

## 2020 Reinstein Set – Packet 7

### Tossups

1. Francois [fran-swah] Darlan said that this person was the only American he would talk to, but this person sent his deputy Mark Clark to talk to Darlan anyway. This person's work with Darlan in North Africa was supported by Franklin Roosevelt and Winston Churchill. This person worked with Bernard Montgomery to plan Operation Overlord. This leader of Operation Torch became the Supreme Commander of the Allied Expeditionary Forces in Europe. This leader would later become the namesake of an anti-communist doctrine developed by John Foster Dulles [DUL-iss], his secretary of state. Name this person who was elected U.S. president in 1952 and 1956.

Answer: Dwight (David "Ike") **Eisenhower**

2. This element was used in the Kucherov [KOO-chuh-rawff] reaction in the hydration of acetylene [uh-SEE-tuh-leen] before the use of palladium [puh-LAD-ee-um] chloride in the Wacker process. A combination of potassium, iodine, and this element is used to detect ammonia as Nessler's reagent. This element combines with sulfur to form the mineral cinnabar [SIN-uh-bar]. Overexposure to this element can cause Minamata disease, which is why the use of thiomersal ["thigh"-uh-MUR-sawl] in vaccines was controversial. Alloys of this element are often used by dentists for patients over 15 years old and are called amalgams. Name this element that was known as quicksilver and is the only metal that is liquid at room temperature.

Answer: **mercury** [accept **Hg**]

3. A woman in this play insults a man by saying "Courtesy itself must convert to disdain, if you come in her presence." The man in this play replies "But it is certain I am loved of all ladies, only you excepted." The woman states "I had rather hear my dog bark at a crow than a man swear he loves me." This play ends with that man saying, "Strike up, pipers" to celebrate their wedding. This play starts near Leonato's house in Messina [meh-SEE-nuh]. The marriage takes place after poems that those people wrote to each are shown by Claudio and Hero, who also get married at the end of this play. Name this William Shakespeare play about Benedick and Beatrice.

Answer: **Much Ado About Nothing**

4. **Vergerio** [vurg-EER-ee-oh] wrote fictional letters supposedly from this person in response to Petrarch. Petrarch discovered many of this person's letters to Atticus in a Verona library. Clodius declared this person to be an exile, and years later this person unsuccessfully defended **Titus Annius Milo** [TEE-tuss AN-ee-us MEE-loh] after Milo killed Clodius. This person's attempt to pit Octavian against Mark Antony was unsuccessful, and Antony ordered this person's hands to be cut off after he was killed. This person and Gaius Antonius Hybrida were the targets of the unsuccessful **Catiline** [KAT-uh-leen] conspiracy. Name this Roman consul and lawyer famous for his skills as an orator.

Answer: (Marcus Tullius "Tully") **Cicero**

5. A 19th-century attempt to make this process cheaper was pushed by Pierre **Leroux** [leh-roh] and was called "**circulus**" [SIR-kyuh-lus]. A similar modern idea used for this process is **Milorganite** [muh-LOR-guh-"night"]. Overdoing this process can cause salt toxicity, which appears as leaf scorch. The material used to promote this process is often given an N-P-K label [pause] and is made by granulating potassium chloride and combining it with triple super-phosphate, ammonium phosphate, and ammonium nitrate. Name this process that improves the productiveness of plants by applying substances to the plant or soil.

Answer: **fertilization** or **fertilizing** [accept **fertilizer**]

6. This person criticized Arthur **Pigou's** [pig-oo'z] theory of a lack of connection between employment and prices by saying "We are, as I have said, one equation short." This person then stood up for his profession by saying that practical men "are usually the slaves of some defunct economist." Those quotes are from a book in which this person introduced the consumption function and used it to develop the government spending multiplier. This person then showed how to increase aggregate demand by increasing government spending. Name this English economist who wrote *The General Theory of Employment, Interest and Money*.

