

ACF Fall 2015

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Tossups

1. These events were often overseen by members of the Sanson family, and used a device invented by Antoine Louis. These events were enthusiastically observed by groups of knitting women called the *tricoteuse*. Many of these events took place in the modern-day Place de la Concorde, which was once called the Place de la Revolution. A wave of these events occurred at the end of the Thermidorian Reaction. A device nicknamed the “National Razor” was used to conduct these events after the trials of Georges Danton and Marie Antoinette. For 10 points, name these public events performed during the French Revolution with a guillotine.
ANSWER: public executions during the French Revolution [or executions by guillotine until mentioned; accept other descriptive answers that imply being killed by the government; prompt on vaguer answers like “killings” or “deaths”]
2. In a novel from this country, Jimmy’s father works at HelthWyzer and marries the lab tech Ramona, who takes care of the protagonist, who plays the game Extinctathon with a future graduate of the Watson-Crick Institute. A writer living in this country wrote about the ill-fated love between Katharine Clifton, who is left to die in the Cave of Swimmers, and László Almásy. Besides *Oryx and Crake* and *The English Patient*, this country also produced a novel whose protagonist plays Scrabble with the Commander in the Republic of Gilead. For 10 points, name this home country of the author of *The Handmaid’s Tale*, Margaret Atwood.
ANSWER: Canada
3. A book by Michael Sandel criticizes this thinker for a misguided “philosophical anthropology”. This man wrote a book describing “modular” political ideas that are shared by people with diverse values. This author of *Political Liberalism* described “overlapping consensus” and argued that social inequalities should favor the disadvantaged, an idea called the “difference principle”. This man claimed the maximin rule would govern choices people make in an “original position” in which they do not know what position they will hold in civil society. For 10 points, name this philosopher who described a veil of ignorance in his *A Theory of Justice*.
ANSWER: John Rawls [or John Bordley Rawls]
4. One member of this non-chordate phylum is commonly used to study fertilization and embryonic development due to its transparent eggs. Aristotle’s description of one member of this phylum led to its feeding structure being called Aristotle’s lantern. This phylum and Chordata make up the most common deuterostomes. Members of this phylum use the madreporite to filter water in their water vascular system. Although organisms in this phylum are born with bilateral symmetry, at adulthood they typically have five-sided radial symmetry. For 10 points, name this “spiny skinned” phylum whose members include sea urchins and starfish.
ANSWER: echinoderms [or Echinodermata]

5. Plans for this architect's Hotel Attraction were submitted to the Ground Zero redesign competition. A mosaic lizard by this designer is nicknamed "El Drac" and stands at the entrance of an urban park. Many of this designer's projects feature his four-armed cross. The Guell ["goo-AYL"] family was a major patron of this architect. One of his buildings has eighteen spires to represent the apostles and other Biblical figures. This architect's biggest project has Nativity and Passion Facades, and contemporary photos of that building all show construction cranes. For 10 points, name this Catalan architect who designed the as-yet-incomplete Sagrada Familia in Barcelona.

ANSWER: Antoni Gaudí i Cornet

6. This author created a character who is given a check signed "Charlie Chaplin" when he asks Colonel Blount for money so that he can marry Nina. In another novel by this author, Teddy tends to a silver fox farm built at Hetton Abbey, which Brenda had left to marry Jock Grant-Menzies. In that novel by this author, a man has Dickens stories read to him by his prisoner in the Brazilian jungle, Tony Last. This author of *Vile Bodies* wrote a novel in which Julia divorces Rex Mottram but does not end up marrying her teddy bear-carrying brother Sebastian's Oxford classmate, Charles Ryder. For 10 points, name this British author of *A Handful of Dust* and *Brideshead Revisited*.

ANSWER: Evelyn ["EEV-lyn"] Waugh

7. During this conflict, a ship commanded by Raphael Semmes was attacked by the *Kearsarge* off the coast of Cherbourg. One side in this conflict became the first to sink a warship with a submarine when it used the *H.L. Hunley*. Because most of one side's ships were illegally built in London, the victor of this conflict received damages from the British government in the *Alabama* claims. Many "blockade runners" were built during this conflict after the implementation of the "Anaconda Plan" restricted one side's lucrative cotton exports. For 10 points, name this conflict that saw the first battle between ironclads, the USS *Monitor* and the CSS *Merrimack*.

