

2018 Reinstein Set – Packet 9

Tossups

1. The direction and magnitude of these objects' movement, known as slip, can be determined by finding a piercing point. When one of these features is not vertical, it consists of a hanging wall and a footwall. **Nappes [naps]** and **klippes [KLIP-us]** are telltale signs of the thrust type of this feature. These features move when stress builds up until it must be released. The strike-slip type of these geologic features is found at transform plate boundaries. Name these fractures in a rock at which the rock can become displaced, causing seismic activity.

Answer: geologic **faults** [accept **fault** lines or **fault** zones]

2. A character in this play states "Let us be sacrificers, but not butchers" and then adds "Let's carve him as a dish fit for the gods, / Not hew him as a carcass fit for hounds." Later in this play, the words "Liberty! Freedom! Tyranny is dead!" are yelled by **Cinna [KIN-nuh]**. A speech in this play beginning "Friends, Romans, countrymen, lend me your ears" is given by Antony, who turns an enraged crowd against Brutus and Cassius. Name this William Shakespeare play in which the words "Et tu, **Brute [broo-TAY]?**" are spoken by the title Roman leader as he is assassinated.

Answer: *The Tragedy of **Julius Caesar***

3. If these particles have less than half of an electron-volt of energy, they are very efficiently absorbed by cadmium-113. On the other hand, californium-252 is commonly used as a source of these particles. This particle is changed into a proton, electron, and electron anti-neutrino in beta-minus decay. Adding one of these particles to uranium or plutonium causes a nuclear chain reaction. Mass number minus atomic number equals the number of these particles in an atom. Name these particles, discovered by James Chadwick, that exist with protons in atomic nuclei.

Answer: **neutrons**

4. Two protagonists die while fighting in this country in Stendhal's novel *Armance*. An author from this country wrote a poem about the senators not doing their jobs because they were anticipating the barbarians and another work that wishes "hope your road is a long one" in a poem about a journey to one of this country's islands. In a novel by an author from this country, the narrator stays with Madame Hortense and mines with Alexis Zorbas. Name this home country of Constantine Cavafy and Nikos **Kazantzakis [kah-zahnt-ZAH-kiss]**, the former of whom wrote "Ithaka" about this country's epic hero Odysseus.

Answer: **Greece** or **Hellenic Republic**

5. This person once got leprosy on his hand by putting his hand in his cloak, and then cured it by putting his hand back. When this person's sister criticized him for marrying a **Cushite [KUSH-"eye"t]** woman, she was given leprosy as punishment. Some speeches that this person gave in the land of Moab are the basis of the Book of Deuteronomy. According to tradition, the Torah was dictated to this person. Name this prophet who as an infant was rescued by the Pharaoh's daughter from the Nile, and who went on to receive the Ten Commandments and lead the Jews out of Egypt.

Answer: **Moses** [or **Moshe**]

6. One character in this play repeatedly refers to the "public works of Puncher and Wattman" after being commanded to think. This play's central characters consider hanging themselves from the tree on stage. One of those characters states "Nothing to be done" when he cannot remove his boot. Pozzo uses a rope leash in this play to guide his blind slave, Lucky. In both acts of this play, a boy announces that the anticipated man will not arrive that day, "but surely tomorrow". Name this absurdist play about Vladimir and **Estragon [ESS-trah-gawn]**, written by Samuel Beckett.

Answer: ***Waiting for Godot*** [or ***En Attendant Godot***]

7. This ability is the subject of Matt Huentelman's MindCrowd Project. The ease with which this ability can be altered was the subject of Elizabeth Loftus and John Palmer's Car Crash Experiment, which explored the impact of different verbs. Though they were actually in an experiment on obedience, participants in the Milgram experiment falsely believed that the experiment was focused on this ability. Processing information and a form of this ability was the subject of George Miller's paper "The Magical Number Seven, Plus or Minus Two". That paper addressed the working form of this ability, which is very similar to its short-term form. Name this ability to store and retrieve information.