Answer: John Maynard **Keynes** ["canes"]

7. This character traveled to Wisconsin to ask a woman to marry him, only to find out she was already engaged to his cousin. This character asked Mr. Philander about three skeletons, the smallest of which was an anthropoid ape. Paul **D'Arnot** [dar-noh] taught this character how to speak French, and this person learned to read English long before learning to speak it. This character killed Kerchak after Kerchak killed his father, and he was raised by Kala in Africa. This character, who was born with the name John Clayton II, Viscount Greystoke, falls in love with Jane Porter. Name this Edgar Rice Burroughs character who was raised in the jungle by apes.

Answer: **Tarzan** [accept John **Clayton** II or Viscount **Greystoke** before each is mentioned]

8. These organs contain cells that wrap around capillaries, called **podocytes** ["POD-oh-sites"]. Fanconi syndrome decreases re-absorption in these organs, causing the body to lose protein. Other problems in these organs lead to a loss of **albumin** [al-BYOO-min] or a build-up of **creatinine** [kree-AT-uh-noon]. These organs are not thought of primarily as glands, but they excrete **erythropoietin** [uh-RITH-roh-POY-uh-tin]. The adrenal glands are on top of these organs. The functional units of these organs contain a Bowman's capsule and loop of Henle [pause] and are called **nephrons** [NEF-rahnz]. These bean-shaped organs are fed by the **renal** [REE-nul] arteries. Name these organs that filter blood and send urine to the bladder.

Answer: **kidneys**

9. Franz **Lehár** [LAY-har] wrote an operetta about the love affair between this composer and Napoleon's sister. Even though this composer did not write for the piano, Franz **Liszt** ["list"] wrote a set of six very difficult grand **études** [AY-toodz] for piano based on this composer's work. Johannes Brahms wrote variations on a theme by this composer, and Sergei Rachmaninoff wrote a rhapsody on the same theme. Those works are based on the 24th and last entry in a series of very difficult pieces this composer wrote for violin. Name this Italian composer and virtuoso violinist who wrote 24 **Caprices** [kuh-PREE-sus] for Solo Violin.

Answer: Niccolò **Paganini**

10. If a function is even, then each term in its **Fourier [for-yay]** series contains this function. If the direction of a vector is expressed using this function, then the sum of the squares of the values of this function equal 1. In spherical coordinates, this function of the inclination angle gives the ratio between the  $z$ -coordinate and the distance from the origin. Dot products are calculated by multiplying the magnitudes of vectors times a value of this function. This function gives the  $x$ -coordinates of points on the unit circle. Name this function that, for an acute angle in a right triangle, equals the adjacent side length over the hypotenuse length.

Answer: cosine function

11. A number of efforts to monitor these events have been the Multi-Instrument Aircraft Campaigns, or MACs. These events seem to come from a point called the apparent radiant. The most noticeable of these events take place in mid-August and mid-November each year. These events occur when Earth passes through the path of a comet. The names of these events are usually made by changing the end of the name of a constellation so that it ends in “-id”. Name these events, such as the Perseids and Leonids, during which there are bright flashes in the sky.

Answer: meteor showers

12. At the end of this novella, 12 voices are shouting in anger because two characters played the ace of spades simultaneously. One of the aces of spades is played by the owner of Foxwood, Mr. Pilkington. The other ace of spades played at the end of this novella is played by a character who falsely claimed both to have come up with the idea of building a windmill and to be a hero of the Battle of the Cowshed. Many critics have compared this novella’s Battle of the Cowshed to the Russian October Revolution. In this novella, Napoleon and Snowball lead a revolution and are pigs. Name this novella by George Orwell.

Answer: *Animal Farm*

13. This U.S. President appointed George Mitchell to be U.S. Special Envoy for Northern Ireland, and Mitchell headed the talks that created the Good Friday Agreement. This president’s secretary of state, Warren Christopher, helped negotiate the Dayton Agreement to end the Bosnian War, though this president later authorized bombings in the Kosovo War. This president was the subject of the Starr Report, which described his relationship with Monica Lewinsky and was used to justify his impeachment. Name this president from 1993 to 2001.

