

### Tossups

1. The bookseller Hakim Hasan in this city is a major character in *Sidewalk*, Mitchell Duneier's study of its street vendors. The 2013 ethnography *Floating City* maps the underground economy of this city. E.B. White discussed its "steady, irresistible charm" in a book titled *Here Is* "this city." Toronto and this city are the main examples of "The Need for Small Blocks" and "The Uses of Sidewalks" in a 1961 book. George Kelling was hired as a consultant by this city after writing an article with James Q. Wilson. Robert Caro's biography *The Power Broker* discusses the near authoritarian power that Robert Moses used to build its public projects. For 10 points, name this city which enthusiastically tested the "broken windows theory" and where Jane Jacobs fought with Robert Moses over the Cross-Bronx Expressway.

ANSWER: New York City

2. One character in this musical tells of a scientist who dissolved a tooth in a glass of Coke. Another notes that she could "stay home every night, wait around for Mr. Right" in the song "There Are Worse Things I Could Do." The lead roles in its 2007 Broadway revival were cast though a Billy Bush hosted NBC reality show. Its female lead sings "Guess mine is not the first heart broken" in the song "Hopelessly Devoted to You." Its song "All Choked Up" is sung by the Pink Ladies and the Burger Palace Boys. Its most popular songs are the duets "You're the One That I Want" and "Summer Nights," which are sung by Sandy and Danny. For 10 points, name this musical set at a 1950s high school, which was turned into a film starring John Travolta and Olivia Newton-John.

ANSWER: Grease

3. Following an invasion of Korea, this city became the site of the Mimizuka, a mound of severed ears and noses. The sword hunt was used to gather metal for creating a large Buddha at Hoko-ji in this city. The Saionji family ran this city's Yodo fish market, and the creation of the Nishijin weaving district in this city followed its destruction in the Onin War. Toyotomi Hideyoshi had his Jurakudai palace in this city torn down, and he also built the Fushimi Castle in this city. The aristocratic kuge class started here during a namesake period, which began when Emperor Kammu made this city the capital. For 10 points, name this city that served as the imperial capital of Japan for over a thousand years, starting with the Heian period and ending when the Meiji Restoration moved the capital to Tokyo.

ANSWER: Kyoto [or Heian-kyo; prompt on "Heian" before read]

4. This work claims that the essential impulse of human drama is the desire to reduce the world to a single principle, a desire it calls "nostalgia for unity." It describes a type of man who seeks an eternal victory in which to remake man and the earth, the "conqueror," after sections on drama and "Don Juanism." This essay, which has an appendix concerning Franz Kafka, concludes that "The struggle ... is enough to fill a man's heart," after showing that the conflict between the human desire for reason and the unreasonable universe makes life "absurd." This essay claims that the only important philosophical problem is the problem of suicide. For 10 points, name this essay in which Albert Camus writes that we must imagine the title Greek character "happy" as he rolls his boulder up the hill.

ANSWER: *The Myth of Sisyphus* [or *Le Mythe de Sisyphe*]

5. An author with this last name wrote a poem which asks "What can I give Him, poor as I am?" and concludes that "what I can give Him" is "my heart." One poem by an author of this last name describes a figure with eyes "deeper than the depth of waters stilled" who had three lilies in her hand. Another poem by an author with this surname notes that though "one may lead a horse to water, twenty may not make him drink" while describing a struggle to open Lizzie's mouth. That poem by an author with this last name, whose brother wrote "The Blessed Damozel," sees the title creatures exhort maidens to "Come buy our orchard fruit, come buy, come buy." For 10 points, give this last name shared by the author of "Goblin Market," Christina, and her brother Dante Gabriel.

