

## ACF Regionals 2017

Tossups by Andrew Hart, Stephen Liu, Benji Nguyen, Adam Silverman, Cody Voight, Nathan Weiser  
Packet by Ohio State A (Amol Gandhi, Sayeef Moyeen, Chris Ray, Clark Smith) and Caltech A (Ishan Mazumdar, Will Overman, Tina Wang, Henry Baer)

1. The number of different “full” examples of these structures with  $n$  internal vertices is the  $n$ th Catalan number. An example of these structures with good amortized properties uses zig, zig-zig, and zig-zag operations. Rotation of these structures maintains their balance, a concept introduced by Evgenii Landis and Georgii Adelson-Velskii. On average, the basic operations on a randomly built example of these structures can be done in big theta of  $\log n$  time. A balanced example of these structures maintains its properties using the red or black property of each node. The “search” type of these structures has left and right subnodes that, respectively, have a lesser and greater value than the parent node. For 10 points, what structure has at most two children at every node?

ANSWER: **binary tree** [or self-adjusting **binary** search **tree**; or self-balancing **binary** search **tree**; or **BST**; or **splay trees**; or **AVL trees**; or **red-black trees**; accept **rooted** tree or **ordered** tree or **plane** tree or **k-ary** tree before “zig”; prompt on “**tree**”; do not accept or prompt on answers that do not mention “tree”]

2. A painting titled after this city contains a low barrier being peered over by a crowd that includes two plump children wearing baseball caps, a reference to the Katzenjammer Kids, and a parody of Dick Tracy, a comic that debuted in one of this city’s newspapers. Under the leadership of Wilhelm Valentiner, an art museum in this city commissioned the painting of the walls of a “garden court” with a work that illustrates the contrasting virtues and vices of modern technology with images of vaccines and chemical warfare; that painting in this city represents the goddess Coatlicue (koh-AHT-lee-kway) as a large machine found in a nearby suburb’s River Rouge plant. Edsel Ford commissioned a Diego Rivera mural depicting the “industry” of, for 10 points, what city, the most populous in Michigan?

ANSWER: **Detroit** [accept **Detroit Industry Murals**]

3. A ruler of this kingdom nicknamed “the Memorable” was assassinated by Sorte Plov (SOR-tuh PLOHV) after coming to power by defeating his uncle at the Battle of Fotevik (FOH-teh-veek). This kingdom underwent a church reformation after a civil war that began with a peasant revolt led by a sea captain called “Skipper Clement.” A bishop from this kingdom ordered the destruction of pagan idols after capturing the temple of Svantovit on the Wendish-held island of Rügen; that bishop, Absalon, commissioned the history of this kingdom’s people written by Saxo Grammaticus. To honor his wife, Thyra, a ruler of this kingdom named Gorm the Old erected the first Jelling stone before being succeeded by his son Harald Bluetooth. For 10 points, what Scandinavian country moved its capital from Roskilde (“ROSE”-kil-duh) to Copenhagen?

ANSWER: **Denmark** [or Kingdom of **Denmark**; or **Danmark**]

4. A book titled for these events uses an anecdote about a child who thinks that aspirin cannot be poisonous because there are no “horrid red things” inside of it to argue that belief and imagination are separate things; that book titled for these events puts forth an “argument from reason” against naturalism. A discussion of these events proceeds from an argument that the “wise and learned” can use as an “everlasting check” against delusion. In a book titled for the “life and morals” of a religious leader, Thomas Jefferson used a razor and glue to remove all references to these events, which were the subject of an empirical criticism by David Hume. A “preliminary study” by C. S. Lewis discusses, for 10 points, what kind of supernatural event exemplified by Jesus turning water into wine?

ANSWER: religious **miracles** [accept Christian **miracles** or **miracles** of Jesus Christ or similar answers; accept **“Of Miracles”** or **Miracles: A Preliminary Study**]

5. A metaphorical knife stabs this character “from the darkness of the night” when he briefly falls for a pretty midget girl at a carnival who later leaves in Gomez’s truck. The narrator of the novel in which this man appears reflects that “when I got better I realized what a rat he was.” In the novel’s final sentence, this character’s friend says that “in America when the sun goes down,” he thinks of this man. This “holy goof,” a native of Denver, abandons his best friend in Mexico City when the friend contracts dysentery. This lover of Camille and Marylou drives erratically at high speeds on his many cross-country trips, during which he meets up with Old Bull Lee and Carlo Marx. For 10 points, what character based on Neal Cassady is a travel companion of Sal Paradise in Jack Kerouac’s *On the Road*?