ANSWER: the American Civil War

8. When a character in this poem refuses to fight a man who once had the form of the woman Amba, he is attacked with such force that he falls down onto a bed of arrows. In this poem, a woman's robes miraculously grow longer to prevent her shameful disrobing during a game of dice that ends with five brothers being sent into twelve years of exile. This poem, which is narrated by Vyasa, culminates in the Kurukshetra War, fought between the rival Pandava and Kaurava brothers. That war begins after a dialogue that takes place largely between Arjuna and Krishna. For 10 points, name this Hindu epic that contains the *Bhagavad Gita*.

ANSWER: Mahabharata

9. These functional groups can be added to aromatic compounds by reacting carbon monoxide with hydrochloric acid and aluminum trichloride. Sugars with this functionality are considered reducing sugars. Unlike the Jones reagent, PCC forms one of these functional groups from primary alcohols by not fully oxidizing them to carboxylic acids. Reacting a Grignard reagent with one of these compounds forms a secondary alcohol. These compounds form a silver mirror when reacted with Tollens' reagent. Compounds with this functional group have names ending with -anal ["uh-NAL"]. For 10 points, name this functional group that is a terminal carbonyl.

ANSWER: aldehydes [prompt on "carbonyl" until it is read]

10. In a story by this author, a firing squad interrupts a fishing trip and kills Morissot and Sauvage for refusing to divulge a secret password. In another of his stories, a man dies of delirium after Malandain falsely accuses him of stealing a lost pocketbook. This author of "Two Friends" and "The Piece of String" wrote a story in which Cornudet annoys a carriage's passengers by whistling "La Marseillaise," and whose title character is forced to sleep with a Prussian officer to free them. This man wrote a story in which Madame Loisel lives in poverty after losing a borrowed piece of jewelry. For 10 points, name this French writer of "Ball of Fat" and "The Necklace."

ANSWER: Guy de Maupassant [or Henri René Albert Guy de Maupassant]

11. The Bronze Age *maryannu* caste was characterized by its use of these objects. This technology was countered by a U-shaped formation of infantry called Alexander's mousetrap. A Lusitanian man named Gaius Appuleius Diocles became one of the richest athletes ever by using a version of these objects called a *quadriga*. Thousands of these objects, the highest number ever assembled, clashed at the Battle of Kadesh. Fans of a sport using these objects made up the Green and Blue factions that clashed during the Nika riots in Justinian's Constantinople. For 10 points, name these horse-drawn vehicles that were raced in the Circus Maximus and Hippodrome.

ANSWER: chariots [or quadriga until it is read]

12. One tributary of this river rises in the Adamawa Plateau and flows through Lagdo Reservoir before joining this river at Lokoja. A tributary of this river flows by the city of Ségou, which served as the capital of the 18th century Bambara Empire. That tributary is the Benue. The exploitation of oil reserves on this river has caused the rise of militant groups such as MEND. The first Westerner to reach the central section of this river was the Scottish explorer Mungo Park. This river empties into the Gulf of Guinea after flowing through Bamako, Timbuktu, and Niamey. For 10 points, name this longest river of West Africa, the namesake of two countries in the region.

ANSWER: Niger River [or *fleuve* Niger; or Joliba; or Isa Ber; or Oya; or Kwara]

13. This fictional building has a "barely perceptible fissure" zig-zagging across its front. The narrator stares at this building's reflection in a "black and lurid tarn" to assuage his nervousness, but only grows more terrified. A resident of this building sings the "The Haunted Palace" and is read to from Sir Launcelot Canning's "The Mad Trist." The narrator's story about Ethelred is interrupted by a sound seemingly coming from this building's vault. Madeline is entombed alive in this building's vault by her brother, Roderick. For 10 points, name this building that collapses at the end of an Edward Allan Poe short story about its "Fall."

