

**2015 NSC Official  
Tiebreaker Scoresheet**

Round	20 TB2	Group	
Reader			

**Tiebreaker Leg One**

Team								Team							
Player Names															
	Q#					Bonus	Steals	Run. score						Bonus	Steals
1															
2															
3															
4															
5															
6															
7															
8															
9															
10															
SD															
FINAL SCORE															

**Tiebreaker Leg Two**

Team								Team							
Player Names															
	Q#					Bonus	Steals	Run. score						Bonus	Steals
11															
12															
13															
14															
15															
16															
17															
18															
19															
20															
SD															
FINAL SCORE															

No substitutions, except for between tossup 10 and overtime. Start Leg Two with TU 11 and Bonus 11



PACE NSC 2015 - Round 20 - Tiebreaker II - Tossups

1. In a play by this man, a toast to "the pirates, preachers, poteen-makers", "jobbing jockies", and "parching peelers", is given by Sara Tansey. Arthur Griffith was enraged by the line "a drift of chosen females, standing in their shift" in a play by this man in which the widow Dame Quin fails to prevent another character from recognizing the winner of a mule race. Nora and Cathleen console Maurya after Bartley, the sixth and last of her sons, (\*) drowns in one of this man's many works set in the Aran Islands. Riots broke out at the Abbey Theater premiere of a play by this man in which Pegeen Mike falls in love with Christy Mahon, who claims to have killed his father. For 10 points, name this Irish playwright of *Riders to the Sea* and *The Playboy of the Western World*.

ANSWER: John Millington Synge [or Edmund John Millington Synge] <Carson>

2. An orphan asylum set up by this organization inspired Andrew Bell's monitorial system of education. Several members of this organization were waterboarded and executed by Dutch authorities in the Amboyna Massacre. This organization expanded its influence via the controversial Doctrine of Lapse. This organization's main rival was once led by Joseph Dupleix, who was based in Pondicherry. It opposed (\*) French interests in the Carnatic Wars, and it further consolidated its gains in the late 18th century by conquering the Kingdom of Mysore. Its employee Robert Clive fought the Battle of Plassey in retaliation for the mistreatment of British prisoners in the Black Hole of Calcutta. For 10 points, name this trading company that once ruled many British colonies in Asia.

ANSWER: British East India Company [or EIC; or English East India Company] <Wang>

3. A type of this which is visible but cannot be collected is known as virga. This phenomenon occurs "every day" according to a refrain sung by Feste at the end of Shakespeare's *Twelfth Night*. Ibuse Masuji wrote a novel set partly during the Hiroshima atomic bombing, which was titled for the *Black* type of this phenomenon. This phenomenon often generates a pleasant odor known as (\*) petrichor. In Greco-Roman myth, nymphs called Hyades control this stuff. Along with high temperature, its high frequency is a trait of Af and Am climates in the Koppen classification system. A namesake "shadow" where this phenomenon doesn't occur can be found on the leeward side of many mountain ranges. For 10 points, name this meteorological phenomenon, the main type of liquid precipitation.

ANSWER: rain [prompt on "water"; prompt on "precipitation"] <Jackson>

4. Formation of this tissue depends on the inactivation of the RANKL-RANK binding interaction. Sharpey's fibers connect this tissue to its outer membrane. The loss of this tissue can be visualized by DEXA scans, and can be treated by a class of drugs called bisphosphonates. Volkmann's canals connect the functional unit of one type of this tissue, which consists of concentric (\*) lamellae arranged around a central Haversian canal. The adjectives flat, irregular, short, sesamoid, and long describe the possible shapes of this tissue. This tissue consists of inorganic carbonated hydroxyapatite. It is synthesized by and resorbed by osteoblasts and osteoclasts, respectively. For 10 points, name this hard connective tissue that makes up the skeletal system.

ANSWER: bone [or osseus tissue; accept spongy bone; accept cancellous bone; accept trabecular bone; prompt on connective tissue] <Gupta>

5. During this time period, authorities ran the Four Square Laundry operation in order to find traces of gunpowder on militants' clothes. The treaty that ended this period consists of three "strands" which create an Assembly and a Ministerial Council. Tapes from a Boston College oral history project were subpoenaed by prosecutors investigating the disappearance of Jean McConville during this period. During it, the (\*) Provisionals carried out the Old Bailey bombings, Bobby Sands led a hunger strike at The Maze prison, and 26 people were shot by the Parachute Regiment in Derry on Bloody Sunday. It ended with the signing of the Good Friday Agreement in 1998. For 10 points, name this period of unrest between Protestants and Catholics in Northern Ireland.