ANSWER: Dean Moriarty [accept either underlined portion]

6. A quote by this author is inverted by Eva, who says that “they still hate us, and they will always hate us,” in Caryl Phillips’s novel *The Nature of Blood*. That quote by this author provides the epigraph to Kurt Vonnegut’s novel *Galápagos* and, improbably, is cried out in the climactic scene of a play by Frances Goodrich and Albert Hackett. This author wrote that “it’s utterly impossible for me to build my life on a foundation of chaos, suffering, and death” in a passage in which she says that “it’s a wonder I haven’t abandoned my ideals” because they “seem so absurd and impractical.” She wrote that she clings to her ideals anyway because “I still believe, in spite of everything, that people are truly good at heart.” For 10 points, what author died at age 15 after writing *The Diary of a Young Girl*?

ANSWER: Anne Frank [or Annelies Marie Frank]

7. Bally Manufacturing’s attempt to corner this city’s leisure industry in the 1970s hit a snag when preservationists objected to its planned demolition of the Marlborough–Blenheim Hotel. A hotel in this city was rebranded in 1990 after contentious negotiations with Merv Griffin and recently closed under the ownership of Carl Icahn (“icon”). Lucy the Elephant was built to attract tourists to this city, where Joseph Fralinger invented saltwater taffy. This city was known as “The World’s Playground” during Prohibition, when its dominant political machine was run by bootlegger Enoch “Nucky” Johnson. The recently-closed Trump Taj Mahal resort was located on this city’s iconic boardwalk. For 10 points, name this resort city with many casinos that is located on the Jersey Shore.

ANSWER: Atlantic City

8. An important parameter for these devices is their slope efficiency. A buried heterostructure implements a stripe geometry surrounded by a lower refractive index to form an index-guided example of this device. Stabilizing the temperature of these devices is important in order to avoid sudden jumps in their mode spectrum. A seminal paper about examples of these devices with multiple quantum wells was published by Nakamura et al., who used indium gallium nitride as a substrate. The VCSEL (VIK-sel) type of these devices is made with a distributed Bragg reflector to cap the cavity. The output of these devices, which is manipulated to make it collimated, depends on the bandgap of the optical gain medium. For 10 points, name these semiconductor devices that create beams of light via stimulated emission.

ANSWER: lasers [or semiconductor lasers; accept injection laser diodes or ILD; prompt on “semiconductor diodes”]

9. In a section of a paper titled “The Problem Illustrated Anew,” this man used an example from a law case in which a confectioner’s mortars and pestles caused vibrations that prevented a doctor from using a stethoscope to examine patients; that paper by this man was published a few weeks before a Guido Calabresi article setting forth similar thoughts about liability rules in automobile accidents and is one of several of his papers that cite the case *Sturges v. Bridgman*. George Stigler used “about four pages” from this man’s work to name a result stating that, in the absence of low transaction costs, private bargaining can be efficient. For 10 points, name this economist who authored “The Problem of Social Cost” and whose namesake theorem describes how bargaining can mitigate externalities.

ANSWER: Ronald Coase [or Ronald Harry Coase; accept Coase’s theorem]

10. Richard Slotkin's *Gunfighter Nation* contrasts the Turner thesis with this man's theory of frontier history, concluding that this man's "progressive" narrative was more influential. A Candace Miller book describes how this man almost died of an infection while accompanying Candido Rondo's "River of Doubt" expedition. Alfred Thayer Mahan's *The Influence of Sea Power upon History* was influenced by this man's *The Naval War of 1812*. He is the subject of a 2012 book by Deborah Davis about a "dinner that shocked the nation," which occurred after he invited Booker T. Washington to the White House. He advocated exercise in the "Strenuous Life" speech and coined the term "bully pulpit." For 10 points, what president summarized his foreign policy as "speak softly and carry a big stick"?

ANSWER: Theodore Roosevelt Jr. [or TR; prompt on "Roosevelt"]

11. A four-line poem set during this decade discusses a group of men who should be with their sweethearts gathering the "flowers left thick at nightfall in the wood." A poem set in this decade that describes "dark-clothed children at play" who are named "after kings and queens" says that "moustached archaic faces" were "grinning as if it were all an August Bank Holiday lark" and describes "long uneven lines" of people who will never have "such innocence again." A poem about an event in this decade states that "too long a sacrifice can make a stone of the heart" and remembers the deaths of MacDonagh, MacBride, Connolly, and Pearse. The refrain "a terrible beauty is born" is from a poem set in, for 10 points, what decade, the setting of a William Butler Yeats poem about the Easter Rising?