ANSWER: The House of Usher [or Roderick Usher's House; or "The Fall of the House of Usher"; accept equivalents to "house" like mansion]

14. Late in his career, this artist published a book entitled *Jazz* which included many works created with the *pochoir* stencil technique. This artist used colored paper and scissors to make his "cut-outs." A chair with a yellow seat is placed next to a window in a painting by this artist that shows a woman arranging fruit in a florally themed room. Embracing couples and a figure playing two pipes appear the foreground, and a group of six figures holding hands in the background, of a painting by this leader of a movement whose name translates as "wild beasts." For 10 points, name this painter of *The Red Room*, *The Joy of Life*, and *The Dance*, who was a leading fauvist.

ANSWER: Henri Matisse [or Henri-Émile-Benoît Matisse]

15. The third chapter of this book forms the basis for Jonathan Edwards' sermon *The Justice of God in Damnation of Sinners*. A section of this book's second chapter addresses hypocritical Jews who have turned away from the laws of God, and it ends with a list of locations its author plans to travel to as a part of his evangelizing campaign. A verse in this book's third chapter mentions that man is "justified by faith without the deeds of the law" and is often used by Protestants to promote the doctrine of salvation through faith alone. For 10 points, name this first Pauline epistle, which is addressed to churches in the capital of a large Italian empire.

ANSWER: Epistle to the **Romans**

16. One form of this quantity is equal to lambda times temperature to the three halves power divided by the temperature plus Sutherland's constant. Ludwig Prandtl proposed a structure which separates regions with zero and nonzero values of this quantity called the boundary layer. This quantity is lowered due to shear stress in thixotropic compounds. The ratio of inertial forces to forces caused by this quantity defines the Reynolds number. This quantity, which comes in kinematic and dynamic forms, is constant for Newtonian fluids. For 10 points, name this quantity which is a fluid's resistance to flow.

ANSWER: **viscosity** [or dynamic **viscosity**; or kinematic **viscosity**]

17. A leader of this ethnicity was forced to convert to Christianity after signing the treaty of Wedmore. Another one of these people, whose life was depicted in the Chronicle of John of Wallingford, may have led attacks in reaction to the death of his sister Gunnhilde. These people were killed in the St. Brice's Day Massacre on the orders of Aethelred the Unready. One of these people named Guthrum signed a treaty creating an autonomous region for them after losing the Battle of Edington. Taxes paid to them to prevent raids were known as their namesake "geld." For 10 points, name these people who controlled England under Sweyn Forkbeard and Canute, and who were often Vikings.

ANSWER: **Danes** [or **Danish** people; prompt on "Vikings"]

18. To describe a vector space of n dimensions, one needs a set of n vectors with this type of independence. This word describes first order differential equations that are easily solvable by using an integrating factor and can be written in the form $y' + p(x)y = q(x)$. This word describes any mapping that preserves addition and multiplication. Functions which are additive and have degree one homogeneity are described by this word. Cramer's Rule can be used to solve systems of equations described by this word, which names polynomials of degree one. For 10 points, name this word which describes equations of the form $y = mx + b$.

ANSWER: **linear**

19. Gustav Mahler's symphony of this number comprises six movements with descriptions such as "Pan Awakens - Summer Marches In." A C minor symphony of this number has two movements, each subdivided into two sections, with each second section featuring an organ. A rising "F, A-flat, F" motif representing the concept "free but happy" begins Johannes Brahms's F major symphony of this number. Ludwig van Beethoven's symphony of this number opens with two *tutti* E-flat major chords, has a second-movement funeral march, and was re-dedicated to the "memory of a great man" in place of Napoleon. For 10 points, give this number of the *Eroica* Symphony.