ANSWER: The **Troubles** in Northern Ireland [or **Na Trioblóidí**; prompt on the **conflict in Northern Ireland** or similar answers until "Northern Ireland" is read] <Bentley>

6. After sitting on the throne of a deity of this domain, a goddess hangs from a nail on a wall. A goddess of this domain sends her messenger Namtar to a feast, where he is rudely insulted by Nergal. An encounter with a goddess of this domain ends with a visitor throwing his comb and headdress to the ground as they transform into fruits. In the aftermath of the birth of the fire-baby Kagutsuchi, (\*) Izanami becomes this type of goddess. In Vedic myth, Yama is a god of this domain. Ishtar is required to take off all of her clothes on her way to visit her sister Ereshkigal, who is one of these goddesses. A male god of this type rules a place populated by the abyss Tartarus and the river Styx. For 10 points, name these deities exemplified by Hades.

ANSWER: gods of the **underworld** [or gods of the **afterlife**; or gods of the **dead**] <Kim>

7. One of this group's leaders, Douglas Young, was criticized as Axis-loving for encouraging followers to fight conscription during World War II. This group was previously led by a member of the 79 Group, which was expelled from this party in 1982 for espousing radical left-wing politics. These supporters of the right of 16- and 17-year olds to vote are currently led by (\*) Nicola Sturgeon. This party's agenda under former leader Alex Salmond was countered by the Better Together campaign supported by celebrities such as JK Rowling. For 10 points, name this political party which spearheaded a 2014 referendum for the independence of a namesake northerly country from the United Kingdom.

ANSWER: **Scottish National** Party [or **SNP**; or Partaidh **Naiseanta na h-Alba**; or **Scots Naitional** Pairtie] <Spencer>

8. One artist with this surname painted *The Forest in Winter at Sunset*. He was called the "Great Rejected One" due to his lack of success with the Salon until the Revolution of 1848 caused a restructuring of the jury. Another artist with this surname boasted of his travels to Mexico when in fact he never left France, instead relying on trips to the Jardin des Plantes (jar-don deh plahnts) for ideas for foliage. That artist with this surname painted a (\*) tiger illuminated by a flash of lightning about to attack its prey in his jungle painting *Surprised!*. That artist also painted a black woman being approached by a lion in the desert at night. For 10 points, give this surname shared by Théodore, who co-led the Barbizon School, and Henri, who painted *The Sleeping Gypsy*.

ANSWER: **Rousseau** [or Théodore **Rousseau**; or Henri **Rousseau**] <Bentley>

9. A character in this play is called the "one cock in the basket" when discussing his lack of desire to intrude in a relationship he calls "the triangle." In the first act of this play, the main character draws ire for claiming that a bonnet belonged to the servant Bertha. Police arrest a character in this play after he creates a disturbance when accusing Mademoiselle Diana of robbing him. At the beginning of this play, a character talks about his upcoming book on the (\*) "Domestic Industries of Brabant during the Middle Ages" when asked about his honeymoon. The title character of this play burns a manuscript belonging to Eilert Lovborg and commits suicide after Judge Brack blackmails her. For 10 points, name this play by Henrik Ibsen about the wife of George Tesman.

ANSWER: **Hedda Gabler** <Lee>

10. The HARPS instrument is used in a telescope at La Silla Observatory to search for these objects. Michel Mayor and Didier Queloz pioneered a technique for observing these objects that involved looking for small redshifts or blueshifts. After discovering a radiation pattern in a pulsar, Aleksander Wolszczan made the first discovery of these (\*) bodies. These bodies, many of which are being discovered by the Kepler spacecraft, can be located through radial velocity or the transit method. Astronomers are looking for bodies of this type, such as Kepler-22b, that fall within the habitable zone. Many of the earliest discovered ones were called "hot Jupiters." For 10 points, name these planets that do not orbit the Sun.

ANSWER: extrasolar planets [or exoplanets; prompt on planets] <Lee>

11. This man is commanded to eat the animals inside a sheet that descends from heaven. A book attributed to this man references a "proclamation to the impassioned spirits," which serves as the basis for the Harrowing of Hell. The "Restoration" of this man at the end of the Book of John ends with him being instructed to "Feed my lambs," "Take care of my sheep," and "Feed my sheep," after he hauls in a miraculous catch of 153 fish. A servant of Caiaphas named Malachus was the victim of an (\*) ear-slicing by this man, who nearly drowned attempting to replicate Jesus's water-walking. Jesus predicts that the rooster will crow after this man thrice denies him. For 10 points, name this Apostle whom Jesus called the rock upon whom he will build his church.