ANSWER: 1910s [accept MCMXs or nineteen-teens; prompt on "tens" or "teens"]

12. One of this composer's pieces begins with a descending G Phrygian scale marked *sotto voce* (soh-toh VO-chay), which is followed by a *marcato* theme played in the left hand that is revisited in the F-sharp-major *Adagio sostenuto* movement. In another of this composer's pieces, which was prepared in a *De Profundis* version by Ferruccio Busoni, a *col legno* ("coal" LANE-yo) in the strings represents the clattering of bones. Johannes Brahms supposedly slept through a performance of this composer's poorly received piano sonata. This man used repeated thirds to imitate a galloping horse in his *Mazeppa*, which can be found alongside his piece *Feux Follets* (foo foh-LAY) in a work of twelve compositions for solo piano. For 10 points, what 19th-century composer wrote *Totentanz*, the Piano Sonata in B Minor, and the *Transcendental Études*?

ANSWER: Franz Liszt [or Franz Joseph Liszt; or Liszt Ferencz; or Liszt Ferenc]

13. A book titled after this concept illustrates an old conception of it with the conflict between the "king of the vultures" and an "animal of prey stronger than the rest." The "ancient" conception of this idea required a slave class to do physical labor, whereas the "modern" type requires everyone to work for a living, according to a text on this concept by Benjamin Constant. A book titled after this concept takes its epigraph and many ideas from Wilhelm von Humboldt's work on government. For humans, this concept must encompass thoughts, feelings, and conscience; one's own tastes and pursuits; and the ability to associate with others. Another text draws a distinction between "positive" and "negative" versions of this concept. The "harm principle" was set forth in, for 10 points, a book "on" what concept by J. S. Mill?

ANSWER: liberty [accept On Liberty or The Liberty of the Ancients Compared with That of the Moderns or positive liberty or negative liberty; do not accept or prompt on putative synonyms such as "freedom"]

14. A businessman from this country exploited his friendship with Boutros Boutros-Ghali to orchestrate Saddam Hussein's corruption of the U.N. Oil-for-Food program; Tip O'Neill became speaker of the house after Carl Albert was implicated in a successful plot by that same businessman to bribe congressmen into keeping U.S. troops in this country in the 1970s. A commando group from this country hijacked a bus after mutinying on Silmido Island. This country's military dictator through the 1960s and 1970s was shot by the head of its national intelligence service, the KCIA, during dinner at the Blue House. Under its first democratic leader, this country adopted the Sunshine Policy toward a northern neighbor. For 10 points, name this home country of Tongsun Park and Kim Dae-jung.

ANSWER: South Korea [ or the Republic of Korea; do not accept or prompt on just "Korea"]

15. The reaction of these compounds with phenyl-pyruvate was used to derive Cram's rule. Reactions of these compounds are initiated using a pinch of iodine or di-bromo-ethane. The palladium-catalyzed cross-coupling of these compounds is named for Kumada. Dioxane ("die"-OX-ayn) reacts with them to swing their solution equilibria toward their dimers. Alcohols can be lengthened by two carbons by converting them to these compounds and then reacting them with ethylene oxide. Two equivalents of these compounds are required to react with esters, whereas just one will nucleophilically attack a ketone to give a tertiary alcohol. These ultra-strong bases are synthesized by reacting alkyl halides with magnesium. For 10 points, identify these organometallic reagents that are named for a Frenchman.

ANSWER: **Grignard** reagents [or **organomagnesium bromides** until "magnesium" is read]

16. This location appears to emerge from a misty vortex of green light in a 1992 staging by Harry Kupfer. Characters in this location are compared to a "young and good-looking woman" in the Klondike in the first chapter of a Marxist analysis written by George Bernard Shaw. A group of characters in this location sing the nonsense syllables "heia jaheia" (HAY-ah ya-HEY-ah) when they are happy and "wei-a-lala lei-a, wall-ala lei-a-lala" (way-ah-"lala" lay-uh "wall"-all-ah lay-a-"lala") when they are sad. In the prelude to an opera, this place is represented by a 6/8 eighth-note E-flat arpeggio that crescendos for 136 measures over an E-flat drone. A leitmotif depicting this location evokes the innocence of Woglinde, Wellgunde, and Flosshilde (VOHG-lin-duh, VELL-goön-duh, and FLOHS-hill-duh), its three namesake "maidens." For 10 points, name this river, the source of the "gold" that titles the first opera in Wagner's *Ring* cycle.

ANSWER: **Rhine** River [accept *Das Rheingold*; or **Rhinemaids**]

17. Despite the efforts of a watchman named Teithrin (TAY-thrin), a region of Ceredigion (ker-eh-DIG-ee-on) suffered this fate when a castle protecting it fell into decay under the command of Seithenyn (say-THEH-nin). That region, which suffered this fate under Gwyddno Garanhir (GWID-no GAH-rahn-heer), was called Cantre'r Gwaelod (kahn-TRAYR gwee-LOHD). A location that suffered this fate was ruled by a man who pushed his daughter off his horse Morvarch (mor-VARK), after which she became a mermaid; that princess caused her city to be destroyed in this way after stealing a key from her sleeping father's neck and using it to open a protective gate. Dahut (da-HOO) brought this fate upon a city in Brittany that was ruled by Gradlon (grahd-loh) and that was called Ys (EES). Plato's *Timaeus* (tim-AY-us) describes an island beyond the Pillars of Hercules that suffered this fate. For 10 points, what sort of disaster befell the lost continent of Atlantis?