ANSWER: Rossetti

6. Gaarder and Gran developed a common method of measuring this quantity. This quantity is in the denominator of Eppley and Peterson's f-ratio. The ratio of this quantity to the APAR is called the light use efficiency, and the log of this quantity varies linearly with the leaf area index. One way to measure it is to take one dark bottle and one light bottle, and subtract the difference in oxygen levels between the two. This quantity, which has units of kilograms per

meters squared per second, equals the standing crop divided by the turnover rate. To calculate the net amount of this quantity, you must first subtract the amount used for respiration. For 10 points, name this quantity, the rate at which chemical energy is made by autotrophs in photosynthesis and turned into biomass.

ANSWER: net **primary production** [or gross **primary production**; or **NPP**; or **GPP**; or **productivity** instead of production; prompt on **production**; do not accept or prompt on “biomass”]

7. This artist used a needle to scratch away at a piece of blackened glass to create a dark portrait of a seated man in a pince-nez, his *Portrait of My Father*. *Red and White Domes* is a variation on this man’s “magic square” style. A painting by this man shows a pink bird stepping between the eyebrows of a cat with a heart-shaped nose. An orange sun rises over a black-outlined pointillist pyramid in this artist’s *Ad Parnassum*. In a watercolor by this man, a pole sporting a bow-tie projects from a pink rectangular table to hold up the wire on which four open-mouthed stick-figure birds sit attached to a crank. For 10 points, name this German-Swiss Bauhaus teacher who painted *The Twittering Machine*.

ANSWER: Paul **Klee**

8. In one scene in this film, a professor shows his students a Venus fly-trap devouring its prey and compares it to one of this film’s characters. Two of its characters interrupt their croquet game to deliver a letter to a woman who sits on a bench at a beach studded with wooden crosses. In this film, after a clock with a skeleton figure strikes midnight, one character cuts his thumb while slicing a loaf of bread. Its title character terrorizes Wisborg until Thomas Hutter’s wife Eileen sacrifices herself. In this film, a ship succumbs to a plague carried by six rat-filled coffins which also carry the title character to Germany. For 10 points, Max Schreck plays Count Orlok in what German Expressionist horror film directed by F.W. Murnau, loosely based on Bram Stoker’s *Dracula*?

ANSWER: **Nosferatu**: *A Symphony of Horror* [or **Nosferatu**, *eine Symphonie des Grauens*]

9. An operator that induces this phenomenon must be deterministic and rate-independent. The Preisach model conceptualizes this phenomenon as a collection of weighted nonideal relays connected in parallel. A transducer will exhibit this phenomenon if it has nontrivial internal states. A comparator can be made resistant to noise by augmenting it with this nonlinear property, converting it into a Schmitt trigger. This phenomenon exists in any system where outputs are not a pure function of inputs, as seen on a graph of magnetization versus applied magnetic field in a ferromagnet when an alternating field is applied. For 10 points, identify this strongly nonlinear phenomenon found in many magnetic systems, in which the system's state depends on its history.

ANSWER: **hysteresis**

10. The groundwork for these institutions may have been laid in the decretals *Ad abolendum* and *Vergentis in senium*. A *Directorium* for people working for these institutions was written by Nicholas Eymeric. One of them used a line from Psalm 73 as its motto; that version started after earlier failed efforts by Alonso de Espina and Alonso de Oropesa to have one of these institutions started by Henry IV. They could force people to wear sanbenitos and were assisted by lay people called familiares. One of these institutions was established following a papal bull issued by Sixtus IV; that one was initially led by Tomas de Torquemada. For 10 points, name this type of institution run by the Holy Office that often resulted in autos-da-fe for people accused of heresy.

ANSWER: **inquisitions**

11. In a novel by this author, the tumultuous marriage of singer Heinrich Muoth to the title character inspires an opera by Kuhn. One character created by this author is sexually awakened by a gypsy and decides not to be a monk, instead becoming apprenticed to a woodcarver who created a beautiful Madonna. In that novel by this author of *Gertrud*, the two title characters meet at Mariabronn monastery. In another novel by this author, the protagonist is raised in a *Scheinwelt* and mentored by an organist named Pistorius. The title character of that novel helps ward off the bully Franz Kromer and encourages Emil Sinclair in the study of the Gnostic god Abraxas. For 10 points, name this author of *Narcissus* and *Goldmund* and *Demian*.