ANSWER: Peter [or Simon Peter; or Petros; or Simon; or Cephas; or Shemayon Keppa; or Shemayon Keppa; or Shim'on bar Yona] <Gupta>

12. In one lecture, this man described an explorer's offer to go to the North Pole as a "momentous option," rather than a trivial option, and the need to cross an icy ledge on an isolated trail as a "forced" option. In two writings, he used the example of a person chased by a bear in the forest, who *first* feels a racing heartbeat and *then* feels (\*) fear, in his account of emotion. This man contrasted the "healthy-minded temperament" among some zealots with the "sick soul" of others. He claimed that truth is made when a belief has "cash value" in the daily life of its believer, and surveyed many mystics and credos in *Varieties of Religious Experience*. For 10 points, name this American professor of philosophy and psychology, who wrote "The Will to Believe" and *Pragmatism*.

ANSWER: William James <Jackson>

13. In a suburb of this city, the Chinese-American draftsman Vincent Chin was murdered in 1982 by two laid-off workers who had mistakenly thought he was Japanese. In 1974 the Supreme Court controversially ruled that this city's *de facto* school segregation was constitutional in *Milliken v. Bradley*. A police raid on a "blind pig" in this city on the corner of Clairmount and 12th streets precipitated its 1967 (\*) race riot, during which Governor George Romney sent in the National Guard. In another suburb of this city, Walter Reuther led a protest culminating in the Battle of the Overpass. A revolutionary \$5 a day was paid to workers in this city's suburb of Dearborn, whose *Independent* newspaper became a vehicle for anti-Semitism. For 10 points, name this city where the Model T was built by workers at the Ford Motor Company.

ANSWER: Detroit [accept Dearborn before mentioned; accept Highland Park] <Wang>

14. The smallest animal in this order is named for the naturalist Philibert Commerson. Many animals within this order possess a mass of adipose tissue in the forehead called a melon. The closest living relatives of this extant order are the hippopotami. The carcasses of many members of this order are known as "falls," and provide a rich ecosystem in the bathyal and (\*) abyssal zones. Some animals in this order have cochleae with the highest amount of innervation of any mammal, enabling them to carry out a bat-like form of echolocation; other animals in this order generate sound with the spermaceti organ. These animals breathe through a blowhole at the top of their head. For 10 points, name this order of marine mammals consisting of porpoises, dolphins, and whales.

ANSWER: cetaceans [or Cetacea; prompt on whales before mentioned; prompt on dolphins before mentioned; prompt on porpoises before mentioned] <Gupta>

15. This king paid to re-enter the bodies of Arthur and Guinevere and set up his own Round Table at Nefyn. This man was knighted by Alfonso X of Castile before marrying Alfonso's daughter Eleanor. Before becoming king, this man helped relieve a siege in Tripoli in the Ninth Crusade. This "English Justinian" forced the abdication of John Balliol, seized the Stone of Destiny, and issued an edict expelling all the (\*) Jews. After subjugating Llywelyn (lou-ELLEN) the Last, this king completed his conquest of Wales. Despite a setback at Stirling Bridge, this successor to Henry III won the Battle of Falkirk, soon before capturing the rebellious landowner William Wallace. For 10 points, name this tyrannical English king known variously as the "Hammer of the Scots" and "Longshanks."

ANSWER: Edward I [or Edward Longshanks before mentioned; or Hammer of the Scots before mentioned; or Malleus Scotorum before "Hammer of the Scots" is read; prompt on Edward; prompt on English Justinian before mentioned] <Bentley>

16. The hindrance factor compares the theoretical and experimental rates of this process. The natural logarithm of the rate of this process is linearly related to Z over the square root of kinetic energy. This process occurs near the upper-right end of the belt of stability. A model of this process, based on quantum tunneling through a potential well from the strong force, replicated the empirical Geiger-Nuttall Law and was proposed by (\*) George Gamow. This process is the source of ionizers used in smoke detectors. This phenomenon gives diagonal movement on a plot of A versus Z in the thorium chain. It decreases the mass number by four, the atomic number by two, and releases a helium nucleus. For 10 points, name this form of radioactive decay contrasted with beta decay.

ANSWER: alpha decay [or alpha emission; prompt on radioactive decay or radioactivity] <Silverman>

17. The only album he recorded as the lead artist for Blue Note was one that featured a version of "I'm Old Fashioned" as well as the song "Lazy Bird." Saxophonist Pharoah Sanders joined his band for the album *Ascension*. The title song of one of his albums is based on cycles of major thirds that outline an augmented triad, creating changes through three keys. Another of his albums begins with (\*) Elvin Jones striking a gong, and is based on a four-note pattern inspired by the album title, which in turn comes from a devotional poem. He composed "Naima" in honor of his wife, and used a cover of a Rodgers and Hammerstein song as the title track of another album. For 10 points, name this jazz saxophonist of the albums *My Favorite Things*, *Giant Steps*, and *A Love Supreme*.