Answer: (William Jefferson) “Bill” Clinton [or William Jefferson Blythe III]

14. This painting is set in the shadow of Mount Pani. The painter of this work stated that part of it was inspired by Camembert [kam-um-bair] cheese that sat outside on a hot day. The human face in this painting appears to have either a tongue or a snail coming out of its nose. The background of this painting shows the coast of Catalonia. The only tree in this painting seems cut off on top and has no leaves; it has a branch to the side which in turn has a small branch going up. A red circular object in the corner of this painting is covered by bugs. Name this surrealist painting showing melting clocks by Salvador Dalí.

Answer: *The Persistence of Memory* [or *La persistencia de la memoria*]

15. In Corfu, on the day before this holiday, people smash pots by throwing them out of windows. On this holiday in Florence, the archbishop lights a dove-shaped rocket that sets off the Explosion of the Cart. In the Eastern Orthodox Church, this holiday begins Bright Week, and it is not allowed to occur before the Jewish people celebrate Passover. Many Eastern Orthodox Church members call this holiday Pascha [PAH-skuh]. This holiday begins a 50-day period that ends with Pentecost. This holiday is just after Holy Week at the end of Lent. Name this holiday during which Christians celebrate the Resurrection.

Answer: Easter Sunday [accept Pascha before it is mentioned; accept Resurrection Sunday before “Resurrection”]

16. When these organisms have scales, they are called “squamulose” [SKWAH-myoo-lohss]. The *Cladonia* genus of these organisms is eaten by animals and used as an antibiotic cream. Reindeer and caribou have an enzyme named for this type of organism, which is useful because this organism is the most important part of those animals’ winter diets. Like mosses, these organisms have rhizines [“RYE”-zynz] that help them attach to surfaces. Recent studies found that these organisms can be made in part from yeast, and they often include cyano-bacteria [“sigh-AN-oh-bacteria”]. Name this composite organism that consists of algae and fungi.

Answer: lichens

17. This character is given the choice of running the gauntlet 36 times or having his brains blown out with a dozen musket-balls. When he is about to be killed, this character is pardoned by the king of the Bulgarians. This person then sees a beggar covered with scabs who turns out to be his former teacher, who claims to have picked up a disease from **Pacquette** [pak-ET]. This character ultimately decides that we should all “cultivate our garden”. When he is young, this person is taught that he lives in the “best of all possible worlds”. This character loves **Cunégonde** [“cue”-neh-gawnd] and is taught by Dr. Pangloss. Name this title character in a novel by Voltaire.

Answer: **Candide** [kan-deed]

18. This quantity is not density, but the bulk modulus is defined as the opposite of this quantity times the rate of change of pressure with respect to this quantity. The amount this quantity changes is equal to 3 times this quantity times the linear coefficient of thermal expansion times the change in temperature. The amount of **buoyant** [BOY-unt] force is calculated by multiplying this quantity times density and gravitational field strength. Enthalpy equals a system’s internal energy plus the product of its pressure and this quantity. The density of a 3D object equals its mass divided by this quantity. Name this quantity that can be measured in liters.

Answer: **volume** [accept displaced **volume** after “buoyant”]

19. In 1919, the people of this country tried to unify it by signing the Act **Zluky** [ZLOO-kih]. This country also unsuccessfully tried to gain independence under **Andriy Melnyk** [AHN-dree MEL-nik] and Stepan Bandera. When this country gained independence, Leonid Kravchuk became its president. Massive fraud was alleged in this country’s 2004 election, leading to the Orange Revolution. One of the Orange Revolution leaders, **Yulia Tymoshenko** [YOO-lee-uh ti-moh-SHAYN-koh], became this country’s prime minister and was the target of a smear campaign by Paul Manafort. Name this former Soviet republic that lost territory in 2014 due to the Russian annexation of Crimea.

Answer: **Ukraine** [or **Ukrayina**]

20. At the beginning of one novel by this author, the body of 12-year-old Zhenia Golov [ZHEN-yuh GOH-lawff] is found. That novel, which this author based on the 1913 Beilis [BAY-lees] trial in Russia, is about Yakov Bok. Another novel by this author starts on a train, where the protagonist uses a bassoon case to carry an object he calls “Wonderboy”. In that other novel by this author, the protagonist impresses Harriet Bird, who tries to kill him. The way that protagonist impresses Bird is by taking on a challenge by Walter “The Whammer” Whambold and striking him out. Name this Jewish American author of *The Fixer* and *The Natural*.