ANSWER: **three** [or Symphony No. **3**]

20. A man who advocated this psychological approach identified autoclitic, echoic, intraverbal, tact and mand relations in a classification of five types of language, which were opposed by Chomsky's innateness theory of language acquisition. The developer of the "radical" form of this school was influenced by Edward Thorndike's law of effect and developed a namesake box in which rats could press a lever for food. A psychologist from this school made a child fear white furry things in the Little Albert experiment, an example of classical conditioning. For 10 points, name this school of psychology developed by John Watson and B.F. Skinner that focuses on an individual's observable actions.
ANSWER: **behaviorism** [or word forms like "**behaviorist**"; or radical **behaviorism**; do not accept "behavioralism"]

Extras

During this conflict, David Rubinger photographed paratroopers praying beside a recently captured landmark. After this war, the Purple Line was established. A party in this conflict accidentally attacked the American warship USS *Liberty*. A policy promising "land for peace" was issued in the aftermath of this conflict by its winner, which used a strategy planned by the eyepatch-sporting defence minister Moshe Dayan. The victor of this war carried out Operation Focus to destroy the Egyptian air force, and occupied the Golan Heights, the Sinai Peninsula and the West Bank. For 10 points, name this 1967 war won by Israel in less than a week.

ANSWER: **Six-Day** War [or **1967 Arab-Israeli** War before "1967"; or *an*-**Naksah**; prompt on "**Arab-Israeli** War"; do not accept "*al*-**Nakba**"]

Bonuses

1. Nylon and rayon are examples of these sorts of compounds. For 10 points each:
[10] Name these macromolecules which consist of smaller subunits called monomers.
ANSWER: **polymers**
[10] DuPont uses this brand name for a polymer of tetrafluoroethylene. It is commonly used in nonstick cookware.
ANSWER: **Teflon** [prompt on **polytetrafluoroethylene** or **PTFE**]
[10] This University of Illinois alumnus and former DuPont employee is the namesake of an equation which gives the degree of polymerization for step-growth polymerization. This inventor of nylon committed suicide with a cocktail of lemon juice and cyanide.
ANSWER: Wallace **Carothers**
2. Because she is reluctant to have a threesome with an Italian prostitute, this character breaks up with the protagonist on a European vacation. For 10 points each:
[10] Name this woman whose sexual proclivities are recounted by Alexander to Dr. Spielvogel in a 1969 novel. She gains her nickname from a story she tells about eating a banana while watching a couple's tryst.
ANSWER: the **Monkey** [or **Mary Jane** Reed]
[10] The Monkey is one of the title character's many conquests in *Portnoy's Complaint*, a novel by this Jewish-American author who also wrote *American Pastoral*.
ANSWER: Philip **Roth** [or Philip Milton **Roth**]
[10] Roth's novel *The Plot Against America* is an alternate history of this war. The plot of James Jones' *From Here to Eternity* takes place during this war.
ANSWER: **World War II** [or the **Second World War**]
3. Answer the following about reforms in Russia under Alexander II, for 10 points each.
[10] In 1861, Alexander II issued legislation emancipating these people, who had previously been bound to their masters' land. However, these people still had to pay forty-nine "redemption payments" after their freedom.
ANSWER: **serfs** [or **muzhik**; or **krepostnoi krestyanin**; prompt on "slaves"]
[10] Another of Alexander's reforms established these small, elected local councils, which gave ordinary Russians a degree of self-government.
ANSWER: **zemstvos**
[10] Alexander II also quashed the January Uprising in what was formerly this nation. After this nation's Partitions, most of it became a part of the Pale of Settlement, which was home to many Jews.
ANSWER: **Poland** [or **Polska**]

4. In the twentieth century, Wanda Landowska led a movement to revive this instrument. For 10 points each:

[10] Name this plucked keyboard instrument that was largely supplanted by the piano in the late eighteenth century.

ANSWER: harpsichord

[10] This Italian composer demonstrated his mastery of the harpsichord by composing 555 sonatas for the instrument.

ANSWER: Domenico Scarlatti [or Giuseppe Domenico Scarlatti]

[10] This French contemporary of Scarlatti wrote the treatise *The Art of Playing the Harpsichord* and wrote the harpsichord piece "The Mysterious Barricades."