ANSWER: **sinking** beneath the **sea** [accept **sunken** cities or **sunken** kingdoms or answers indicating that locations are **submerged** or **underwater**; prompt on "flooding" or "drowning"; do not accept or prompt on "Great Flood" or similar answers]

18. In a speech dismissing an assembly, this man indicated a ceremonial mace and commanded "take away that fool's bauble." He won a battle in which the losing commander evaded capture by hiding with William Careless in an oak tree at Boscobel House. This leader convened the Whitehall Conference to debate whether England should readmit the Jews, which he favored. At the Norway Debate in 1940, Leo Amery quoted this victor of the Battle of Worcester (WUH-ster) when he told Neville Chamberlain "in the name of God, go!" This man gained power for life in England's first written constitution, the Instrument of Government, and he set up the Barebones Parliament after dissolving the Rump Parliament. "Old Ironsides" was the nickname of, for 10 points, what first Lord Protector of England?

ANSWER: Oliver **Cromwell**

19. A mutation in the amiloride-sensitive (ah-MIL-oh-"ride") protein ENaC causes a severe form of this condition called Liddle's syndrome. A drug that treats this condition was the first designed rationally using QSAR and was based on a peptide extracted from a Brazilian viper. Drugs that treat it, such as aliskiren and captopril (ah-LIS-kih-ren and CAP-to-pril), inhibit the proteases that cleave alpha-2-globulin into an 8-residue peptide and that degrade bradykinin ("brady"-KYE-nin). Thiazides ("THIGH"-ah-zides) treat this condition, which was once the main target of the drug propranolol (pro-PRAN-uh-lahl) but today is treated using inhibitors of the renin-angio-tensin-aldosterone system. Beta blockers are no longer recommended to treat this condition's primary form. This condition is diagnosed by a high result on a sphygmomanometer (s'fig-mom-ah-NOM-eh-ter) during both the systole and diastole. For 10 points, name this condition also called hypertension.

ANSWER: **high blood pressure** [accept **hypertension** before "hypertension"]

20. One character created by this author listens to a broadcast about Soviet nuclear testing while agonizing over his decision to dilute the milk being fed to his infant son. In a novel on similar themes, this author created a character who writes the play *Gulliver's Foot and the Country of the Little People*, remembers almost drowning in Carp Cave, and looks to the poetry of William Blake to help raise his son. In the first-mentioned novel by this author, the protagonist is fired from a cram school after showing up drunk and decides not to go to Africa so that he can care for his son, who was born with a brain hernia. K tends to his son, Eeyore, in *Rouse Up O Young Men of the New Age*, a novel by, for 10 points, what Japanese author who wrote about a man called Bird in his novel *A Personal Matter*?

ANSWER: Kenzaburo **Oe** (OH-ay) [or **Oe** Kenzaburo]

TB. This politician won a gubernatorial election on a promise to take down a political machine run by his rival Solomon Blatt, which was called the "Barnwell Ring." After this politician was frozen out of his state's Democratic Party, he became the first person to be elected to the senate as a write-in candidate. After claiming that the U.S. would have been a better place had this man been president, Trent Lott resigned as Senate majority leader; Lott made those remarks in 2002 at this senator's 100th birthday party. This politician read his grandmother's biscuit recipe into the congressional record during his record-breaking filibuster of the Civil Rights Act of 1957. For 10 points, name this Dixiecrat candidate in the presidential election of 1948, a South Carolina senator known for his opposition to civil rights.

ANSWER: Strom **Thurmond** [or James Strom **Thurmond**]

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Edited by Andrew Hart, Stephen Liu, Benji Nguyen, Adam Silverman, Cody Voight, Nathan Weiser  
Bonuses by Ohio State A (Amol Gandhi, Sayeef Moyeen, Chris Ray, Clark Smith) and Caltech A (Ishan Mazumdar, Will Overman, Tina Wang, Henry Baer)

1. This sect of Mahayana Buddhism was founded by Bodhidharma ("bode"-hee-DAR-mah). For 10 points each:  
[10] Name this Buddhist sect that is divided into the Soto, Rinzai, and Obaku schools of thought and whose practitioners are mainly found in Japan.

ANSWER: Zen Buddhism [or Chan Buddhism]

[10] The Zen Buddhist thinker Hakuin Ekaku (hah-koo-een ay-kah-koo) formulated a koan that asks what sound this body part makes.