ANSWER: Herman **Hesse**

12. One of these compounds reacts with a carboxylic acid in the first step of the Schmidt reaction. In oil refining, alkylation of hydrocarbons requires one of these compounds as a catalyst. The Bronsted catalysis law applies to them. Effectively, active methylene groups act as these compounds. Like sulfonates, they turn hydroxyls into good leaving groups, and they also activate carbonyls for nucleophilic substitution. In their presence, nucleophiles open

epoxides at the more substituted carbon. Hydration of alkenes catalyzed by these compounds proceeds with carbocation rearrangements. These compounds have low-lying LUMOs. Magnesium cation is a hard one, and boron trifluoride is a Lewis one. For 10 points, name these electron pair acceptors which have pH less than 7.

ANSWER: acids [or Lewis acids; or Bronsted-Lowry acids; or Arrhenius acids; prompt on electrophiles]

13. This character comes home with his pockets filled with money after helping two lost women find their way back to his hometown. The book in which he appears has been published alongside the author's "Railroad Stories." This character, who constantly quotes the Bible, appears in a collection of eight stories, including one in which he "strikes it rich." In the story "Lekh-Lekho," this character reconciles with his daughter Chava, who leaves her Russian Orthodox husband to return to her family when they are exiled. This character, who lives in the town of Boyberik, has six named daughters, including Hodel and Shprintze. For 10 points, name this Sholem Aleichem character, a dairyman who is also the protagonist of *Fiddler on the Roof*.

ANSWER: Tevye the Dairyman [or Tevye the Milkman]

14. A serialist composer from this country argued that serious music is too difficult for the layperson to understand in the article "Who Cares If You Listen?" It's not the UK, but like Ralph Vaughan Williams, another composer from this country wrote *A Sea Symphony*, as well as a fourth symphony subtitled "Requiem." A composer from this country used its folk idioms in his *Excursions* for piano and wrote a violin concerto with a *perpetuum mobile* third movement. That composer's Opus 11 is a string quartet whose second movement was arranged to create a melancholic piece for string orchestra to which he later added a choral setting of the *Agnus Dei*. That piece is the *Adagio for Strings*. For 10 points, name this country home to Milton Babbitt, Howard Hanson and Samuel Barber.

ANSWER: the United States of America [accept obvious equivalents]

15. One character in this story attempts to relate the plot of Pope's translation of *The Iliad*, but mispronounces "Achilles" as "Ash-heels." One character in this story starves herself to death to save rations for Piney Woods, who ran away to marry "The Innocent." Another character in this story writes a suicide note on a two of clubs and pins it to a tree with a bowie knife. To the accompaniment of an accordion, characters in this story sing the refrain "I'm proud to live in the service of the Lord, and I'm bound to die in His army." The main characters of this story are stranded together with Mother Shipton and "The Duchess" in a snow-storm after Uncle Billy makes off with all of their mules and horses. The gambler John Oakhurst commits suicide in, for 10 points, what Bret Harte story?

ANSWER: "The Outcasts of Poker Flat"

16. In many depictions, this deity's eyebrows are made of serpents that entwine lower down on the face to form a nose. This god governs a locale where toads guard the cooking pots of the lord of the winds. Four jug-holding figures at the corners of the earth are named for this god, who was depicted with blue goggle-like markings around his eyes and prominent fangs at mountaintop shrines. This god sired a moon deity with a jade-skirted goddess of the flood named Chalchiuhtlicue. This patron god of the third sun controls an alternative to Mictlan for victims of lightning strike, drowning, or water-borne disease. For 10 points, name this namesake of a watery underworld, the Aztec rain god.