ANSWER: François Couperin

5. This object was hammered in at Promontory Point, Utah. For 10 points each:

[10] Name this object that connected the tracks built by the Central Pacific and Union Pacific Railroad companies, thus completing the transcontinental railroad.

ANSWER: the Golden Spike [or the Last Spike; accept variants of "spike" like crampon, or cut spike]

[10] To cut tunnels through the tough Sierra Nevada, the Central Pacific Railroad employed immigrants from this country. This country's citizens were forbidden to immigrate to the United States by a namesake 1882 Exclusion Act.

ANSWER: China [or Qing Dynasty; or Zhongguo]

[10] The golden spike was driven in by this incompetent president of the Central Pacific Railroad. This governor of California commissioned Eadweard Muybridge to photographically study a horse's gallop.

ANSWER: Leland Stanford [or Amasa Leland Stanford]

6. The original name of this painting refers to the title concept "stabbed by a dagger." For 10 points each:

[10] Name this painting in which a small black clock and two candlesticks stand on a mantle piece below which a locomotive emerges from a fireplace.

ANSWER: Time Transfixed [or *La durée poignardée*]

[10] This Belgian surrealist artist painted *Time Transfixed*. This man's *Treachery of Images* shows a pipe with the phrase "Ceci n'est pas une pipe" written below it.

ANSWER: René Magritte [or René François Ghislain Magritte]

[10] This Magritte painting shows dozens of nearly identical men in bowler hats in the air in front of and above a building with a red tile top.

ANSWER Golconda [or Golconde]

7. Subfields of this discipline include natural language processing and machine learning. For 10 points each:

[10] Name this field of computer science. John Searle argued that machines that satisfy its "strong" form can never exist in the "Chinese Room" argument.

ANSWER: artificial intelligence [or AI]

[10] Artificially intelligent programs often have some means of understanding and using this form of reasoning. The "fuzzy" version of this form of reasoning accepts values that lie in between "true" and "false."

ANSWER: logic

[10] A "naïve" classifier named after this mathematician is used to efficiently filter spam e-mails. Random variables are represented as nodes in his namesake "networks."

ANSWER: Thomas Bayes

8. This poem's speaker advises the title characters that "that age is best which is the first, / when youth and blood are warmer." For 10 points each:

[10] Name this poem in the collection *Hesperides* that instructs the title characters to "gather ye rosebuds while ye may" and to "be not coy."

ANSWER: **"To the Virgins, to Make Much of Time"**

[10] The author of *Hesperides*, Robert Herrick, was a member of this 17th century group of poets named for its support of the Royalists in the English Civil War.

ANSWER: **Cavalier** poets

[10] "To the Virgins, to Make Much of Time" is in this poetic genre. Horace coined this phrase in a poem that advises one to "cut short long-term hopes", "trusting the future as little as possible", and do this action.

ANSWER: **carpe diem** [or **seize the day**]

9. Statues of a "laughing" figure in Chinese religion are often mistaken to be depictions of this person. For 10 points each:

[10] Name this prince. He gained a title meaning "enlightened one" after meditating for forty-nine days underneath a Bodhi tree.

ANSWER: Siddhartha **Gautama** [or the **Buddha**]

[10] Followers of this "Great Vehicle" sect of Buddhism employ the doctrine of expedient means. It is much more popular in East Asia than the Theravada school.

ANSWER: **Mahayana** Buddhism

[10] The Dalai Lama leads a sect of Tibetan Buddhism which is named after a "yellow" one of these articles of clothing. Three other sects are named after a red variety of one of these articles.

ANSWER: **hats**

10. Answer the following about ridiculous soccer coaches, for 10 points each.

[10] This country's national team was coached by Miguel Herrera until he attacked a reporter after it won the 2015 Gold Cup. It plays its home games in the Azteca stadium and is the United States' biggest continental rival.

ANSWER: **Mexico**

[10] This London-based club is managed by Jose Mourinho, who once referred to himself as "the special one" and regularly gets into spats with Arsenal manager Arsene Wenger. It won the 2014-2015 English Premier League.