ANSWER: John Coltrane [or John William Coltrane or Trane] <Morlan>

18. This novel's ninety-seventh chapter consists of the two words "The story." The protagonist of this novel hurriedly leaves an island where a tree bears fruit containing human teeth inside. This book uses a different font for passages translated from Japanese during the protagonist's interview with two ministers in the town of Tomatlan, Mexico, where he convalesces. As a child, the protagonist of this novel practices Islam, Christianity, and (\*) Hinduism simultaneously, and spends a lot of time in his father's zoo in Pondicherry. After the successive deaths of a zebra, an orangutan, and a hyena, the protagonist of this novel is left alone with Richard Parker, a Bengal tiger. For 10 points, name this novel about an Indian boy's 227 days on a lifeboat, by Yann Martel.

ANSWER: Life of Pi <Gupta>

19. The penultimate movement of a piece by this composer begins with the trumpets and trombones blaring the cryptogram G – E flat – A – B. He is not Hindemith, but he set a passage from Walt Whitman's "When Lilacs Last in the Dooryard Bloom'd" in his piece "Ode to Death." The Artistic Directorate of Aldeburgh Festival included this composer's daughter Imogen until her death. For much of his life, this composer worked in a soundproof room at a (\*) girl's school for which he wrote a suite ending with an arrangement of his "Fantasia on the Dargason." He set the poem "I Vow to Thee, My Country" to music from the central movement of a seven-movement suite, depicting the "Bringer of Jollity." For 10 points, name this British composer of *St. Paul's Suite* and *The Planets*.

ANSWER: Gustav Holst [or Gustav Theodore von Holst] <Gupta>

20. A character from this author's most famous novel is imprisoned for murdering M'Lissa, who killed that character's sister Dura in a clitoridectomy, in her later novel *Possessing the Secret of Joy*. That character is a member of the Olinka tribe who marries Adam, who himself was adopted by the missionary Samuel. This author described posing as another author's niece while searching for her grave in her essay (\*) "Looking for Zora". In her most famous novel, Nettie sends the protagonist letters from Africa that are intercepted by her abusive husband Albert, or Mister. After breaking up with Germaine, the blues singer Shug Avery returns to the protagonist Celie at the end of that novel by this woman. For 10 points, name this African-American author of *The Color Purple*.

ANSWER: Alice Walker [or Alice Malsenior Walker] <Carson>

21. PTH stimulates the corpora allata to prevent this process by secreting juvenile hormone. A substage of this process ends with an eclosion which leaves behind an exuvium. Prolactin inhibits this process, whereas thyroxin promotes it. All amphibians except for (\*) axolotls undergo it. A gradual form of this process known as hemimetabolism is undergone by nymphs via several rounds of ecdysis. A group of organisms that undergo this process enter an intermediate, inactive stage known as the pupa, or chrysalis. For 10 points, name this drastic post-birth transformation of an animal to its adult form, exemplified by caterpillars becoming butterflies. ANSWER: metamorphosis [or word forms; prompt on pupation; prompt on ecdysis before mentioned; prompt on molting before mentioned] <Gupta>

22. A character this novel is asked to hold a paper rose and smile while having her picture taken, but she bursts into tears. A disastrous date in this novel ends with the "country club gentleman" Marco attempting to rape the protagonist. A spoiled batch of crab salad causes an outbreak of food poisoning in this novel, whose protagonist befriends Doreen after winning a scholarship donated by Philomena Guinea and has a tumultuous relationship with (\*) Buddy Willard. It opens with the protagonist musing "It was a queer, sultry summer, the summer they electrocuted the Rosenbergs", before leaving for an internship at *Ladies' Day* in New York. For 10 points, name this novel about the suicidal writer Esther Greenwood, a thinly-disguised version of its author, Sylvia Plath. ANSWER: *The Bell Jar* <Carson>

23. This is the name most commonly used to refer to a man whom Livy claims was the first to free a slave using the *vindicta* staff. This is also the name most commonly used to refer to a man who quoted Euripides' *Medea* by asking "Forget not, Zeus, the author of these ills," and had his corpse covered in an expensive purple mantle. The earlier man led the overthrow of Lucius Tarquinius Superbus and founded the Roman (\*) Republic. Lucius Junius was the ancestor of a son of Servilia with this name who killed himself at the Battle of Philippi, supposedly originated the expression *sic semper tyrannis*, and was asked "You too, child?" For 10 points, give the name most commonly used to refer to the man who led a conspiracy with Cassius to assassinate Julius Caesar. ANSWER: Brutus [or Brute; or Lucius Junius Brutus; or Marcus Junius Brutus; prompt on Junius until it is read] <Yu>

24. The first self-assembling monolayers were formed by alkane-thiols bonding to this metal. Colloidal particles of this element are used to stain in electron microscopy. A cross-section proportional to the fourth power of the cosecant was first proposed for elastic scattering off this element. This metal has +1 and +3 oxidation states. This metal does *not* dissolve in nitric acid, but does (\*) dissolve in a 1:3 mixture of nitric and hydrochloric acids. This element was described as a piece of tissue paper, deflecting a cannonball, into a ring of zinc sulfide, during the experiment which discovered the nucleus. It is the most malleable and ductile metal. For 10 points, name this element with symbol Au. ANSWER: gold [or Au until it is read] <Silverman>



## PACE NSC 2015 - Round 20 - Tiebreaker II - Bonuses

1. In humans, this enzyme consists of dyskerin, an RNA component, and a reverse transcriptase. For 10 points each:

[10] Name this enzyme that adds a repeated pattern of six nucleotides to the 3 prime end of DNA to compensate for the shortening of that end of chromosomes.