ANSWER: Tlaloc [or Tlaloque]

17. In the United States, Thomas Leiper created the earliest type of this structure, about which Louis H. Haney wrote a *Congressional History*. Asa Whitney campaigned unsuccessfully for one of these structures to be started in Prairie du Chien. John Stevens is known as the father of these structures in America. In 1853, Jefferson Davis set up surveys in anticipation of building one of these structures. Theodore Judah organized Charles Crocker, Collis Huntington, Mark Hopkins, and another man into building part of one of these structures. That type of this structure had its Golden Spike driven in by Leland Stanford in Promontory, Utah. For 10 points, name these structures that included the Union Pacific and Central Pacific, which were joined together in 1869 to form the first transcontinental one.

ANSWER: railroads [or railways; or train tracks; or tramways]

18. One symbol made using this physical material is called the *tripundara*. The Manikarnika Ghat is a locale devoted to producing this material, which is collected after the Antam Sanskar ritual in Hinduism. A type of this material called *vibhuti* is used by some Shiva devotees to draw lines across their forehead, and Shaivite Hindus believe Shiva's entire body is covered with this stuff. Families bring containers of this material to Varanasi for the

largest Hindu pilgrimage, in which this material is scattered in the Ganges River. In the Old Testament, people such as Mordecai put it on themselves while wearing sackcloth. For 10 points, name this sacred material sometimes produced from sandalwood, which is also the byproduct of cremation.

ANSWER: ashes [accept ashes of the dead, or wood ashes, at any point even though some of these clues only refer to one and not the other]

19. An assault on Chocolate Hill during this campaign was led by Ernest Julian of the Dublin Pals, which lost two-thirds of its members in this campaign. Although it did not take place in America or Belgium, this campaign had a Bloody Angle and Dead Man's Ridge overlooking its Shrapnel Valley, in which the Man with the Donkey, John Simpson Kirkpatrick, was killed. This campaign included a disastrous attempt to divert attention from Suvla Bay during the August Offensive by having troops charge the Nek. This campaign's failure led to the resignation of Winston Churchill, and the date of its initial landing is marked by ANZAC Day. For 10 points, name this failed World War I campaign that attempted to open a route to Constantinople by invading a Turkish peninsula.

ANSWER: Gallipoli Campaign [or Dardanelles Campaign; or Battle of Canakkale]

20. A map has this property if it is a surjective continuous linear operator between Banach spaces, by the Banach-Schauder theorem. In a Baire space, a countable intersection of dense sets with this property will also be dense. If a collection of subsets and *any* union of those subsets has this property, those subsets define a topology. A space is compact if every cover with this property has a finite subcover. A set has this property if every point is an interior point, so that each point has a neighborhood entirely contained within the set. The set of points less than one unit from the origin is the unit ball with this property. On the real line, intervals of this type don't include their endpoints. For 10 points, name this property that is possessed by the complements of closed sets.

ANSWER: open [accept word forms]

TB1. In Algonquin lore, these creatures include Mikchich, the uncle of Glooskap. In the Iroquois creation myth, Sky Woman lands on one of these creatures; thus the Iroquois call North America this creature's "island." A golden one of these creatures gave the sword "Heaven's Will" to the Vietnamese hero Le Loi. In China, a black one of these creatures is the sacred animal of the north. An example of these animals, which kept Mount Mandara from sinking during the churning of the ocean of milk, was Kurma, the second avatar of Vishnu. For 10 points, name this long-lived reptile which, in many Asian cosmologies, supports some number of elephants who in turn hold up the world.

ANSWER: a turtle [accept tortoise]

TB2. An Eocene-Miocene plutonism is responsible for one of this island group's major exports, translucent marble. Joseph Nasi, a Jewish merchant, was named duke of that island in this group after wresting control from Marco Sanudo's descendants. "New" and "Old" Kameni, the result of sulfur venting, are found at the center of a lagoon in this group, which formed when an ancient volcano destroyed half of the island of Thera and forced the evacuation of its people. A siege on this group's largest island by the Milesian tyrant Aristagoras was a primary cause of the Ionian Revolt. This Aegean island group contains Santorini and Naxos. For 10 points, name this Greek island group that forms a circle around the island of Delos.