ANSWER: **Chelsea** FC [or **Chelsea** Football Club]

[10] While manager of Liverpool, this Spaniard went on a strange tirade against Manchester United's Alex Ferguson, repeatedly yelling his accusations were "facts!" He replaced Carlo Ancelotti as manager of Real Madrid.

ANSWER: Rafael **Benitez** [or Rafael Rafa **Benitez** Maudes]

11. Answer the following about the Year of the Four Emperors, for 10 points each.
- [10] The Empire was plunged into civil war after this Emperor committed suicide in 68 AD. He succeeded his grandfather Claudius and, according to Suetonius, played the lyre during the Great Fire of Rome.
ANSWER: Nero [or Nero Claudius Caesar Augustus Germanicus]
- [10] Stability was restored when this general returned from his post in Judea, defeated Vitellius, and became the last of the four emperors. He founded the Flavian dynasty and was the father of Titus and Domitian.
ANSWER: Vespasian [or Titus Flavius Caesar Vespasianus Augustus]
- [10] The first of the Four Emperors, Galba, was assassinated by a member of this group. An earlier member of this group named Sejanus held power after Tiberius retired to the island of Capri.
ANSWER: Praetorian Guard [or Praetorians; or Praetorian prefects]
12. This philosopher asked whether a “tele-transporter” that destroys a person’s body and recreates it elsewhere preserves a person’s identity. For 10 points each:
- [10] Name this English philosopher who wrote *On What Matters* and *Reasons and Persons*.
ANSWER: Derek Parfit
- [10] In *Reasons and Persons*, Parfit describes a “repugnant conclusion” that the “mere addition” of unhappy people would raise total happiness, according to this ethical theory of “the greatest happiness for the greatest number”.
ANSWER: utilitarianism
- [10] This English author of *An Introduction to the Principles of Morals and Legislation* is regarded as the founder of utilitarianism. This man also proposed a circular prison called the panopticon.
ANSWER: Jeremy Bentham
13. This character is initially engaged to a green-haired woman, but after her death marries her sister instead. For 10 points each:
- [10] Name this patron of Tres Marias. He attempts to kill Pedro Tercero for seeing his daughter Blanca.
ANSWER: Esteban Trueba [prompt on “Trueba”]
- [10] Esteban Trueba is the patriarch of a family that includes his clairvoyant wife Clara and his illegitimate granddaughter Alba in this novel.
ANSWER: *The* House of the Spirits [or *La* Casa de Los Espíritus]
- [10] This Chilean author of *The Stories of Eva Luna* wrote *The House of the Spirits*.
ANSWER: Isabel Allende
14. This organ releases digestive enzymes in response to chole-cysto-kinin. For 10 points each:
- [10] Name this organ which also produces insulin and glucagon in the islets of Langerhans.
ANSWER: pancreas [or exocrine pancreas]
- [10] Pancreatic juice is secreted into this first section of the small intestine, where bile is also secreted from the gallbladder. This section is followed by the jejunum and the ileum.
ANSWER: duodenum
- [10] The pancreas releases trypsinogen, an inactive form of the enzyme trypsin, which is cleaved to become active. This term refers to the inactive precursor of an enzyme.
ANSWER: zymogens