ANSWER: one hand clapping [accept answers mentioning a single hand (clapping); do not accept or prompt on answers mentioning multiple "hands"]

[10] Another Zen koan, which originated in the *Gateless Gate*, asks the listener to show the Zen master his "original" body part of this type, the one that the listener possessed "before your parents were born."

ANSWER: original face

2. The cover of a book by this architect features his wife Madelon Vriesendorp's (VREE-zen-dorp's) painting *Flagrant Delit*, which shows two distorted skyscrapers lying in bed next to the Statue of Liberty's torch. For 10 points each:

[10] Name this architect who wrote *Delirious New York*. With Ole Scheeren (OH-luh SHAY-ren), this architect designed Beijing's CCTV headquarters, which features a 75-meter perpendicular cantilevered section suspended from two separate towers.

ANSWER: Rem Koolhaas [or Remment Lucas Koolhaas]

[10] Koolhaas designed the glass-and-steel central library in this American city. The 1962 World's Fair in this city produced its Pacific Science Center and Space Needle.

ANSWER: Seattle, Washington

[10] Koolhaas's 2002 never-adopted redesign of the flag of the European Union is typically referred to by its similarity to this visual pattern. The flag has been praised for being easily updated to reflect the entry of new member states.

ANSWER: barcode

3. When this woman realizes that a house she wanted to visit is not in Georgia but in Tennessee, she knocks over a valise holding her cat, Pitty Sing, causing a car accident. For 10 points each:

[10] Name this character who tells her killer that "you're one of my own children" at the end of the story in which she appears; in that story, she and the rest of her family are murdered by the Misfit.

ANSWER: the grandmother

[10] The grandmother and the Misfit are characters from this Flannery O'Connor story, whose title is spoken by a restaurant owner named Red Sammy.

ANSWER: "A Good Man Is Hard to Find"

[10] The grandmother remarks that, in her time, "children were more respectful of their native states" after this eight-year-old, her grandson, claims that "Georgia is a lousy state." He and his father, Bailey, are the first to be killed.

ANSWER: John Wesley [prompt on partial answers]

4. In humans, this protein's name is prefixed with an F when it is polymerized and filamentous or with a G when it is monomeric and globular. For 10 points each:

[10] Name this constituent of thin filaments that makes up most of the cytoskeleton with myosin.

ANSWER: beta-**actin** [accept F-**actin** or G-**actin**]

[10] Because actin is in high concentration in most cells, it is often used as the loading control in this lab procedure, which involves running an SDS-PAGE (s-d-s "page"), then transferring the gel, blocking with milk, and incubating with two antibodies.

ANSWER: **Western** blot [prompt on "blotting" or "immunoblotting"]

[10] Another common loading control when running a Western blot is this housekeeping glyco-lytic enzyme, which makes the only NADH in glycolysis by oxidizing an aldehyde to a phosphate ester.

ANSWER: **GAPDH** [or **glyceraldehyde-3-phosphate dehydrogenase**]

5. Prior to this battle, the Union shelled Wilmer McLean's plantation, serendipitously firing a cannonball down his chimney into his dining room during suppertime. For 10 points each:

[10] Name this 1861 battle fought in northern Virginia, a decisive victory for the Confederacy. It was the first major battle of the Civil War.

ANSWER: **First** Battle of **Bull Run** [or Battle of **First Manassas**; prompt on "Battle of **Bull Run**" or "Battle of **Manassas**"]

[10] With the help of reinforcements brought by Joseph E. Johnston, this general commanded the winning Confederate army at First Bull Run. Earlier, he organized the siege and bombardment of Fort Sumter.

ANSWER: P. G. T. **Beauregard** [or Pierre Gustave Toutant-**Beauregard**]

[10] Ken Burns's *Civil War* documentary popularized the emotional letter that this Rhode Island officer wrote to his wife, Sarah, shortly before dying at First Bull Run. His letter climaxes with the command to "think I am gone and wait for me, for we shall meet again."

ANSWER: Sullivan **Ballou**

6. This work was accused of stealing material from Julius Heuscher (YOO-lee-us HOY-shur) and Alan Dundes on the same subject. For 10 points each:

[10] Identify this study that analyzes stories of "animal grooms" and describes how a story such as "The Frog King" may help children through existential problems.

ANSWER: *The **Uses of Enchantment***

[10] This author of *The Uses of Enchantment* spent time in Dachau, which was the basis for his "Individual and Mass Behavior in Extreme Situations." He also put forth now discredited theories on autism.

ANSWER: Bruno **Bettelheim**

[10] Bettelheim blamed autism on people with this relationship, whom he called "refrigerators." Sigmund Freud's Oedipal complex concerns a man's latent attraction toward a person with this relationship to the man.