Answer: Bernard Malamud

21. Girard’s formula is used to find the areas of triangles drawn on this shape’s surface by relating it to the “excess” of this shape. In the coordinate system named for this shape, the equation “rho equals a constant” generates this shape. This shape has the smallest surface area for a given volume. In Cartesian [kar-TEE-zhun] coordinates, the equation “ $x$  squared plus  $y$  squared plus  $z$  squared equals  $r$  squared” generates this shape. Name this three-dimensional analogue of a circle.

Answer: sphere [accept ball before “equals”]

## 2020 Reinstein Set – Packet 7

### Bonuses

1. Name these late-20th-century and early-21st-century Canadian writers.

A. This author wrote about the control of women in the Republic of Gilead [GIL-ee-ud] in *The Handmaid's Tale*.

Answer: Margaret (Eleanor) **Atwood**

B. This Canadian author wrote about visiting his native home of Sri Lanka in *Running in the Family*. One of his novels is titled *The English Patient* but is about a Hungarian who has been badly burned.

Answer: (Philip) Michael **Ondaatje**

C. This author explored gender roles in a story about a girl whose father was a fox farmer. In addition to “Boys and Girls”, this author wrote the story “Free Radicals” about Nita, who pretends to be Bett when a murderer is in her house.

Answer: Alice (Ann) **Munro** [accept Alice Ann **Laidlaw**]

2. Many instruments use this type of wave to create sound, but sound itself is a longitudinal wave.

A. Name these waves that vibrate perpendicularly to the direction of motion.

Answer: **transverse** waves

B. This term refers to transverse waves that oscillate in a single plane rather than a variety of transverse directions.

Answer: **polarized** waves or **polarization**

C. This angle, sometimes called the polarization angle, is the angle of incidence that causes all reflected waves to be polarized.

Answer: **Brewster's** angle

3. Buddha attained enlightenment while sitting under one of these objects called the **Bodhi** [BOH-dee].

A. Name these objects that, following a tradition started in Northeastern Europe, are often brought into homes and decorated during Christmas.

Answer: **trees**

B. This large ash tree is the center of the universe in Norse mythology.

Answer: **Yggdrasil** [IG-druh-sill]

C. In Greek mythology, these nymphs lived in oak trees. Women sometimes pretended to be these nymphs when worshipping **Artemis** [ART-eh-miss].

Answer: **dryads** [“DRY-ads”]

4. This event occurred December 16, 1773 on board the ships *Dartmouth*, *Eleanor*, and *Beaver*.

A. Name this protest by American colonists against the British, in which the Sons of Liberty threw certain cargo into the water.

Answer: Boston **Tea Party**

B. The Boston Tea Party was in part a protest against this governor, who refused to allow the ships to leave without paying a duty.

Answer: Thomas **Hutchinson**

C. The protest was also against laws named for this British Chancellor of the Exchequer. Most of the taxes were repealed in 1770, but the tax on imported tea remained.

Answer: Charles **Townshend**

5. This woman's husband Clifford is paralyzed during World War I.

A. Name this woman whose lover is Oliver Mellors.

Answer: Lady (**Constance** "**Connie**" **Reid**) **Chatterley** [accept any underlined name]

B. Lady Chatterley is a major character in a novel by this author. He also wrote *Women in Love*.

Answer: D(avid) H(erbert) **Lawrence**

C. This sister of Lady Chatterley does not get along with Oliver Mellors, but helps her get out of her marriage.

Answer: **Hilda** Reid [prompt on **Reid**]

6. It is tricky to use this law to find angle measures because it cannot differentiate between supplementary angles.

A. Name this law used to solve a triangle if the angle measures are known but only one side length is known.

Answer: law of **sines** [do not accept answers containing "cosine"]

B. Find the hypotenuse of a right triangle if a leg of length 12 is opposite an acute angle whose sine is 0.6.

Answer: **20** units

C. Find the sine of an angle if it is opposite a side of length 5, and in the same triangle, a side of length 8 is across from an angle whose sine is 0.4.