ANSWER: **telomerase** [or **telomere terminal transferase**]

[10] Telomeres resist the activity of telomerase by forming "quadruplexes" of this nucleobase, a purine that forms three hydrogen bonds with cytosine, or C.

ANSWER: **guanine** [or **G**]

[10] Telomerase expression in cancer cell lines sometimes gives them this property, allowing them to undergo cell division indefinitely. Famous cell lines with this property include Jurkat and HeLa.

ANSWER: **immortalized** [accept word forms] <Gupta>

2. Magni easily lifts the foot of this giant, who has a triangular heart, and this giant tosses a whetstone that gets lodged in his opponent's forehead. For 10 points each:

[10] Name this giant who causes a ruckus in Valhalla after his horse, Gullfaxi, loses a race to Sleipnir. Thor then kills him.

ANSWER: **Hrungnir**

[10] This chief Norse god owns Sleipnir, and has one eye because he traded the other to attain wisdom.

ANSWER: **Odin** [or **Wotan**; or **Woden**]

[10] The story of Hrungnir's fight with Thor is recounted in the *Skaldskaparmal*, which together with the *Hattatal* and *Gylfaginning* comprises this compendium of Norse myths by Snorri Sturluson.

ANSWER: **Prose Edda** [or **Younger Edda**; prompt on **Edda**; prompt on **Snorri's Edda**] <Zhang>

3. The image of a hand with a wheel on its palm symbolizes this principle, whose implementation requires stratifying all living creatures by the number of senses each has. For 10 points each:

[10] Name this principle which motivates followers of a major world religion to sweep the ground before them with small brushes, to wear a mask while drinking water, and to eat a completely vegetarian diet. It is the most important of the five main vows of that religion.

ANSWER: **ahimsa** [prompt on **non-violence** or similar answers]

[10] *Abimsa* is a key principle of this South Asian religion, which was spread by the last two *tirthankaras*, Parshva and Mahavira.

ANSWER: **Jainism**

[10] This second-most important Jain vow, also known as *satya*, sometimes conflicts with *ahimsa* -- in such cases, a devout Jain should remain silent.

ANSWER: telling the **truth** [or word forms, such as being **truthful**; or answers that suggest **not lying**] <Gupta>



4. This architectural form was transplanted to England with Inigo Jones's design for Covent Garden. For 10 points each:
- [10] Give this term for an Italian public space, usually surrounded by a colonnade. Michelangelo's design for one called the Campidoglio was adapted for New York's Lincoln Center, and one called Navona houses the Fountain of the Four Rivers.
- ANSWER: **piazza** [do not accept the Spanish "plaza"]
- [10] The Fountain of the Four Rivers was designed by this Baroque architect who also created the Piazza San Pietro.
- ANSWER: Gialorenzo **Bernini**
- [10] The Piazza San Pietro, along with the pavement design at the Campidoglio, is in this favorite shape of Baroque architects. Borromini's San Carlo alle Quattro Fontane features this shape in its plan.
- ANSWER: **ellipse** [or **oval**; do not accept or prompt on "circle"] <Mehigan>
5. This character backs out of a contract for his six-million dollar hospital after his son is paralyzed in a football game. For 10 points each:
- [10] Identify this character, often referred to as "the Boss". He orders the narrator of the novel to dig up dirt on Judge Irwin and is ultimately shot by Adam Stanton.
- ANSWER: **Willie Stark** [accept either underlined portion]
- [10] Willie Stark serves as an analog for Huey Long in this Robert Penn Warren novel, which is narrated by Jack Burden.
- ANSWER: ***All the King's Men***
- [10] Willie first became Governor in part due to his campaign against J. H. Moore's shoddy construction of one of these buildings. The fire escape on that Moore-constructed building of this type collapses, killing three people.
- ANSWER: **schoolhouse** [or public **school**] <Bentley>
6. This group split into "Conscience" and "Cotton" factions over the issue of slavery. For 10 points each:
- [10] Name this American political party led by Henry Clay in opposition to the Democratic Party led by Andrew Jackson. Its successful candidates include William Henry Harrison and Zachary Taylor.
- ANSWER: **Whig** Party
- [10] In the 1830s, the Whigs and Henry Clay in particular pushed this threefold economic plan, which sought to establish a protective tariff, a national bank, and subsidies for internal improvements such as roads and canals.
- ANSWER: **American System**
- [10] The Whigs formed from a coalition of the Anti-Masonic Party and this earlier anti-Jackson party, which ran Henry Clay as a candidate in the 1832 election, and was formed by men loyal to John Quincy Adams.
- ANSWER: **National Republican** Party <Bentley>
7. Anka Muhlstein examined the use of food in this novel series in a book titled after its author's "Omelette". For 10 points each:
- [10] Identify this series containing 91 finished novels, short stories, and essays. Its recurring character Eugène de Rastignac appears or is mentioned in *Lost Illusions*, *Cousine (coo-zawn) Bette*, and *La Père Goriot*, among other works.
- ANSWER: *The* **Human Comedy** [or *La Comedie Humaine*]
- [10] *The Human Comedy* contains the vast majority of the works of this nineteenth-century French author.
- ANSWER: Honore de **Balzac**
- [10] This Balzac character angers her father Felix by giving her stash of gold coins to her cousin Charles. Later, after Charles abandons her, she marries Cruchot des Bonfons.
- ANSWER: **Eugenie Grandet** [accept either underlined portion] <Bentley>