ANSWER: Cyclades

### Bonuses:

1. Until 1864, this country controlled Altona, which was where the German physician Johann Friedrich Struensee first treated one of its kings before essentially taking power and being executed. For 10 points each:

[10] Name this kingdom where the sister of George III, Caroline Matilda, had an affair with Struensee while serving as queen to a mentally-ill king.

ANSWER: Kingdom of Denmark [or Kongeriget Danmark]

[10] That king was the seventh of this name, the tenth of whom apocryphally wore a Star of David during World War II. Along with Frederik, this name has been held by nearly every Danish ruler for the last five hundred years.

ANSWER: Christian

[10] Following a war, Christian IX was forced to give up Altona in 1864 because it was a part of these two duchies. The short-lived Gastein Convention set up how these duchies would be ruled by Prussia and Austria.

ANSWER: Schleswig and Holstein [accept in either order or combined]

2. Part of this poem concerns the search for Rilke's rendering of Paul Valéry's "Palme." For 10 points each:

[10] Name this poem, describing the speaker piecing together a jigsaw puzzle with his German governess, who is pretending to be French.

ANSWER: "Lost in Translation"

[10] "Lost in Translation" is by this American poet, who used transcriptions from Ouija boards as the basis for his epic *The Changing Light at Sandover*.

ANSWER: James Merrill

[10] Merrill's partner and collaborator, David, has this last name. Another author with this last name wrote about the stoning of Tessie Hutchinson in "The Lottery."

ANSWER: Jackson

3. Trituration is a simple variant of this purification technique, which requires a solvent in which the product is soluble only at high temperatures. For 10 points each:

[10] Name this technique in which the solid organic product is dissolved at high temperatures, then cooled back down so that it crashes out, leaving impurities in the solution.

ANSWER: recrystallization [prompt on crystallization]

[10] After recrystallization, you can collect your solid product using the "vacuum" form of this process, which draws liquids but not solids through a Buchner funnel. Sieving is another type of it.

ANSWER: vacuum filtration

[10] Crystallization can be used in this process, the separation of a racemic mixture into pure enantiomers. Common reagents used for it include Mosher's acid and tartaric acid, which form separable diastereomers as intermediates.

ANSWER: chiral resolution [or chiral resolving agents; or word forms; or chiral derivatization; or word forms]

4. The inscription at the bottom of this artist's San Giovenale Triptych unusually does not use Gothic lettering. For 10 points each:

[10] Name this artist of *The Tribute Money* who included a memento mori at the bottom of his *Holy Trinity*.

ANSWER: Masaccio [or Tommaso di Ser Giovanni di Simone]

[10] *The Tribute Money*, *The Expulsion from the Garden of Eden*, and several other Masaccio paintings are found in this chapel in Florence.

ANSWER: Brancacci Chapel

[10] Masaccio's *Berlin Tondo* depicts one of these events, and is an example of a *desco*, or tray, which was traditionally given as a gift at these events.

ANSWER: childbirths [accept clear equivalents]

5. This mode of failure shows no plastic deformation before failure. For 10 points each:

[10] Name this type of failure which is contrasted with ductile failure, or yielding. It occurs via cleavage, not via necking.

ANSWER: brittle fracture [or brittle failure]

[10] At stresses below the yield strength, this elastic modulus is the slope of the tensile stress-strain curve. It is named for an Englishman who demonstrated the wave nature of light with a double-slit experiment.

ANSWER: Young's modulus

[10] This process, in which a metal is strengthened via plastic deformation, occurs between the yield strength and the ultimate strength. It is generally performed at relatively low temperatures.

ANSWER: **work hardening** [or **strain hardening**; or **cold working**; or **cold forming**; prompt on partial answer]

6. This knight caught the attention of King Arthur when he sat at the Siege Perilous without being swallowed up by the earth. For 10 points each:

[10] Name this illegitimate son of Lancelot, whose spiritual purity let him achieve the Holy Grail in full.

