mountains rise above this dissected plateau region.

ANSWER: **Ozarks** [or **Ozarks** Mountain country; or **Ozark** Mountains; or **Ozark** plateau]

149-12-59-06207

8. This son of Humayun increased his empire's patronage of the arts. For 10 points each:

[10] Name this great Mughal emperor who ruled from both Agra and Fatehpur Sikri.

ANSWER: Abu al-Fath Jalal al-Din Muhammad **Akbar** the Great

[10] This later emperor deposed his father Shah Jahan and ended the empire's great religious freedom, establishing conservative Islamic law.

ANSWER: Muhi al-Din Muhammad **Aurengzeb** [or **Awrangzib**; or **Alamgir I**; prompt on **Alamgir**]

[10] This eldest son of Shah Jahan and Mumtaz Mahal was defeated and killed during his brother Aurengzeb's rise to power.

ANSWER: **Dara** Shikoh

105-12-59-06208

9. This class of plant hormones promotes apical dominance by causing the emission of ethylene and curbing plant growth away from the main stem. For 10 points each:

[10] Name this class of hormones that have an aromatic ring and a carboxylic acid. Indole-3-acetic acid is the most prevalent member of this class.

ANSWER: **auxins**

[10] Auxins are partially responsible for this phenomenon, in which the growth of a plant is altered by the directionality of a light source.

ANSWER: **phototropism**

[10] Auxins mediate their effects by pumping protons into the cell wall space, thereby activating these proteins. These proteins elongate the cell wall.

ANSWER: **expansins**

040-12-59-06209

10. At the end of this story, the narrator warns that generous men should fully think through the consequences of their supposedly philanthropic intents before acting on them. For 10 points each:
[10] Identify this short story in which Violet and Peony create the title sister, who melts when she is placed by the fire by their father, Mr. Lindsey.

ANSWER: "The **Snow-Image**"

[10] In this other short story, the title character invites four old subjects to drink water sent to him from the Fountain of Youth, which he demonstrates by reviving a faded rose.

ANSWER: "**Dr. Heidegger's Experiment**"

[10] "The Snow-Image" and "Dr. Heidegger's Experiment" were written by this American novelist of *The Scarlet Letter*.

ANSWER: Nathaniel **Hawthorne**

014-12-59-06210

11. This son of Emma of Normandy constructed Westminster Abbey. For 10 points each:

[10] Name this English king known for his piety. His death prompted William the Conqueror's invasion of England.

ANSWER: **Edward the Confessor** [prompt on **Edward**; do not accept "Edward I"]

[10] Edward the Confessor succeeded this ruler, who replaced his own father Canute the Great as King of Denmark in 1035 and was invited to assume the throne of England five years later.

ANSWER: **Harthacanute** [or **Hardicanute**]

[10] Much of the conflict between the Danes and the English at the time stemmed from these hefty ransoms forced on the English to prevent invasions.

ANSWER: **Danegelds**

015-12-59-06211

12. Early versions of this type of device were made by Thomas Savery and Edward Somerset. For 10 points each:

[10] Name this device that produces work, one version of which was designed by James Watt and Matthew Boulton.

ANSWER: **steam engine** [prompt on **engine** or other less specific answers that do not mention steam]

[10] A balance beam that had one side connected to a chamber in which steam would accumulate characterized the design of steam engine named for this man. Watt improved on this man's work.

ANSWER: Thomas **Newcomen**

[10] Steam engines are described by the thermodynamic cycle developed by this Scottish polymath. This scientist also developed a temperature scale equal to the degrees in Fahrenheit plus 459.67 degrees.

ANSWER: William John **Rankine**

040-12-59-06212

13. Answer these questions about Incan mythology, for 10 points each.

[10] Godlike beings called Apu were the spirits of these objects. Ida and Parnassus are examples of these objects in Greek myth.

ANSWER: **mountains** [or **hills**]

[10] This chief Incan deity was said in some stories to have fathered Inti and to have then caused a great flood, leaving only two survivors. He also is said to have walked across the Pacific Ocean from Cuzco.

ANSWER: **Viracocha**

[10] This rain god kept the Milky Way on a jug on his back. In times of drought, black dogs were starved to propitiate this god.

ANSWER: **Ilyapa**

040-12-59-06213

14. This leader trained as an ophthalmologist in London before the death of his brother, Basil, in a car crash. For 10 points each:

[10] Name this current president of Syria, who recently committed a massacre in Houla to crush protests against his regime.

ANSWER: Bashar al-**Assad**

[10] Assad's forces have besieged this third most populous city in Syria since 2011. Eyepatch-sporting journalist Marie Colvin was killed in this "capital of the revolution."

ANSWER: **Homs**, Syria

[10] The al-Assad regime is supported by these paramilitaries, thugs nicknamed "ghosts" for assaulting protesters while wearing civilian dress.

ANSWER: **shabeeha**

080-12-59-06214

15. This composer wrote *A Complete Theoretical and Practical Course of Instruction on the Art of Playing the Piano Forte*. For 10 points each:

[10] Name this contemporary of Beethoven, who also wrote an E Major concerto for the keyed trumpet. This student of Mozart composed piano concertos that influenced those of Chopin.