8. The first leader of this organization spent his final years engaged in naval piracy after he was deposed from his last remaining stronghold in Gotland. For 10 points each:

[10] Identify this organization formed by Queen Margaret I in 1397 on behalf of the young Eric of Pomerania.

ANSWER: **Kalmar** Union [or Union of **Kalmar**]

[10] The Kalmar Union ended during the reign of the first Swedish king of this name. The second Swedish king of this name was called "The Lion of the North" and led his country into the Thirty Years War.

ANSWER: **Gustav** [or **Gustavus** or **Gustavus** Augustus or **Gustav** Vasa]

[10] The lords of this region in northern Germany invited the Victual Brothers to prey on Kalmar ships during a war with Eric of Pomerania. This region, along with an alphabetically later region to its south, was the subject of a frequent "question" over who controlled it during the 19th century.

ANSWER: **Holstein** [prompt on **Schleswig-Holstein**] <Bentley>

9. Answer the following about the Atwood machine, for 10 points each.

[10] The downward force of gravity on each block is balanced by this force, which is exerted upward and provides the torque on the pulley. This force is opposite a compression force.

ANSWER: **tension** force [or **T**]

[10] If the pulley is considered a solid disk with an axis through its center, then its rotational inertia equals the mass times radius squared times this constant factor.

ANSWER: **one-half** [or **0.5**]

[10] If one mass is twice as heavy as the other mass, and the pulley is assumed to have no inertia, then the overall acceleration of the system equals gravitational acceleration times this numerical factor.

ANSWER: **one-third** [or equivalents] <Silverman>

10. The natural features of Qutang, Wuxia and Xiling lend their name to this river's Three Gorges Dam, a hydroelectric project completed on this river in 2012. For 10 points each:

[10] Name this longest river in Asia, which flows east from the Tibetan plateau to just outside Shanghai.

ANSWER: **Yangtze** river [or **Chang** Jiang]

[10] The Three Gorges Dam is located in this Chinese province due west of Anhui (**AHN-hwey**), which is north of Dongting Lake. Its capital is Wuhan.

ANSWER: **Hubei** province [or **Hupeh**]

[10] This other large dam, constructed in the late 1970s along the border between Paraguay and Brazil, generates some 12,600 megawatts of power per day from its 18 turbines.

ANSWER: **Itaipu** Dam <Bentley>

11. A set of 19 questions within this work discuss the eternal, divine, natural, and human forms of law. For 10 points each:

[10] Name this work of religious philosophy that reintroduced "The Philosopher", Aristotle, to Christian tradition. This book follows a pattern of raising questions, posing objections to the premise of the question, citing an authority such as the Bible on the contrary, and giving a real reply in response to the question.

ANSWER: **Summa Theologica** [or **Summa theologiae**; prompt on **Summa**]

[10] This Doctor of the Church and student of Albertus Magnus wrote *Summa Theologica*.

ANSWER: Saint Thomas **Aquinas** [or Tomaso d'**Aquino**; prompt on Saint **Thomas**]

[10] The Summa cites many other thinkers like this man, who Aquinas called "The Commentator", since this man was the foremost interpreter of Aristotle at the time. This Moorish philosopher defended rationalism and bashed Al-Gazali in *The Incoherence of the Incoherence*.

ANSWER: **Averroes** [or Abu l-Walid Muḥammad Ibn 'Aḥmad **Ibn Rushd**] <Jackson>

12. In Florence, Apollonio di Giovanni and Marco del Buono specialized in creating paintings for a type of these objects given as a dowry called cassoni. For 10 points each:

[10] Identify this type of furniture. A girl in white buries her head in one of these things in the background of the *Venus of Urbino*.

