

2022 Reinstein Set – Packet 2

Tossups

1. In recent years, the Tian–Calvet types of these devices have been used to determine which materials should be used in batteries. These devices are not microscopes, but the differential scanning types are used to study liquid crystals and **polymers** [POL-uh-murz]. When these devices are used, they often contain a chemical reaction that involves enthalpy changes. Many of these devices use a liquid enclosure that can be measured, including the “bomb” type of this device. Data from these devices are often used to calculate the heat capacity of materials. Name these devices that measure the amount of heat during a reaction.

Answer: **calorimeters** [kal-uh-RIM-ih-turz] [accept micro**calorimeters**]

2. Six different women say something negative to this character right before she goes to Redmond College. Two of those women belong to the Wright family, which this character’s friend Diana marries into while this person is in college. As a child, this character saved Diana’s sister Minnie May’s life by giving her **ipecac** [IP-uh-kak] for **croup** [kroop]. This character was adopted by Matthew and Marilla Cuthbert, who had actually requested a boy. Once adopted, this character grows up in **Avonlea** [AV-un-lee] on Prince Edward Island. Name this character in stories by Lucy Maud Montgomery who grew up on a farm called Green Gables.

Answer: **Anne Shirley** [accept either; accept **Anne** of (the) Green Gables]

3. This person portrayed Gloria Gaines, who was the wife of the protagonist, in *The Butler*. This person produced and starred in the movie version of *Beloved*. More recently, this person hosts the television show *Super Soul Sunday*. This person started Harpo Productions, which produces the shows *Dr. Phil*, *Rachael Ray*, and *The Dr. Oz Show*. A well-known meme shows this person repeatedly saying “And you get a car!”. Until Breonna Taylor was on the cover of the September 2020 issue, this person was always on the cover of the magazine named for her. Name this former talk-show host who formed the O.W.N. network and publishes *O* magazine.

Answer: **Oprah** (Gail) **Winfrey** [accept either underlined name; accept Orpah (Gail) **Winfrey**]

4. An alloy of this element and **niobium** [ny-OH-bee-um] is used to make superconducting magnets. This element is in many minerals, including with oxygen in **ilmenite** [ILL-muh-“night”] and **rutile** [ROO-teel]. From those minerals, the tetra-chloride of this element can be formed from the Kroll process. The di-oxide of this element is a white pigment that is often combined with zinc oxide in sunscreens. The combination of high strength and low density of many alloys of this metal make them useful in spacecrafts and high-speed aircraft. Though this metal is too expensive for most commercial cars, it has become common in prosthetics. Name this element whose chemical symbol is **Ti** [spell out].

Answer: **titanium** [accept **Ti** before the end]

5. This rule provides direct justification for the most common polar coordinates distance formula. In the **isosceles** [“eye”-SAH-suh-leez] case, this rule can be stated by the formula “1 minus c squared over the quantity 2 b squared”. This rule is used to find either a triangle angle when the three sides are known or to find the third side of a triangle when two sides and the angle between them are known. Name this “law” in which there is a term equal to twice the product of two side lengths times its namesake trigonometric function.

Answer: law of **cosines** [accept **cosine** rule; do not accept or prompt on “law of sines”]

6. This explorer used the ships *Half Moon* and *Discovery*. The navigator **Abacuk** [AB-uh-kuk] Prickett kept notes about this explorer’s journeys, including the end when a mutiny sent this man, his son, and a few other sailors out in an open boat because most of the crew wanted to return home. The mutiny occurred after the expedition got trapped in ice in what is now called James Bay. In 1609, this explorer went along the coast of what is now Canada and the northern U.S., and in 1610, this explorer went across the Labrador Sea in the strait now named for him. Name this explorer who tried to find the Northwest Passage and is now the namesake of a river and a bay.