ANSWER: Johann Nepomuk **Hummel**

[10] The instrumentation of Hummel's piano quintet inspired this piano quintet, which is based on a song by its composer called "Die Forelle."

ANSWER: the **Trout** Quintet [or Schubert's **Piano Quintet in A Major**]

[10] This composer's Trumpet Concerto in E-flat major was also composed for Anton Weidinger. He worked as a court musician for the Esterhazys and wrote symphonies like "The Surprise."

ANSWER: Franz Joseph **Haydn**

066-12-59-06215

16. For 10 points each, identify the following about the works of early English poets.

[10] Do-Well, Do-Better, and Do-Best appear in this man's allegorical poem *Piers Plowman*.

ANSWER: William **Langland**

[10] John Gower is best known for a long poem titled for a lover's one of these. Thomas de Quincey wrote a book of these "of an Opium Eater."

ANSWER: **confessions**

[10] This author's *Book of Showings*, also known as *Revelations of Divine Love*, consist of a series of visions that she had during a near death experience.

ANSWER: **Julian** of Norwich

040-12-59-06216

17. At the end of this opera's third act, Erika runs out into the cold, apparently to abort her child. For 10 points each:

[10] Name this opera which begins with the title character awaiting the arrival of her former lover Anatol. Its arias include "Must the Winter Come So Soon" and "He has come, he has come!....Do Not Utter a Word."

ANSWER: **Vanessa**

[10] *Vanessa* was an opera by this American composer, who also wrote a famous 1936 *Adagio for Strings*.

ANSWER: Samuel Osborne **Barber** II

[10] Barber adapted a James Agee prose piece for a 1947 work for voice and orchestra set in this Southern city during the "summer of 1915." The premiere of the piece was conducted by Serge Koussevitzky.

ANSWER: **Knoxville**

052-12-59-06217

18. While based in Saint Paul, Minnesota, this man's gang included Homer Van Meter and Baby Face Nelson. For 10 points each:

[10] Name this notorious Depression-era gangster who was killed in 1934 in Chicago after coming out of the Biograph Theater. That same year, he was named the first "Public Enemy Number One."

ANSWER: John Herbert **Dillinger**

[10] Dillinger was set up in Chicago by Ana Cumpanas, a brothel madam who accompanied Dillinger to the movies. She was known by this alias, referring to the color she wore as a signal to the FBI.

ANSWER: **Woman in Red**

[10] This first director of the FBI headed the efforts to bust Dillinger. He served in that post until his death in 1972 and was criticized for using the bureau to harass political foes.

ANSWER: John Edgar **Hoover**

052-12-59-06218

19. These compounds are polydentate if they have multiple binding sites. For 10 points each:

[10] Name these molecules or ions that bond with a metal atom to form a coordination complex.

ANSWER: **ligand**

[10] This hexadentate ligand is used in industrial processes and food preservation because of its ability to sequester reactive metal ions. It is synthesized from formaldehyde, ethylenediamine (EH-thuh-leen-DIE-uh-meen), and a cyanide compound in a reaction that may also produce nitrolotriacetic (nye-TROH-loh-uh-see-tick) acid.

ANSWER: **EDTA** [or **ethylenediaminetetraacetic acid**]

[10] Polydentate ligands will exert a greater attraction to metal ions than a collection of monodentate ions, even when the total number of electron donor atoms is the same, in an effect given this name.

ANSWER: **chelate** (KEY-late) effect

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20. This character likes his shaving water at 86 degrees Fahrenheit and fires valet James Foster for bringing him water at 84 degrees. For 10 points each:

[10] Name this character who is served by the valet Passepartout and eventually marries the Indian princess Aouda. He is a member of the Reform Club.

ANSWER: **Phileas** Fogg [or Phileas **Fogg**]

[10] Phileas Fogg is the protagonist of *Around the World in Eighty Days*, a novel by this French author, who also wrote about Captain Nemo in *Twenty Thousand Leagues Under the Sea*.

ANSWER: Jules **Verne**

[10] This stupid detective believes Fogg robbed the Bank of England and follows him around the world, hoping to arrest him. He drugs Passepartout in an opium den and gets punched by Fogg near the end of the novel.

ANSWER: Inspector **Fix**

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21. For 10 points each, identify the following mathematical contributions of John Tukey.

[10] With James Cooley, Tukey invented a "fast" way to compute this transform that shifts functions from the time domain to the frequency domain.

ANSWER: **Fourier** transform [or fast **Fourier** transform; or **FFT**]

[10] Tukey names a certain form of this statistical measurement, which in general is defined as the value separating a list of values into two halves of equal size.

ANSWER: **median**

[10] Tukey's Lemma, which states that "every family of finite character has a maximum set," is a restatement of Zorn's Lemma, which is likewise equivalent to the Hausdorff maximality principle, the well-ordering theorem, and this axiom.

ANSWER: axiom of **choice**

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