Answer: **memory** [accept **remembering** and other casual synonyms]

8. A mutiny against this explorer was described by Abacuk Pricket, and this explorer was never seen again after being left in a small boat with his close followers. Earlier, this explorer commanded the *Hopewell* while exploring Greenland and Russia. He then commanded the *Half Moon* on a voyage to America. This explorer took the *Discovery* through the Labrador Sea to a strait that is now named for him. This person tried to go to China via the Northwest Passage. Name this person who explored the river in New York and the large bay in Canada now named for him.

Answer: Henry **Hudson**

9. John Wheeler described the universe as being made of a “quantum” version of this type of material. Expanding or extruding the plastic **polystyrene** [pah-lee-STY-reen] makes one form of this type of material. This type of material is often made from **polyurethane** [pah-lee-YUR-ih-thayn] and can be used for air filter seals and insulation. Materials of this type are **colloids** [KAH-loydz] in which gas is dispersed. Plastic polymers are turned into this type of material to create bath sponges. Give this term for airy substances like whipped cream and the material that forms atop recently-poured carbonated beverages.

Answer: **foams** [prompt on **colloids** before it is mentioned]

10. One poem by this writer is named for somebody who lost a singing contest against Corydon in one of Virgil’s *Eclogues*. That poem makes references to an earlier work this poet based on a Joseph Glanvill story, whose protagonist is a poor scholar who leaves Oxford. This writer of “**Thyrsis**” [THUR-siss] and “The Scholar-Gipsy” wrote another poem in which pebbles “Begin, and cease, and then again begin”. That poem by this author ends by comparing the world to “a darkling plain ...Where ignorant armies clash by night”. Name this English poet of “Dover Beach”.

Answer: Matthew **Arnold**

11. These lines separate both the attacking and defending zones from the neutral zone. These lines are one foot wide and 75 feet from the end of the playing surface. If the crossing of this line could lead to a future penalty, the referee puts one hand in the air and points to this line with the other hand. Offsides is called by an official aligning his arm horizontally with this line, and occurs when offensive players cross this line before the puck does. There are two red dots just inside this line for faceoffs. Name these lines on ice hockey rinks that are named for their color.

Answer: **blue** lines

12. This work’s narrator compares the sound of a train to the scream of a hawk and calls the train a “traveling demigod, this cloud-compeller.” The slave Cato Ingraham is a neighbor of this book’s narrator, who is visited by the poet William Ellery Channing. The narrator works barefoot while weeding his bean-field, and he spends 28 dollars and 12 and a half cents to build a house on a plot of land described in the section “Where I Lived, and What I Lived For”. The narrator of this book “went to the woods...to live deliberately”. This nonfiction book is set near Concord, Massachusetts. Name this memoir about life on a pond by Henry David **Thoreau** [thuh-ROH].

Answer: **Walden**; or, *Life in the Woods*

13. A few months after this event, a mayor said “This city will be chocolate at the end of the day.” That mayor, who accepted bribes from Frank Fradella after this event, was Ray Nagin [NAYG-in]. The U.S. president at the time of this event was criticized for saying “Brownie, you’re doing a heck of a job” to the director of FEMA [FEE-muh] during this event, Michael Brown. Many Republicans stated that Mississippi governor Haley Barbour handled this event better than Louisiana governor Kathleen Blanco. Name this natural disaster that struck during the George W. Bush presidency in 2005.

Answer: Hurricane **Katrina** [accept any reasonable answer containing **Katrina**; prompt on a **hurricane**]

14. This organ is surrounded by muscle tissue called the *teniae coli* [TEN-ee-ee KOH-lee] and fat pouches called the *epiploic* [ep-ih-PLOH-ik] appendices. This organ is comprised of pouches called *haustra* [HAW-struh]. Blood from this organ goes to the inferior *mesenteric* [mez-en-TAIR-ik] vein. This organ is the most common location of the disease *diverticulitis* [“DIVER-tick-you-LIE”-tiss]. This organ begins with the *cecum* [SEE-kum], which is attached to the appendix. Much of this organ consists of the ascending, transverse, and descending colon. Name this organ that connects the small intestine to the anus.