ANSWER: Sir **Galahad** [or **Galeas**; or **Galath**; or **Gwalchavad**]

[10] The Holy Grail is kept at this castle, which is ruled by the Fisher King. It was also here that Galahad's mother, Elaine, gave birth to him.

ANSWER: **Corbenic** [or **Corbonek**; or **Carboneck**; or **Carbonek**; or **Carbonic**; or **Corbin**]

[10] This knight accompanied Galahad and Percival on the quest for the Holy Grail. After the Grail was brought to the island of Sarras, and Galahad and Percival died there, this man returned to Camelot to tell the tale.

ANSWER: Sir **Bors** the Younger [or **Bohort**; while the epithet is unnecessary, do not accept "King Bors the Elder"]

7. Samuel Beckett and William Carlos Williams contributed essays to *Our Exagmination Round His Factification for Incamination of Work in Progress*, which collected positive criticism about this novel while it was still in progress. For 10 points each:

[10] Name this novel which begins and ends with a fragment of the same sentence, and whose characters include Humphrey Chimpden Earwicker, his wife Anna Livia Plurabelle, and their children Shem, Shaun, and Issy.

ANSWER: **Finnegans Wake**

[10] *Finnegans Wake* is by this Irish Modernist creator of Stephen Dedalus, who appears in this author's *Ulysses* and *Portrait of the Artist as a Young Man*.

ANSWER: James (Augustine Aloysius) **Joyce**

[10] This other Irish author, a contemporary of Joyce, wrote about the orphaned Portia Quayne in *The Death of the Heart* and depicted London in the aftermath of the Blitz in *The Heat of the Day*.

ANSWER: Elizabeth (Dorothea Cole) **Bowen**

8. Answer these questions about philosophers who cared about law, for 10 points each.

[10] This Englishman distinguished the "right of nature," by which each man can do whatever, from the "law of nature," which implies that men ought to endeavor peace and use self-defense, in his *Leviathan*.

ANSWER: Thomas **Hobbes** of Malmesbury

[10] This Dutch jurist was attacked at the start of Rousseau's *The Social Contract*. He inspired the field of international law with his *On the Law of War and Peace* and *Mare Liberum*.

ANSWER: Hugo **Grotius** [or Hugo **de Groot**]

[10] More recently, this legal philosophy was espoused at Oxford by H.L.A. Hart. Less harsh than imperativism, it holds that law exists as a matter of social fact irrespective of its morality or merit.

ANSWER: legal **positivism**

9. William Price's actions may have led to the eventual formation of this group when he was trying to get a job with the *Washington Evening Star*. For 10 points each:

[10] Name this group that receives briefings in a room named for James Brady in the West Wing.

ANSWER: **White House Press** Corps [or **White House Correspondents'** Association]

[10] This "dean of the White House Press Corps" died in July 2013, after covering the White House from 1961 until 2010. She was responsible for getting John F. Kennedy to open the White House Correspondents' Dinner to women.

ANSWER: Helen Amelia **Thomas**

[10] This president was the first to attend the Correspondents' Dinner. He forced reporters to submit questions ahead of time in writing and was only quoted as "a White House spokesman" rather than as the president.

ANSWER: John Calvin **Coolidge**

10. This musician collaborated with the lyricist Bob Russell on the songs "Do Nothin' Till You Hear From Me" and "Don't Get Around Much Anymore." For 10 points each:

[10] Name this pianist and bandleader who wrote "It Don't Mean a Thing (If It Ain't Got That Swing)." Billy Strayhorn wrote "Take the A Train" for his band.