ANSWER: **mother**(s) [accept equivalents such as **mom**(s)]

7. *Note: read all formulas slowly and warn players that they may want paper handy.* Answer the following about identities in combinatorics. For 10 points each:

[10] This identity states that " $m$  plus  $n$  choose  $r$ " equals the sum from " $k$  equals zero to  $r$ " of " $m$  choose  $k$ " multiplied by " $n$  choose  $r$  minus  $k$ ."

ANSWER: **Vandermonde's** identity

[10] This French mathematician names the identity stating that " $n$  choose  $k$ " equals " $n$  minus one choose  $k$  minus one" plus " $n$  minus one choose  $k$ "; a way to prove that identity is by block walking through this mathematician's namesake "triangle" of binomial coefficients.

ANSWER: Blaise **Pascal** [accept **Pascal's** triangle]

[10] One of the simplest combinatorial identities demonstrates that " $n$  choose  $k$ " is equivalent to " $n$  choose *this quantity*."

ANSWER:  **$n$  minus  $k$**

8. This good was traded by Tuareg (TWAH-reg) tribesmen through the Azalai caravan. For 10 points each:  
[10] Name this good once extracted in great volumes from the Taghaza (tah-GAH-zah) region. It was traded for gold in cities like Gao and Djenné (JEN-ay).

ANSWER: common **salt** [or table **salt**; or **sodium chloride**; or **NaCl**]

[10] Gao was the capital city of this empire, whose greatest leader was Askia Muhammad. In the 15th century, it dislodged Mali as the Sahel's dominant trade empire.

ANSWER: **Songhai** Empire

[10] Moroccan sultan Ahmad al-Mansur coveted the Songhai's control of the salt trade, so he ordered his general Judar Pasha to launch an invasion that culminated at this battle. Pasha's army decisively defeated the Songhai at this 1591 battle after the Songhai cattle stampeded, scared by the Moroccan army's firearms.

ANSWER: Battle of **Tondibi**

9. This painter based many of his works on photographs commissioned from John Deakin that he subsequently folded or spattered with paint. For 10 points each:

[10] Name this artist whose *Black Triptych* was painted after the suicide of his lover George Dyer.

ANSWER: Francis **Bacon**

[10] Bacon painted writhing anthropomorphic creatures in a work showing "three studies for figures at the base of" this scene. Marc Chagall painted a "white" version of this biblical scene.

ANSWER: **Crucifixion** [accept answers indicating **Christ on the Cross** or being **crucified**; accept **Three Studies for Figures at the Base of a Crucifixion** or **White Crucifixion**]

[10] Bacon painted a triptych that in 2013 became the most expensive painting ever sold at auction and that shows "three studies" of this artist sitting in a wooden chair in a cage in front of a bed's headboard.

ANSWER: Lucian **Freud** [or Lucian Michael **Freud**; accept **Three Studies of Lucian Freud**]

10. The speaker of a poem set in one of these locations says that "there is something horrible about a flower" and tells his deceased fiancée that "you do not miss a rose." For 10 points each:

[10] Name these places, one of which is called Nunhead in the title of a poem by Charlotte Mew. Thomas Gray stated that "the curfew tolls the knell of parting day" to open an "elegy" written in one of these places.

ANSWER: **cemetery** [or **graveyard**; accept country **churchyard** or **"Elegy Written in a Country Churchyard"** or **"In Nunhead Cemetery"**]

[10] "In Nunhead Cemetery" states that this action will occur at Trafalgar Square when the "bell of Judgement tolls." In a Susanna Clarke novel, Mr. Norrell proves his magical powers by making this action occur at York Cathedral.

ANSWER: **statues coming to life** [accept any answer mentioning **statues** or **sculptures** and **living** or **speaking** or similar actions indicating "life"]

[10] This contemporary of Mew regarded her as "far and away the best living woman poet." This writer wrote of how the sound of "gunnery practice out at sea" broke "the chancel window-squares" in his poem "Channel Firing."

ANSWER: Thomas **Hardy**

11. A methylated derivative of this compound is formed from three equivalents of acetaldehyde (ass-ih-TAHL-dih-hyde) and sodium amide in the Chichibabin (chee-chee-"BOB"-in) synthesis. For 10 points each:

[10] Name this simple heterocycle that is equivalent to benzene except with one carbon replaced by a nitrogen.

ANSWER: **pyridine** (PEER-ih-deen)

[10] In the last step of the Chichibabin reaction, the imine (IH-meen) attacks an enone (EE-nohn) using this regiochemistry. Michael additions and Stork enamine reactions occur with this regiochemistry, which is characteristic of soft nucleophiles.

ANSWER: **1,4** addition [or **conjugate** addition; prompt on "attacking the **double bond**" or "attacking the **alkene**"]

[10] Niacin is directly formed when methyl-pyridine undergoes this type of reaction and gains oxygens. In this type of reaction, a compound loses electrons.