Answer: **0.25** or **1/4**

7. This substance may be uniformly distributed throughout the universe.

A. Name this substance used to explain the accelerating expansion of the universe.

Answer: **dark energy** [do not accept “dark matter”]

B. Some models of dark energy use this “constant” developed by Albert Einstein in his general relativity theory.

Answer: **cosmological** constant

C. In the Einstein field equations, the cosmological constant is multiplied by this quantity. It is symbolized “ $g$  sub **mu nu** [myoo noo]” and is analogous to distance.

Answer: **metric tensor** [prompt on partial answer]

8. At the beginning of this novel, the characters are upset because they are facing a giftless Christmas.

A. Name this novel in which the protagonists are the daughters of a Union Army chaplain and a person often referred to as “Marmee”.

Answer: ***Little Women***

B. In *Little Women*, Beth wants one of these objects, which she eventually gets from Mr. Laurence.

Answer: **piano(s)** [prompt on musical **instruments**]

C. This author wrote *Little Women*.

Answer: Louisa May **Alcott**

9. This principle limits **fermions** [FAIR-mee-ahns] and is the reason that atomic orbitals are filled the way they are.

A. What principle states that fermions cannot occupy the same quantum state within a system at the same time?

Answer: **Pauli exclusion** principle [prompt on partial answer]

B. This person is the namesake of several rules about the way orbitals are filled, including the rule that electrons always enter empty orbitals before pairing up.

Answer: Friedrich **Hund** [accept **Hund**’s rules]

C. The **aufbau** [AWFF-bao] principle says that electrons fill lower atomic orbitals before occupying higher levels. One exception is this element, which has a filled  $3d$  orbital and only one  $4s$  electron.

Answer: **copper** [accept **Cu**]

10. This poet wrote “I will enjoy thee now, my Celia,” at the beginning of his poem “A Rapture”.

A. Name this 17th century English poet who also wrote the country-house poems “To Saxham” and “To my friend G. N. from Wrest”.

Answer: Thomas **Carew** [“carry”]

B. Like Robert Herrick and Richard Lovelace, Thomas Carew is considered a member of this group of poets who supported King Charles I during the English Civil War.

Answer: **Cavalier** poets [or the **Cavaliers**; prompt on the **Caroline** poets]

C. Carew wrote “An Elegy upon the Death of the Dean of Paul’s” about this poet whose “Sonnet X [10]” is known by its first line, “Death Be Not Proud”.

Answer: John **Donne** [dun]

11. This polygon has 35 diagonals.

A. Name this polygon with ten sides.

Answer: **decagon**

B. Find the measure, in degrees, of an internal angle in a regular **decagon** [DEK-uh-gahn].

Answer: **144** degrees

C. Find the number of edges of a **decagonal** [dek-AG-uh-nul] pyramid.

Answer: **20** edges

12. This artist depicted a swirling sky in *The Starry Night*.

A. Name this artist who sometimes depicted himself bandaged after he mutilated one of his ears.

Answer: Vincent (Wilem) **van Gogh**

B. This Vincent van Gogh painting shows a man in white standing next to a pool table in an eating establishment.

Answer: *The **Night Café*** [or *Le **Café de nuit***]

C. *The Night Café* is set in **Arles** [arl], where van Gogh also painted a starry night over this river.

Answer: **Rhône** River [do not accept “Rhine”]

**13.** Much of the White House was burned down during this war.

A. Name this war, sometimes called “Mr. Madison’s War”, that was a stalemate between the U.S. and the U.K.

Answer: War of **1812**

B. This U.S. ship defeated five British ships during the War of 1812. After its victory over the HMS *Guerrriere* [gair-yair], this ship got the nickname “Old Ironsides”.

Answer: USS ***Constitution***

C. When this commodore was successful at the Battle of Lake Erie, he sent a message to William Henry Harrison stating “We have met the enemy and they are ours.”