Answer: **large intestine** [accept **large bowel**; prompt on **bowel**; accept **colon** before it is mentioned]

15. This leader did not give enemy javelin-throwers time to set up at the Battle of *Ticinus* [tee-KEE-noos]. That battle was fought after his Siege of *Saguntum* [sah-GOON-toom]. This leader’s brother Mago laid a trap against *Tiberius Sempronius Longus* [ty-BEER-ee-uss sem-PROH-nee-uss LAWN-guss] that helped them win the Battle of the *Trebia* [TRAY-bee-uh]. This general was then victorious at Lake Trasimene and Cannae. This leader was eventually defeated by *Scipio* [SKIP-ee-oh] Africanus at the Battle of Zama, ending the Second Punic War. Name this general who crossed the Alps with his elephants while leading Carthage.

Answer: **Hannibal Barca** [accept either]

16. The shortest median in this type of triangle is a radius of the circumcircle. The diameter of the circumcircle of one of these triangles is its longest side. One of the altitudes of this type of triangle divides it into triangles that are similar to each other and to the original; the other two altitudes of this triangle are sides of this kind of triangle. The two smallest angles of this triangle are complementary, and the sum of their measures equals the measure of the larger angle. Name this kind of triangle whose side lengths must satisfy the Pythagorean theorem.

Answer: **right**(-angled) triangle

17. One work by this painter shows girls on the left, one of whom has her arm outstretched, challenging a group of boys on the right. This painter of *Young Spartans Exercising* showed a man looking off to the right while a woman looks downward in front of a green drink. Another painting by this artist shows a woman in orange sitting on a double bass while one dancer adjusts another dancer's sash and other dancers practice ballet poses. Name this painter of *The Absinthe Drinker* and *The Dance Lesson*.

Answer: (Hilaire-Germain-)Edgar **Degas** [day-gah]

18. In 1914 in this state, the National Guard attacked striking coal miners, killing about 20 people in the Ludlow Massacre. In 1999 in this state, Eric Harris and Dylan **Klebold** [KLEE-"bold"] went on a shooting rampage that left 15 people dead, including themselves, at Columbine High School. In 2012 in this state, James Holmes opened fire during a midnight showing of *The Dark Knight Rises*. Because of when it gained statehood, this state is the Centennial State. Name this state whose population grew during the Pike's Peak Gold Rush, which drew people to the area around Denver.

Answer: **Colorado**

19. This composer's Piano **Concerto** ["con-CHAIR-toe"] in G major was premiered by Marguerite Long and opens with a whip crack. This composer's other piano concerto, which has a contrabassoon solo, was commissioned by Paul **Wittgenstein** [VIT-gun-shtyn], who lost his right arm in World War I. Another piece by this composer begins with a snare drum and adds flutes and then clarinets as it builds to eventually include the entire orchestra. Name this early-20th-century French composer who wrote *Boléro*.

Answer: (Joseph-)Maurice **Ravel** [rah-VEL]

20. This phenomenon was explained using the formula "mobility times Boltzmann's constant times temperature equals the diffusion coefficient". A consequence of that relationship allowed **Jean Perrin** [zhahn pair-an] to confirm the atomic nature of matter and measure Avogadro's constant, which in this phenomenon varies inversely with mean squared displacement. The *annus mirabilis* [AN-uss mir-AB-ih-luss] of Albert Einstein included an explanation of this phenomenon. Name this phenomenon demonstrated by pollen grains moving somewhat randomly in water.

Answer: **Brownian motion**

21. Setting powers of x equal to this number gives the **cyclotomic** [“sigh”-kloh-“TOM”-ik] equation, whose solutions are the **de Moivre** [duh mwahv] numbers and have the same magnitude as this number. The Von **Neumann** [NOY-mun] definition of ordinals associates this number with a set containing only zero. This is the only positive number that cannot be the base of a logarithm. This is the larger digit in Boolean algebra. “Zero point nine repeating” equals this number. Name this number that is neither prime nor composite, and is the smallest positive integer.

Answer: 1

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Bonuses

1. This house was pictured on the cover of *Time* magazine in January 1938.

A. Name this house in southwestern Pennsylvania. Edgar Kaufmann commissioned it.

Answer: **Fallingwater**

B. This Prairie-school architect designed Fallingwater. He started his career in Oak Park, Illinois, where he designed the Unity Temple.