ANSWER: (Edward Kennedy) "Duke" **Ellington**

[10] This colorfully titled co-composition by Ellington and clarinetist Barney Bigard is notable for inverting the ranges of the standard Dixieland front line: the trombone plays above the trumpet which plays above the clarinet.  
ANSWER: "**Mood Indigo**"

[10] Ellington's main trumpeter from 1929 to 1940 was a man nicknamed "Cootie" who had this last name. A pianist with this last name wrote "Royal Garden Blues" and led namesake "Jazz Kings" and "Blues Five" bands.  
ANSWER: **Williams** [that pianist is "Clarence Williams"]

11. One character in this poem falls in love with the father of the boy she is cradling in her lap. For 10 points each:  
[10] Identify this poem, in which passions are inflamed by the flight of the many-feathered Gossip's visit to Iarbas.

ANSWER: *The **Aeneid*** [or **Aeneis**]

[10] The *Aeneid* is by this Roman author, who also talked a lot about farming in his *Georgics*.

ANSWER: **Virgil** [or Publius **Virgilius** Maro]

[10] This other work by Virgil was inspired by a similarly-titled work of Theocritus. It's likely that its fourth section was Virgil sucking up to Augustus, not predicting the coming of Christ.

ANSWER: **Eclogues** [or **Bucolics**]

12. Answer the following about biological theories of aging, for 10 points each:

[10] One theory is that this serine-threonine kinase, which normally stimulates the overall rate of protein synthesis, inhibits autophagy, and thereby causes accelerated aging. It was named for an immunosuppressant.

ANSWER: **target of rapamycin** [or **TOR**; or **metazoan target of rapamycin**; or **mTOR**; or **FRAP1**]

[10] Autophagy limits the damage to DNA caused by these species, such as peroxides and superoxides, which have oxygen in abnormal oxidation states. High levels of them lead to oxidative stress.

ANSWER: **reactive oxygen** species [or **ROS**; prompt on partial answer]

[10] Another theory of aging is that these structures gradually shorten during each cell division. They are the repetitive sequences at the end of chromosomes that protect against DNA damage.

ANSWER: **telomeres**

13. After this man's father fled to Hebron, he defiled his father's concubines in broad daylight and appointed Ahithophel as his chief counselor. For 10 points each:

[10] Name this rebellious third son of David, who was ultimately killed by Joab when his long hair got caught in tree branches.

ANSWER: **Absalom** [or **Avshalom**]

[10] This eldest son of David raped Absalom's sister Tamar. Absalom killed this man at a banquet held in honor of all David's sons.

ANSWER: **Amnon**

[10] This first book of the New Testament begins by listing out 42 generations of Jesus's genealogy, including his descent from David's other son Solomon.

ANSWER: Gospel of **Matthew** [or to Evangelion kata **Matthaion**]

14. This composer worked on the film scores for *Pitfall* and *Empire of Passion*. For 10 points each.

[10] Name this composer of a *Requiem* for strings and *Rain Tree Sketch*, the latter of which uses his E-flat - E - A motive, representing the sea.

ANSWER: Toru **Takemitsu**

[10] The Japanese pianist Mitsuko Uchida is renowned for her performances of Mozart, as well as her recordings of this composer of the *Wanderer Fantasy* and "Ellen's Third Song," which is popularly known as his Ave Maria.

ANSWER: Franz Peter **Schubert**

[10] The then 14-year-old Japanese violinist Midori Goto famously broke two strings during a 1986 performance of this American composer's *Serenade* for violin. This composer also wrote the music for *Candide* and *West Side Story*.

ANSWER: Leonard **Bernstein**

15. If a fluid's temperature gradient is superadiabatic, it is unstably stratified and has this type of instability. For 10 points each:

[10] Name this type of instability, in which buoyant forces act to increase the vertical displacement of a fluid. Unlike absolute instabilities, this type of instability transports a perturbation to infinity.

ANSWER: convective instability [or convection or other word forms]

[10] In stars heavier than about two solar masses, convection occurs in this part of the star, due to its high specific power generation. Type II supernovae occur when this structure becomes enriched in iron and nickel and then collapses.

ANSWER: stellar core

[10] In low-mass stars, convection does not occur in the core, because the fusion of hydrogen to form this element takes place via the proton-proton chain, rather than the CNO cycle.