Answer: Oliver Hazard **Perry**

**14.** This principle states that the proportion of dominant and recessive genes remains the same across generations.

A. Identify this principle named for an English mathematician and German doctor.

Answer: **Hardy-Weinberg** principle or law or equilibrium or theorem

B. The Hardy-Weinberg principle was designed for organisms with this chromosome property, meaning that each cell has two copies of each chromosome—one from each parent.

Answer: **diploidy**

C. This effect, named for a Swedish geneticist, states that the number of heterozygous organisms decreases over time because of population subdivisions.

Answer: **Wahlund** effect

**15.** This leader was the son of Pepin the Short and father of Louis the Pious.

A. Name this king of the Franks who, in 800, became the first Holy Roman Emperor.

Answer: **Charlemagne** [or **Charles the Great** or **Charles I** or **Carolus Magnus**; prompt on **Charles** or **Carolus**]

B. When Charlemagne became king of the Franks, he first co-ruled with this man who was his brother and who died three years later.

Answer: **Carloman I**

C. Charlemagne was briefly married to *Desiderata* [deh-see-duh-rah-tuh], a daughter of the leader of these people. With the support of Pope Adrian I, Charlemagne conquered these people.

Answer: **Lombards** or **Lombardy**

16. This term describes a relationship between shapes if one can be transformed into the other by an **isometry** [“eye”-SAH-meh-tree].

A. Give this term. It can refer to segments of the same length or angles of the same measure.

Answer: **congruence** or **congruent**

B. In this type of arithmetic, two numbers are called “congruent” if their difference is divisible by a particular fixed number.

Answer: **modular** arithmetic [prompt on **modulus** or **clock** arithmetic]

C. Find the smallest positive number congruent to 5 to the 10th power, mod 11. You may want to use **Fermat’s** [fur-mah’z] little theorem.

Answer: **1**

17. The most populous inland city in this country is **Tampere** [TAHM-puh-ray].

A. Name this country north of Estonia whose capital is Helsinki.

Answer: (Republic of) **Finland** [or **Suomi** or **Suomen** (tasavalta)]

B. This gulf separates Finland from Sweden.

Answer: Gulf of **Bothnia** [BAHTH-nee-uh]

C. This is the northernmost region of Finland. Its most populous city is **Rovaniemi** [roh-vah-nee-EH-mee].

Answer: **Lapland** [or **Sápmi** or **Lappi**]

18. One of these Catholic tribunals was set up by Ferdinand II and Isabella I in Spain in 1478.

A. Name this group set up shortly before Jews and Muslims were told to convert to Catholicism or leave Spain.

Answer: Spanish **Inquisition**

B. This person became the first grand inquisitor in Spain in 1483. While he was in charge, about 2,000 people were burned at the stake.

Answer: Tomás de **Torquemada**

C. This term was used to describe former Muslims and their descendants in Spain who converted to Catholicism, usually under pressure.

Answer: **Moriscos**

19. According to legend, there was a riot at the 1913 Paris opening of this Russian composer's ballet *The Rite of Spring*.

A. Name this composer who also wrote the ballets *The Firebird* and *Pulcinella* [*pul-chee-NEL-luh*].

Answer: Igor (Fyodorovich) **Stravinsky**

B. In this Stravinsky ballet, the title character is a puppet who is brought to life by a Charlatan but killed by another puppet.

Answer: ***Petrushka***

C. All of the ballets mentioned in this question were commissioned by this founder of the **Ballets Russes** [*bal-ay roos*].

Answer: Sergei **Diaghilev** [*dee-AH-guh-leff*]

20. This type of region is usually not recognized as a **biome** [*BY-ohm*], but Robert Bailey classified it as a humid tropical domain.

A. Give this term for a region that is the home of a very large number of species and gets over 100 inches of precipitation per year.

Answer: **rainforests**

B. Many species live in this dense rainforest layer that is about 100 feet above the ground.

Answer: **canopy**

C. These woody vines are rooted in soil and use trees as support to reach up to and across the canopy. These plants are in several different plant families.

Answer: **lianas** [*lee-AH-nuhz*] [or **lianes**]