Answer: Frank Lloyd **Wright** [or Frank Lincoln **Wright**]

C. Frank Lloyd Wright designed this house for Herbert F. Johnson on Wind Point peninsula near **Racine** [ruh-SEEN], Wisconsin. This building is now a conference center.

Answer: **Wingspread**

2. **Beryllium** [buh-RIL-ee-um] and magnesium are in this group, or column, of the periodic table.

A. Give the IUPAC [“eye-you-pack”] group number of this group that was once known as alkaline earth metals.

Answer: **2**(A)

B. This married couple discovered the heaviest element in group 2, **radium** [RAY-dee-um].

Answer: Pierre **Curie** and Marie Curie [or the **Curies**; or Pierre **Curie** and Maria Salomea **Skłodowska** [sk’-woh-DOHV-skah]]

C. The group-2 element barium is in YBCO, the first compound shown to have this property above 80 kelvins.

Answer: **superconductivity** or **superconducting** or **superconductor** [do not prompt on answers that omit “super”]

3. This property of a function’s graph can be found by substituting x equals 0 into the function’s formula, assuming you have the formula.

A. Name this quantity that is represented by the b when a line’s equation is in the form “ y equals mx plus b ”.

Answer: **y-intercept** [prompt on **intercept**]

B. Find the y -intercept of the graph of the equation $5x$ plus $2y$ equals 20.

Answer: $y = \mathbf{10}$ or $(\mathbf{0}, \mathbf{10})$

C. Rather than finding the y -intercept, find the x -intercept of the graph of the equation y equals x squared plus $8x$ plus 16.

Answer: $x = \mathbf{-4}$ or $(\mathbf{-4}, \mathbf{0})$

4. This joint is just above the top of the **fibula** [FIB-yoo-luh].

A. Name this hinge joint between the **femur** [FEE-mur] and **tibia** [TIB-ee-uh].

Answer: **knee**

B. This bone protecting the knee is commonly called the kneecap.

Answer: **patella** [puh-TEL-uh]

C. This is the name of the tendon connecting the top of the patella to the **femoris** [FEH-muh-rus] muscles at the front of the thigh.

Answer: **quadriceps** (extensor)

5. This Titan's name means "forethought".

A. Name this Titan who made humankind out of clay and stole fire.

Answer: **Prometheus** [proh-MEE-thee-uss]

B. To punish humans for the theft of fire, **Hephaestus** [heh-FESS-tuss] and Athena created this woman, who released evil by opening a container.

Answer: **Pandora**

C. Prometheus was one of a handful of male Titans who were not involved in the **Titanomachy** ["Titan"-AH-muh-kee]; this husband of **Tethys** [TETH-iss] also wasn't, since he followed the advice of his sister, Rhea.

Answer: **Oceanus** [oh-SEE-uh-nuss]

6. This cancer is the most common type diagnosed in children.

A. Name this cancer in which the bone marrow produces abnormal white blood cells.

Answer: **leukemia**

B. Other blood-related cancers such as Hodgkin's lymphoma, as well as mononucleosis, may develop after infection with this virus in the herpes family.

Answer: **Epstein-Barr** virus [accept **EBV**; prompt on human **herpes**virus 4 or **HHV-4**]

C. Cancers of the blood may cause enlargement of this organ known for its role in recycling red blood cells and converting iron into **bilirubin** [BIL-ih-roo-bin].

Answer: **spleen**

7. The Del Peral and De Salas inquiry and the Sampson Board's Court of Inquiry reached different conclusions about this ship's explosion.