ANSWER: **chests** [or **coffer** or **chest** of drawers]

[10] The *Venus of Urbino* was painted by this artist who at one point joined the Hapsburg court and painted *Emperor Charles V at Muhlberg*.

ANSWER: **Titian** [or **Tiziano** Vecellio or **Tiziano** Vecelli]

[10] In this Titian painting, a nude Venus is juxtaposed with a fully dressed woman as they sit together on a sarcophagus with a fountain on top, while a putto (**POO-toe**) dips his hand into the fountain.

ANSWER: ***Sacred and Profane Love*** [or ***Amor Sacro e Amor Profano***] <Bentley>

13. A common volcano curve explains that the rate of catalysis requires an intermediate enthalpy for this process. For 10 points each:

[10] Name this process by which gas molecules stick to a catalytic surface. Catalytic hydrogenation requires hydrogen to do this in the first step.

ANSWER: **adsorption** [or word forms; do not accept or prompt on "absorption"]

[10] Gerhard Ertl proposed a mechanism involving adsorption for this industrial process, in which hydrogen and nitrogen come together on a solid surface to make ammonia.

ANSWER: **Haber-Bosch** process

[10] Adsorption occurs on these minerals in a common method of purifying air. These objects, made of aluminum and silicon, have catalyst beads inserted inside of them for petrochemical cracking.

ANSWER: **zeolites** <Silverman>

14. The Kepler conjecture states that the most efficient way to pack these shapes in three dimensions is either the hexagonal or cubic close packing. For 10 points each:

[10] Name these shapes, whose surface area is given by the formula "4 pi times the radius squared."

ANSWER: 2-**spheres** [or 2-**balls**]

[10] This "paradox," which follows from the axiom of choice, shows that a sphere can be decomposed and reassembled into two spheres of the same size.

ANSWER: **Banach-Tarski** paradox

[10] This conformal mapping takes a sphere to a plane, by mapping a point to where a ray emanating from the north pole and going through the point intersects a given plane. It sends the north pole to the "point at infinity."

ANSWER: **stereographic** projection <Jose>

15. After World War II, the Morgan Line split this city's surrounding region into Zone A and Zone B. For 10 points each:

[10] Name this port city on the Istrian Peninsula that became a "Free Territory" in 1947 to provide a buffer between Yugoslavia and Italy.

ANSWER: **Trieste**

[10] In a 1946 speech in Missouri, Winston Churchill described this imaginary structure that stretched from "Stettin in the Baltic to Trieste in the Adriatic".

ANSWER: **Iron Curtain**

[10] The Iron Curtain didn't actually make it to Trieste, since Josip Tito of Yugoslavia broke with Stalin and helped found this organization in 1961. India, Egypt, and Ghana were among the members of this group, which was made up of countries not part of the Western and Eastern blocs.

ANSWER: **Non-Aligned** Movement [or **NAM**] <Wang>

16. While performing this action, a character remembers the sound of her first lover's spurs clanging across her porch. For 10 points each:

[10] Name this action committed at the end of an 1899 novel by a character who is depressed due to her rejection by Robert LeBrun. It occurs off the shore of Grand Isle.

ANSWER: **Edna** Pontellier's **suicide** [or Edna **Pontellier's suicide**; or **Edna** Pontellier **walking into the ocean**; accept equivalents to suicide such as **killing herself** or **drowning herself**]

[10] Edna Pontellier walks into the sea at the end of this novel, the most famous work of Kate Chopin.

ANSWER: *The **Awakening***

[10] *The Awakening* begins with a parrot repeating this three-word phrase twice in a row, before adding "Sapristi," which translates to "For heaven's sake!" Give either the original French phrase or the English translation.

ANSWER: "**Allez vous-en!** Allez vous-en!" [or "**Go away!** Go away!"] <Weiser>

17. A pioneer of this school of thought encouraged adding little to what the patient says and giving "unconditional positive regard" to them as part of what he called client-centered therapy. For 10 points each:

[10] Name this school of psychologists that includes the author of *On Becoming a Person*, Carl Rogers. Another member of it proposed that people reach the height of their potential through "self-actualization."

ANSWER: **humanistic** psychology [do not accept "humanist"]

[10] This aforementioned humanistic psychologist put self-actualization at the top of his five-tier hierarchy of needs.

ANSWER: Abraham **Maslow**

[10] This later movement in psychology, begun by Penn professor Martin Seligman years after his research on learned helplessness, studies and promotes optimal human health and well-being rather than focusing on disordered cognition.

ANSWER: **positive** psychology <Jackson>

18. Answer the following about the poem "Dover Beach", for 10 points each.

[10] It was written by this Victorian poet of "The Scholar Gipsy" and *Culture and Anarchy*.