ANSWER: helium-4 [or He-4]

16. Identify some Pacific port cities, for 10 points each:

[10] The site of the first stock exchange in Latin America and the oldest extant Spanish-language newspaper, this port city has been home to the National Congress of Chile since 1990.

ANSWER: Valparaiso

[10] This largest city in Alaska has access to the Pacific through the Cook Inlet.

ANSWER: Anchorage

[10] Previously known as Port Arthur, this Korea Bay seaport in the Liaoning province was the site of China's worst ever oil spill in 2010. Bo Xilai came to prominence as this city's mayor during the 1990s.

ANSWER: Dalian

17. This man used the threat of an imaginary communist plot called the Cohen Plan as a pretext for the consolidation of his dictatorial powers. For 10 points each:

[10] Name this man whose overthrow in 1945 ended his Estado Novo. His later time as a democratically-elected president lasted from 1951 until his suicide in 1954.

ANSWER: Getulio Dorneles Vargas

[10] Getulio Vargas was the president of this South American country, which was dominated by Minas Gerais and Sao Paulo during the "coffee with milk" period.

ANSWER: Federative Republic of Brazil [or Republica Federativa do Brasil]

[10] The Cohen Plan was made up by members of this movement led by Plinio Salgado and initially supportive of Vargas. When Vargas later banned political parties, this fascist group tried to depose him and was then persecuted.

ANSWER: Integralism [or Integralists; or Brazilian Integralist Action; or Acao Integralista Brasileira; or AIB]

18. One of the two protagonists of this story remarks on the German name of her Russian husband, Von Diderits. For 10 points each:

[10] Name this story about the affair between Dmitri Gurov and Anna Sergeyevna during their time at a resort in Yalta.

ANSWER: "The Lady with the Dog" [or "Dama s sobachkoy"; or "The Lady with the Lap Dog"; or "The Lady with a Dog"; or "The Lady with a Lap Dog"]

[10] "The Lady with the Dog" is by this Russian author, who wrote of Boris Trigorin's affair with Nina in *The Seagull*.

ANSWER: Anton (Pavlovich) Chekhov

[10] The 1898 production of *The Seagull* co-directed by Constantin Stanislavski and Vladimir Nemirovich-Danchenko for this theater company is often considered the birth of naturalistic ensemble acting in European drama.

ANSWER: Moscow Art Theatre [or Moskovskiy Hudojestvenny Akademicheskij Teatr; or MAT; or MHAT]

19. This method can be used in conjunction with other brain imaging techniques such as EEG. For 10 points each:

[10] Name this technique which demonstrates brain activity by contrasting oxygen rich blood with oxygen poor blood and which is usually presented by color coding an image of the different parts of the brain.

ANSWER: fMRI [or functional magnetic resonance imaging or functional MRI; prompt on "MRI" or "magnetic resonance imaging"]

[10] One fMRI study showed that people with the developmental form of this condition did not fully engage in scene construction. Patients with its retrograde or anterograde forms suffer from memory loss.

ANSWER: amnesia

[10] An alternative to fMRI is this imaging technology, which uses SQUID sensors to measure the magnetic fields given off by tens of thousands of neurons. Unlike fMRI, its timing measurements have sub-millisecond precision.

ANSWER: MEG [or Magnetoencephalography]



20. The last thesis of this document was refuted by the allocution *Jamdudum Cernimus*. For 10 points each:

[10] Name this document that condemned eighty propositions and was issued at the same time as the encyclical *Quanta Cura*.

ANSWER: **Syllabus of Errors** [or **Syllabus Errorum**]

[10] This pope was responsible for the *Syllabus of Errors* in 1864. This pope served longer than any other, lasting 32 years from 1846 until 1878.

ANSWER: **Pius IX** [or Giovanni Maria **Mastai-Ferretti**; prompt on “Pius”]

[10] Pius IX was disillusioned with liberalism early in his reign by the revolutions that started in this year and spread throughout Europe, forcing Pius into exile in Gaeta for more than a year.

ANSWER: **1848**