A. Name this ship that exploded in Havana Harbor in 1898.

Answer: USS Maine

B. The explosion of the *Maine* led to this war fought in the Caribbean Sea and Pacific Ocean.

Answer: Spanish-American War

C. During the Spanish-American War, Henry Glass captured this island without a fight.

Answer: Guam

8. The title character in this novel is Michael Henchard, but the title could also refer to Donald Farfrae.

A. Name this novel in which Henchard gives up alcohol for 21 years after he auctions off his wife and daughter.

Answer: *The Mayor of Casterbridge*

B. This English author wrote *The Mayor of Casterbridge* as well as *Tess of the d'Urbervilles*.

Answer: Thomas Hardy

C. This name is shared by the two daughters of Susan Henchard, the first of whom is auctioned.

Answer: Elizabeth-Jane Henchard [prompt on partial answer]

9. This quantity is the rate at which work is done.

A. Name this quantity measured in watts.

Answer: power

B. The watt per square meter is the unit used for this vector representing the flux of an electric field. This vector equals the cross product of the electric field with the magnetic *H*-field.

Answer: Poynting vector

C. The log of the ratio of two sound intensities, each measured in watts per square meter, is used to calculate this unit of sound intensity.

Answer: decibel

10. The narrator of this novel falls in love with Fayaway.

A. Identify this novel, based on the author's experience in the Marquesas [mar-KAY-suss] Islands, in which the narrator and Toby find themselves among cannibalistic natives at war with the Happers.

Answer: *Typee: A Peep at Polynesian Life*

B. Tommo and Toby find themselves among the Typee after a failed hunt for one of these animals. In another novel, one of these animals is sought by Ishmael and Ahab aboard the *Pequod*.

Answer: sperm **whales**

C. Both of those novels, *Typee* and *Moby-Dick*, were written by this author.

Answer: Herman **Melville**

11. The first two movements of this piece are subtitled "the Bringer of War" and "the Bringer of Peace".

A. Name this early-20th-century composition by Gustav Holst.

Answer: *The Planets*

B. Holst had a long friendship with this composer of *Fantasia on a Theme by Thomas Tallis* and *The Lark Ascending*.

Answer: **Ralph [rayff] Vaughan Williams** [prompt on partial last name]

C. Holst wrote *The Planets* while he was a teacher at this school. There is a lively jig at the beginning of a suite that Holst named for this school.

Answer: **St. Paul's** (Girls') School

12. Because of its origin, this empire was also known as the Eastern Roman Empire.

A. Name this empire whose first ruler was Constantine ["CON-stun-teen"] the Great. Its final ruler, Constantine XI [11], was killed by the Ottomans in 1453.

Answer: **Byzantine** Empire

B. This person was the Byzantine emperor from 527 to 565. He ordered the construction of the Hagia Sophia ["HI"-ah soh-FEE-ah].

Answer: **Justinian I** or **Justinian the Great** [prompt on **Justinian**]

C. This general under Justinian helped expand the empire by defeating the Sassanids [suh-SAH-nidz] at Dara and the Vandals at Ad Decimum [ad DESS-ih-mum].

Answer: Flavius **Belisarius** [FLAH-vee-ooss beh-lih-SAR-ee-uss]

13. The expenditure form of this concept incorporates consumption, investment, government spending, and net exports.

A. Name this concept used to measure national economies. Its name has three words, none of which is “national”.

Answer: **gross domestic product** or **GDP**

B. There are often two published versions of GDP growth. Those versions are real GDP growth, which is adjusted for inflation, and this type of GDP growth that is not adjusted for inflation.

Answer: **nominal** GDP growth

C. This quantity equals 100 times nominal GDP divided by real GDP. Like the consumer price index, this quantity is a measure of inflation.

Answer: GDP **deflator**

14. This leader defeated **Ibrahim Lodi** [EE-brah-heem LOH-dee] at the First Battle of **Panipat** [PAH-nee-paht].

A. Name this grandfather of Akbar who established the **Mughal** [MOO-gul] Empire during the 16th century.

Answer: **Babur** [BAH-bur] [or **Zahir** ud-din Muhammad Jalal ud-din Babur]

B. Babur died in this city about 100 years before the Taj Mahal was built there.

Answer: **Agra**, Uttar Pradesh, India

C. A year after his victory at Panipat, Babur renounced the consumption of wine while rallying his troops to win this battle over Rana Sanga.

Answer: Battle of **Khanwa**

15. The protagonist of this novel sings “Amazing Grace” and “Heartbreak Hotel” to herself because those songs were outlawed.