ANSWER: Matthew **Arnold**

[10] It notes that "ignorant armies clash by night" on a "plain" described by this unusual adjective. The "growing gloom" on which the title bird "throws its soul" explains this adjective's presence in the title of a Thomas Hardy poem about a thrush.

ANSWER: **darkling** [or "The **Darkling** Thrush"]

[10] Daisy Perowne recites "Dover Beach" in order to distract Baxter, who is holding her family hostage, in this novel by Ian McEwan set during an anti-Iraq War protest in London.

ANSWER: **Saturday** <Carson>

19. This ruler was once a concubine of Emperor Taizong and moved the capital to Luoyang. For 10 points each:

[10] Identify this woman who assumed the title of empress of China after emperor Gaozong died of a stroke. She died in 705 CE.

ANSWER: Empress **Wu** [or **Wu** Zetian; or **Wu** Tse-t'ien; or **Wu** Zhao; or **Wu** Chao]

[10] Empress Wu proclaimed herself ruler of a new iteration of this dynasty. This dynasty was founded by a namesake duke who created the *fengjian* feudal system, and included the Spring and Autumn Period.

ANSWER: **Zhou** Dynasty [or **Chou** Dynasty]

[10] The original Zhou dynasty broke down into a period given this designation, in which the Qin emerged supreme among a set of seven rival powers. In Japan, the chaotic *senjoku* period is sometimes referred to with this two-word designation.

ANSWER: **Warring States** period [or **Zhanguo shidai**] <Bentley>

20. Ralph Vaughan Williams wrote a piece of this type which splits the orchestra into three sections called Concertino, Tutti, and Ad Lib. For 10 points each:

[10] Name this type of composition popular during the Baroque era, in which multiple soloists are accompanied by the orchestra, which carries the *ripieno* part.

ANSWER: **concerto grosso** [or **concerti grossi**; prompt on partial answer]

[10] This composer's Opus 6 is a set of concerti grossi that were transcribed frequently after his death. He also wrote coronation anthems such as *Zadok the Priest*.

ANSWER: George Frideric **Handel**

[10] The eighth of Corelli's set of twelve concerti grossi is named after this holiday, for which Britten's *Ceremony of Carols* was written.

ANSWER: **Christmas** <Lee>

21. This poet wonders "When churches will fall completely out of use / What we shall turn them into[?]" in a poem describing a visit to a "serious house on serious earth". For 10 points each:

[10] "Name this British poet of "Church Going" and the collections *High Windows* and *The Whitsun Weddings*. He blamed "your mum and dad" for messing you up in "This Be the Verse."

ANSWER: Philip **Larkin** [or Philip Arthur **Larkin**]

[10] The speaker of this Larkin poem notices that the stone figures of "the earl and countess" are holding hands, prompting a meditation on the passage of time that culminates in the final line, "What will survive of us is love."

ANSWER: "An **Arundel Tomb**"

[10] Martin Amis's essay about Andrew Motion's biography of Larkin punningly refers to Larkin as this person "in Hull". Lord Byron wrote a long satirical poem based on the story of this legendary Spanish lover.

ANSWER: **Don Juan** [Byron's poem is pronounced "DON JOO-en"] <Sy>

22. A leading explanation for the observed radiation pattern of these objects is the lighthouse model, in which a beam of radiation sweeps past earth periodically. For 10 points each:

[10] Name these rotating neutron stars.

ANSWER: **pulsars**

[10] This term refers to sudden increases in pulsar rotation rate. In the Vela Pulsar, these sudden increases result in about one extra rotation per day.

ANSWER: pulsar **glitches**

[10] In 1989, this observatory in Puerto Rico used a millisecond pulsar to detect two exoplanets. In 1974, it broadcast a radio message to M13 in the hopes that extra-terrestrial life will pick it up.

ANSWER: **Arecibo** Observatory <Jose>

23. In 1987, Miguel de la Madrid reorganized his country's security forces in order to better combat the smuggling of these things through Mexico. For 10 points each:

[10] Identify this broad class of illegal goods. Mexico's former President, Felipe Calderon, also tried to stymie their trade by going after cartels such as Las Zetas.

ANSWER: illegal **drugs** [or **narcotics**]

[10] This leader of the Sinaloa Cartel was arrested in 1993 following the assassination of Cardinal Juan Jesus Posadas Ocampo. He escaped from prison but was arrested again in 2014.

ANSWER: El Chapo **Guzman** [or **El Chapo** Guzman; or Joaquín Archivaldo **Guzmán** Lora]

[10] Calderon succeeded this Mexican president, the first man in 71 years to rule without being a member of the PRI. After succeeding Ernesto Zedillo in 2000, this man amended the Constitution to provide more rights for indigenous peoples.

ANSWER: Vicente **Fox** Quesada <Bentley>