Answer: Henry **Hudson**

7. One play by this writer begins with a character saying “Yes, I have tricks in my pocket; I have things up my sleeve.” This writer depicted that character getting yelled at after Jim says he is engaged, which disappoints Amanda and Laura. In another play by this writer, a woman tells Mitch that her first husband Allan Grey committed suicide. This writer depicted that woman moving in with her sister and brother-in-law, Stella and Stanley. Name this playwright who wrote about the Wingfield family in *The Glass Menagerie* and wrote about Blanche **DuBois** [doo-bwah] in New Orleans in *A Streetcar Named Desire*.

Answer: Tennessee **Williams** [or Thomas Lanier **Williams** III]

8. This person described an offer from Stafford Cripps as a “post-dated check drawn on a failing bank.” Cripps had offered dominion status, which this person had almost received a decade earlier through a pact with Lord Irwin. This person then started a movement whose slogan was “Do or Die”, causing him and his followers to be jailed. With Lord Irwin, this person ended the salt tax in exchange for ending the Salt March. While in prison, this person fasted for several weeks in 1943. Name this practitioner of nonviolence who worked with Jawaharlal Nehru [JUH-wah-hur-LAHL NEH-roo] to make India free from the United Kingdom.

Answer: Mohandas (Karamchand “Mahatma”) **Gandhi**

9. A ballet by this composer has been popular since a 1940 version of it was put together by the choreographer Leonid Lavrovsky [lav-RAWFF-skee]. This composer wrote “The Street Awakens” and “Dance of the Girls with Lilies” for that ballet. In another work by this composer, the question “What kind of bird are you if you can’t fly?” is asked by a bird to a duck. This composer represented the duck with an oboe theme, while the grandfather was represented by a bassoon. Name this 20th-century Russian composer of *Romeo and Juliet* and *Peter and the Wolf*.

Answer: Sergei **Prokofiev**

10. One poem by this writer describes the actions of the invisible worm and then states “His dark secret love does thy life destroy.” This author of “The Sick Rose” wrote a poem about little Tom Dacre [DAY-kur] that begins “When my mother died I was very young” and in which Tom is told “When your head’s bare, you know that the soot cannot spoil your white hair.” In addition to “The Chimney Sweeper”, this author wrote a poem that asks “Did he who made the Lamb make thee?”. This poet addressed that poem to an animal that is “burning bright, in the forests of the night.” Name this English poet whose *Songs of Innocence and of Experience* includes “The Tiger”.

Answer: William **Blake**

11. The amount of this gas is measured by a technique developed by John Tyndall [TIN-dul] that uses infrared absorption. That method is used in both capnography and at the Mauna Loa Observatory. Amines [AM-eenz] are sometimes used to collect this gas, which can then be stored underground or underwater. In 2018 the U.S. Congress passed tax breaks for companies who follow that process, which is sometimes called the “capture” of the first element in this gas’s name. The amount of this gas in the atmosphere recently went above 400 parts per million. Name this greenhouse gas that is released by the burning of fossil fuels.

Answer: carbon dioxide or CO₂ [do not accept or prompt on “carbon”]

12. When Congressman Wright Patman got frustrated with the I.R.S. and this agency, he made public a list of foundations that gave money to the J. M. Kaplan Fund. During the Eisenhower Administration, this agency was led by Allen Dulles [DULL-us], whose brother was the secretary of State. During the 1980s, this agency was led by William Casey, who may have admitted on his deathbed that he knew about diverting funds to the Contras in Nicaragua. This agency replaced the Office of Strategic Services and was created at the same time as the National Security Agency. Name this U.S. agency that collects national security information from outside the U.S.

Answer: CIA or Central Intelligence Agency

13. In one novel by this author, a loose tile from the floor hides an account book with the strongbox combination, and it is found after a photographer commits suicide. At the end of that novel, this author wrote that the *New Fidelity* boat was waving the yellow plague flag after the boat is used by Florentino and Fermina [fair-MEE-nah]. In another novel by this author, the future is predicted by the gypsy Melquíades [mel-KEE-ah-dayss]. This author wrote that novel about the family started by Úrsula Iguarán [OOR-soo-lah ee-gwah-RAHN] and José Arcadio Buendía, who start the town of Macondo. Name this Colombian author of *Love in the Time of Cholera* [KAH-luh-ruh] and *One Hundred Years of Solitude*.