ANSWER: **oxidation** reaction [prompt on "**redox** reaction"]



12. The variant of this procedure used in Syracuse was known as *petalismos* (peh-tahl-EEZ-mohs) because its participants cast their votes with leaves. For 10 points each:

[10] Name this procedure that was often used as a preventative measure against potential tyrants. The name of this procedure refers to the shards of pottery that were used as voting tokens.

ANSWER: ostracism [or ostrakismos; accept word forms such as ostracizing]

[10] Ostracism was a procedure followed by this democratic city-state. Men from this city-state who were ostracized include Themistocles, Thucydides, and Xanthippus, whose son, Pericles, led it during its Golden Age.

ANSWER: Athens [or Athenai]

[10] This Athenian was ostracized after Sparta rejected his aid in putting down a helot revolt at Mount Ithome (ee-THOH-mee). After Athens was defeated at the Battle of Tanagra, this man was recalled early from exile to broker a truce with Sparta.

ANSWER: Cimon (KYE-mon) [or Kimon]

13. This word appears twice in the title of a paper that introduced the Twin Earth experiment, which argued for an “externalist” approach to this concept. For 10 points each:

[10] Identify this concept that is studied in semantics.

ANSWER: meaning [accept “The Meaning of Meaning”; do not accept or prompt on putative synonyms or word forms]

[10] This philosopher wrote “The Meaning of Meaning” and names an “indispensability thesis” in the philosophy of mathematics with W. V. O. Quine.

ANSWER: Hilary Putnam [or Hilary Whitehall Putnam]

[10] In his article “Meaning,” this thinker distinguished between natural meaning and non-natural meaning. He devised four maxims regarding conversation that make up his “cooperative principle,” which allow for the possibility of non-explicit meanings that he termed “implicatures” (im-PLIH-kuh-churz).

ANSWER: Paul Grice [or Herbert Paul Grice; or H. P. Grice; or H. Paul Grice]

14. This song commands “don’t accept that what’s happening / is just a case of others’ suffering,” which is given as an example of how the listener can join in on the title action. For 10 points each:

[10] Name this antipoverty song from the 1987 album *A Momentary Lapse of Reason* that opens with its title four words, followed by “from the pale and downtrodden.”

ANSWER: “On the Turning Away”

[10] “On the Turning Away” is a song by this English rock band. Themes of divisions in society also underlie their song “Us and Them” from their album *The Dark Side of the Moon*, which also contains “Money.”

ANSWER: Pink Floyd

[10] Pink Floyd’s “Us and Them” was based on the band’s work for the film *Zabriskie Point*, which was directed by this Italian filmmaker. His “trilogy on modernity and its discontents” includes *L’Avventura*.

ANSWER: Michelangelo Antonioni

15. This book follows seven women and three men escaping the plague and telling stories as they go. For 10 points each:

[10] Name this collection by Giovanni Boccaccio that contains 100 stories told over ten days.

ANSWER: *The* Decameron [or Decamerone]

[10] This woman’s collection *Heptaméron*, which was published in the mid-1500s, was inspired by Boccaccio’s work. She was the sister of King Francis I of France.

ANSWER: Marguerite of Navarre [or Marguerite de Navarre; or Marguerite of Angoulême; or Marguerite d’Angoulême or Marguerite d’Alençon; prompt on “Marguerite” or “Navarre”]

[10] Christine de Pizan was also influenced by the *Decameron* in the writing of this collection, finished in 1405, that serves as a response to Jean de Meun’s (moon’s) *Romance of the Rose*.

ANSWER: *The* Book of the City of Ladies [or *Le* Livre de la Cité des Dames]

16. The 60-year-old title character of this novel remembers executing his political rivals after the death of Trajan. For 10 points each:

[10] Name this novel that is told in the form of a letter to “Mark.” Its title character reminisces about his love for Antinous (an-tih-NOH-us) and his marriage to Sabina.

ANSWER: **Memoirs of Hadrian** [or **Mémoires d’Hadrien**]

[10] The author of *Memoirs of Hadrian*, Marguerite Yourcenar (YORE-seh-nar), was born in this European country. The play *Blue Bird* was written by Maurice Maeterlinck, an author from this country.

ANSWER: **Belgium** [or **België**; or **Belgique**; or Kingdom of **Belgium**]

[10] Yourcenar was inspired to write *Memoirs of Hadrian* when she read a letter in which this author wrote that “the melancholy of the antique world seems to me more profound than that of the moderns.” He claimed that he pursued the “mot juste” (moh zhoost), or “right word,” to write books such as *Madame Bovary*.