A. Identify this novel about **Offred** [“of Fred”]. It is set in the Republic of Gilead.

Answer: *The **Handmaid’s Tale***

B. This Canadian author wrote *The Handmaid’s Tale*.

Answer: Margaret (Eleanor) **Atwood**

C. Serena Joy, the wife of the Commander, shows Offred a picture of this person, whom Offred had last seen in a grocery store.

Answer: Offred’s **daughter** or her **child**

16. This person became president after serving as Secretary of State and Secretary of War under James Madison.

A. Name this president who presided over the Era of Good Feelings, though it was an economically difficult time due to the Panic of 1819.

Answer: James **Monroe**

B. During Monroe's presidency, the U.S. signed the Adams-Onís ["oh-NIECE"] Treaty with this nation, clearly defining our border and giving us Florida.

Answer: (Kingdom of) **Spain** [or (Reino de) **España**]

C. When Monroe was governor of Virginia, this slave planned a rebellion in Richmond that failed, leading to him and 25 of his followers being hanged.

Answer: **Gabriel Prosser** [accept either]

17. In the context of conic sections, this term might mean two intersecting lines or a line segment, among other possibilities.

A. Give this term for a limiting, unusual case of a shape or other definition.

Answer: **degenerate** or **degeneracy**

B. A degenerate circle is equivalent to this geometric figure, since it is essentially a circle whose radius is 0.

Answer: **point**

C. Specifically describe the degenerate graph of a parabola that occurs when either x squared or y squared is set equal to a positive number.

Answer: two **parallel lines** [accept two **vertical lines** or two **horizontal lines**]

18. These compounds have a **carboxyl** ["car-BOX-ill"] group and the group they are named for, which consists of one nitrogen atom and two hydrogen atoms.

A. Name these compounds that combine to form proteins.

Answer: **amino acids**

B. Amino acids are joined by this type of bond. The same term refers to short chains of amino acids.

Answer: **peptide** bonds [prompt on **amide** bonds]

C. Five amino acids, including **glycine** [GLY-seen], are denoted by this term because their side chains are not aromatic.

Answer: **aliphatic** [al-ih-FAT-ik] amino acids

19. Answer the following about the essay collection *Notes of a Native Son*, which is not to be confused with the novel *Native Son*:

A. This author wrote *Notes of a Native Son*. His other works of nonfiction include *No Name in the Street* and *The Fire Next Time*.

Answer: James (Arthur) **Baldwin**

B. The first entry in the collection is “Everybody’s Protest Novel”, which calls this work by Harriet Beecher Stowe a “very bad novel”.

Answer: ***Uncle Tom’s Cabin***

C. The second essay, “Many Thousands Gone”, criticizes this Richard Wright character for being an unsympathetic stereotype. This protagonist of *Native Son* smothers Mary Dalton and rapes Bessie.

Answer: **Bigger Thomas** [accept either]

20. Evaluate these exponential expressions.

A. Find the value of 64 raised to the $\frac{1}{3}$ power.

Answer: **4**

B. Find the value of 5 raised to the -2 power.

Answer: **1/25** or **0.04**

C. Find the product of 2 to the 7th power, times 5 to the 5th power.

Answer: **400,000** or **4×10^5**

21. This character wields Ruyi Jingu Bang, a size-changing staff that he stores behind his ear.

A. Identify this trickster who accompanies **Xuanzang [shoo-AHN-zahng]**, Sandy, and Pigsy on a voyage to Vulture Peak to retrieve Buddhist texts.

Answer: **Sun Wukong** or the **Monkey King** [prompt on partial answer]

B. Sun Wukong appears in this 16th-century Chinese novel about a trip to India.

Answer: ***Journey to the West*** or ***Xi You Ji***

C. In *Journey to the West*, Sun Wukong gained this quality by eating peaches. In his namesake epic, Gilgamesh sought **Utnapishtim [oot-nuh-PISH-tim]** to gain this quality after the death of his friend **Enkidu [EN-kee-doo]**.

Answer: **immortality** [accept any reasonable answer indicating the inability to die]