Answer: Gabriel García Márquez [prompt on Márquez]

14. The Supreme Court invalidated this state's criminal **syndicalism** [SIN-duh-kul-izm] statute in a 1969 decision that was brought by Ku Klux Klan leader Clarence Brandenburg. The ability of prosecutors to use illegally gained evidence was taken away by a 1961 U.S. Supreme Court decision on a case brought against this state by Dolly Mapp. The Environmental Policy Act passed after a river in this state caught fire in 1969. In 1970, National Guardsmen from this state shot four protesters at Kent State University. Name this state where the **Cuyahoga** [kie-uh-HOE-guh] River caught fire in 1969 in Cleveland.

Answer: **Ohio**

15. In this U.S. state, almost the entire town of Elkinsville was taken by eminent domain during the construction of Lake Monroe Reservoir. This state used to be the location of the Miami tribe city of **Kekionga** [KEE-kee-ahn-guh]. That location is now a town named for a fort that in turn was named for a Revolutionary War general nicknamed "Mad Anthony". The capital and most populous city of this state has a Soldiers' and Sailors' Monument at the intersection of Meridian and Market, and it is also the home of Butler University. This state is also the site of Ball State, Purdue, and Notre Dame universities. Name this state between Ohio and Illinois.

Answer: **Indiana**

(The town is Fort Wayne, and the capital is Indianapolis.)

16. These organisms do not exactly fit into a **genus** [JEE-nus], but the best-known examples are in the genus **Agaricus** [uh-GAR-ih-kuss]. These organisms sometimes grow in patterns called fairy rings. These organisms are classified as **monomitic** [mah-noh-MIT-ik] because they only contain generative **hyphae** ["HI"-fee]. These organisms do not live in the water, but they have structures called gills that can also be called **lamella** [luh-MELL-uh]. These organisms are easy to recognize by their **pileus** ["PIE"-lee-uss], which is their cap. Name this group of fungi that includes some poisonous examples, such as the deadly dapperling, and some delicious examples, such as **shiitake** [shih-tah-keh] and portobello.

Answer: **mushrooms** [accept **toadstools**; prompt on **fungus** or **fungi**]

17. Some of the sculptures by this artist show his companion **Fernande Olivier** [fur-NAHND oh-LEE-vee-ay], including some of his *Head of a Woman* sculptures. After this artist broke up with Olivier, he repainted two of the faces on a painting of five women so that those two women now appear to wear African masks. In that painting, this artist portrayed five aggressively posed naked prostitutes. This painter of *Les Demoiselles d'Avignon* [lay dem-wah-zel dah-veen-yohn] also made a work showing the suffering of people and animals after a bombing during the Spanish Civil War. Name this painter of *Guernica* [gair-NEE-kah].

Answer: Pablo (Ruiz y) **Picasso**

18. This person is often portrayed with his right hand touching the ground to show the moment when the Earth told this person “I bear you witness.” That occurred when this person overcame the demon Mara, whose daughters were used to tempt this person. Some depictions of this person show him being protected by a snake-like being named **Mucalinda** [moo-kah-LIN-duh]. Those events occurred before this person traveled to **Sarnath** [SAR-nuth], where he taught about suffering, the cause of suffering, the end of suffering, and the eight-fold path. Name this former prince who taught about the Four Noble Truths in ancient India.