ANSWER: Gustave **Flaubert**

17. At the interface between two media, the “sine of the angle of incidence” over the “sine of the angle of refraction” is equal to the ratio of this value for the refracting medium over this value for the incident medium. For 10 points each:

[10] Name this value defined as the speed of light over the phase velocity of light for a given medium. It is represented by the letter *n*.

ANSWER: **index of refraction** [or **refractive index**]

[10] The Abbe (ah-BAY) number, or V number, provides a measure of the dispersion of a medium at visible wavelengths in relation to the refractive indices at the small d, big F, and big C lines named for this German physicist, who also lends his name to far-field diffraction.

ANSWER: Joseph von **Fraunhofer** (“FROWN”-hoh-fur) [or Joseph Ritter von **Fraunhofer**; accept **Fraunhofer** lines or **Fraunhofer** diffraction]

[10] A different V number, which determines the number of modes in an optical fiber, must be less than this value in order for an optical fiber to be single mode. You may round to the nearest whole number.

ANSWER: **2** [more precisely, **2.405**]

18. This country’s widespread 1968 student protests were exacerbated when SDS leader Rudi Dutschke (“Rudy” DOOTSH-keh) became the target of an assassination attempt. For 10 points each:

[10] Name this European country where Axel Springer founded his tabloid publication *Bild* in 1952. Its first chancellor was Konrad Adenauer, who served from 1949 to 1963.

ANSWER: **West Germany** [accept **Federal Republic of Germany** or **FRG** or **Bundesrepublik Deutschland**; prompt on “Germany” or “Deutschland”]

[10] Adenauer was succeeded as chancellor by this man. As Adenauer’s minister for economics, this man oversaw West Germany’s *Wirtschaftswunder* (VEERT-shahfts-voon-der), or “economic miracle.”

ANSWER: Ludwig **Erhard** [or Ludwig Wilhelm **Erhard**]

[10] Franz Josef Strauss, Adenauer’s defense minister, resigned after he accused this news magazine of treason for its article reporting on a NATO exercise. A number of its journalists, including founder Rudolf Augstein, were arrested.

ANSWER: *Der* **Spiegel** [accept **Spiegel** Affair]

19. As punishment for raising this god in his court, Athamas (ah-THAH-mas) was deluded by Hera into perceiving his wife and children to be lions, resulting in his slaying of his own son Learchus (lee-AR-kus). For 10 points each:

[10] Name this Greek god who was born from the thigh of his father, Zeus, because his mother, Semele (SEM-uh-lee), died from her exposure to the full extent of Zeus's glory. He was associated with ritual madness and grape harvests.

ANSWER: **Dionysus** [or **Dionysos**; accept **Bacchus** or **Eleutherios**]

[10] In a Homeric Hymn, Dionysus is kidnapped by a group of pirates and attacks them in the form of a lion; although the helmsman Acoetes is spared, the rest of the pirates jump overboard and are transformed into these animals.

ANSWER: **dolphins**

[10] Dionysus killed Eurytus (yoo-RIT-us) with one of these objects during the Gigantomachy. These wands, which consisted of a staff decorated with ivy leaves and tipped with a pinecone, were used in the worship of Dionysus.

ANSWER: **thyrsus** (THUR-sus) [or **thyrsos**]

20. This composer used the first and second lessons from the Tenebrae on Maundy Thursday to set *Lamentations* to music. For 10 points each:

[10] Name this composer of a *Miserere nostril* who wrote a tune called "Third Mode Melody" that would inspire a work by a later composer.

ANSWER: Thomas **Tallis**

[10] The aforementioned later composer was this Englishman, who used "Third Mode Melody" for his *Fantasia on a Theme of Thomas Tallis* in 1910. He also composed a fantasia on "Greensleeves."

ANSWER: Ralph **Vaughan Williams**

[10] Thomas Tallis's *Spem in alium* is a piece in this polyphonic genre prevalent during the Renaissance. With William Byrd, Tallis composed a collection of these pieces for the *Cantiones Sacrae* (can-tee-OH-nays SAHK-"rye").

ANSWER: **motets**

Extra. Therese gets the protagonist of this novel a job at the Hotel Occidental. For 10 points each:

[10] Name this novel whose protagonist is abused by Robinson and Delamarche and made to be a servant to the overweight Brunelda. As the completed portion of this unfinished novel concludes, the protagonist goes to work at the Nature Theatre of Oklahoma.

ANSWER: **Amerika**

[10] *Amerika* is a novel by this author, whose other novels include *The Trial* and *The Castle*.

ANSWER: Franz **Kafka**

[10] The protagonist of *The Castle*, K (KAH), has his coffee pot destroyed by this character after he oversleeps, and in another scene, this character scratches K with her cat's claws. She is the love interest of Schwarzer.

ANSWER: Miss **Gisa** [or Fräulein **Gisa**]