15. This city is home to the Galata Tower, which was built to replace an earlier tower destroyed in the 13th century. For 10 points each:
[10] Name this modern-day city whose Fatih district corresponds to its historic extent, and whose western border was once marked by the Theodosian walls.
ANSWER: **Istanbul** [or **Constantinople**]
[10] Istanbul lies on the Bosphorus Strait, which connects the Sea of Marmara to this large body of water. It is fed by the Dnieper ["NEE-per"], Dniester ["NEE-ster"], and Danube rivers.
ANSWER: **Black** Sea
[10] This narrow inlet of the Bosphorus extends into the European side of the city and separates "Old Istanbul" from newer areas. It was once blocked by a defensive metal chain and is currently spanned by the Galata Bridge.
ANSWER: **Golden Horn** [or **Haliç**]
16. While aiming to kill this creature, Peleus misses and instead spears his father-in-law Eurytion to death. For 10 points each:
[10] Name this creature which is hunted by a large number of heroes when it begins ravaging King Oeneus's land as punishment for the king's failure to sacrifice to Artemis.
ANSWER: the **Calydonian Boar** [or the **Aetolian Boar**]
[10] After he lands the killing blow on the Calydonian Boar, Meleager awards its hide to this virgin huntress, with whom he is in love.
ANSWER: **Atalanta**
[10] During the Calydonian Boar Hunt, this hero leaps into a tree for safety. In the *Odyssey*, Telemachus pays visits to both Menelaus and this king of Pylos.
ANSWER: **Nestor**
17. Answer the following about the Joseon dynasty, for 10 points each.
[10] The Joseon dynasty ruled this peninsula, which was once was contested by the Silla and Goryeo kingdoms. It is currently split into two countries by a Demilitarized Zone.
ANSWER: **Korean** peninsula [or **Han** peninsula]
[10] While defending against a Japanese invasion, the Joseon created a type of warship named for these creatures. Oracle bones used for divination in early China were usually made from either oxen or these creatures.
ANSWER: **turtles**
[10] This fourth and arguably greatest king of the Joseon dynasty is revered for creating the Korean writing system of Hangeul.
ANSWER: **Sejong** the Great

18. One variety of this phenomenon named for Johnson and Nyquist is caused by thermal excitation of electrons. For 10 points each:
[10] Name this phenomenon which is called “white” when it has a constant power spectrum. It is a term for fluctuations that interfere with signals.
ANSWER: **noise**
[10] The signal-to-noise ratio can be improved by taking more samples and averaging them, but that method is not time efficient because the signal-to-noise ratio is proportional to this function of the number of samples taken.
ANSWER: **square root** [or **one-half power**]
[10] Signals are commonly obtained in this form, which CCDs detect and convert to voltage. Spectroscopy studies matter through its interaction with this phenomenon.
ANSWER: **light** [or **photons**; or **electromagnetic radiation**]
19. Answer the following about Romantic-period opera set near the Indian subcontinent, for 10 points each.
[10] In this composer’s opera *The Pearl Fishers*, Zurga and Nadir sing the duet “Au fond du temple saint” before having their friendship threatened by a mutual love for Leila.
ANSWER: Georges **Bizet** [or Alexandre César Léopold **Bizet**]
[10] The title character of this composer’s opera *Lakmé* falls in love with Gérald, a British officer, shortly after singing the “Flower Duet” with her servant Mallika.
ANSWER: Léo **Delibes** [or Clément Philibert Léo **Delibes**]
[10] Bizet and Delibes were composers from this modern-day country, which is the setting of Giacomo Meyerbeer’s opera *The Huguenots*.
ANSWER: **France** [or the **French Republic**; or le **République française**]
20. The realist Lieutenant Pirogov tries to seduce a married woman while his romantic friend Piskaryov obsesses over a prostitute in this short story. For 10 points each:
[10] Name this story that opens and ends with commentary about the title street.
ANSWER: “**Nevsky Prospect**” [or “**Nevskii Prospekt**”]
[10] Akaky Akhakiyevich seeks help from the “Person of Consequence” after being robbed of his most prized possession in this story by the same author.
ANSWER: “The **Overcoat**” [or “The **Cloak**”; or “**Shinel**”]
[10] This Russian author of “Nevsky Prospect” and “The Overcoat” wrote about Major Kovalyov waking up to find a body part missing in “The Nose.”
ANSWER: Nikolai **Gogol**

Extras

Copper deposition in this structure forms Kayser-Fleischer rings in patients with Wilson’s disease. For 10 points each:

- [10] Name this structure that covers the front of the eye. LASIK surgery attempts to modify its curvature.
ANSWER: **cornea**
[10] This inner lining of the eye allows it to detect light due to containing rods and cones.
ANSWER: **retina**
[10] This is the substance which fills up most of the eye. This substance is not served by blood vessels and unlike the aqueous humor, it is not replenished.
ANSWER: **vitreous humor**