Answer: **Siddhartha Gautama** [accept either; accept the **Buddha**; accept **Bhagavat** or **Tathagata**]

19. When an object moves in circular motion due to a magnetic field, this quantity equals mass times velocity divided by the quantity radius times magnetic field strength. Capacitance equals this quantity divided by electric potential difference. The elementary value for this quantity was measured in Robert Millikan’s oil drop experiment. The force of a magnetic field on a particle equals this quantity times the cross product of velocity with magnetic field. Electric current is the rate of flow of this quantity. Name this quantity that is measured in **coulombs** [KOO-lohmz] and which is positive for protons and negative for electrons.

Answer: electric **charge**

20. This leader sent the followers of Aulus Gabinius [OW-looss guh-BEE-nee-uss] to Marcus Bibulus [BEE-boo-luss] in Syria, and historians disagree as to whether or not Bibulus sent them back. This person went to Syria to build an army to fight a civil war against Arsinoe IV [ar-SIN-aw-ee “the 4th”] and Ptolemy XIII [TAH-luh-mee “the 13th”]. This person was successful after Ptolemy ordered the death of Pompey the Great, which led to Julius Caesar supporting this person. After this leader’s death years later, Egypt became a Roman province. During the Battle of Actium [AK-tee-um], this leader supported Mark Antony, and this leader committed suicide soon after Octavian’s victory. Name this leader who ruled Egypt with Caesarion [suh-ZAR-ee-un], who was her son.

Answer: Cleopatra (VII Philopator)

21. The Karatsuba [kar-at-soo-bah] algorithm is used to perform this operation on large numbers. When this operation is supposed to be applied in an iterative [IH-tuh-ruh-tiv] fashion, pi notation is used. This operation can only be applied to two matrices if the number of columns of the first matrix equals the number of rows of the second matrix. Applying this operation before taking a logarithm has the same impact as addition after taking a log. This operation can be distributed over addition and subtraction. Name this operation that takes factors into a product.

Answer: multiplication or multiplying [accept product before the end; accept times but not “timesing”]

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Bonuses

1. The title of this book is based on the name that Jonas is told to use for the previous Receiver of Memory.

A. Name this novel, the first in a quartet that continues with *Gathering Blue*, *Messenger*, and *Son*.

Answer: *The Giver*

B. This author wrote *The Giver* as well as *Number the Stars*.

Answer: Lois (Ann Hammersberg) Lowry [accept either underlined name]

C. In *The Giver*, this term is used for the ultimate punishment. Many people believe this term refers to being kicked out of the community, but it actually refers to being given a lethal injection.

Answer: being Released

2. This sense is sometimes called **olfaction** [ohl-FAK-shun].

A. Name this sense that detects odors.

Answer: sense of smell(ing)

B. The olfactory nerves are usually designated number one out of the 12 pairs of these nerves that connect directly to the brain rather than via the spinal cord.

Answer: cranial nerves

C. This term is used both to describe a round structure in the nasal cavity used to detect smells and a round structure made of capillaries in a kidney nephron.

Answer: glomerulus or glomeruli

3. The New York nightclub Birdland was named for this person.

A. Name this musician who recorded “Yardbird Suite” and “Ornithology”.

Answer: (Charles) “Charlie” Parker (Jr.)

B. Like Paul Desmond, Charlie Parker primarily played the alto type of this instrument.

Answer: saxophone(s)

C. Paul Desmond spent most of his career performing with this pianist.

Answer: (David Warren) “Dave” Brubeck

4. This play opens with a discussion between the sentinels Bernardo and Francisco, who welcome Horatio and Marcellus.

A. Name this play by Shakespeare that is set in Denmark and includes the line “to be or not to be.”

Answer: ***Hamlet***

B. In *Hamlet*, this counselor of Claudius is the father of Laertes [“lay-AIR-tees”] and Ophelia. He gives a lot of advice, including “To thine own self be true.”

Answer: **Polonius** [poh-LOH-nee-uss]

C. Hamlet argues with Ophelia after the “to be or not to be” soliloquy. What are the first five words that Hamlet says in response to Ophelia stating “I was the more deceived”?

Answer: **“Get thee to a nunnery!”**

5. Apollonius [ap-uh-LOH-nee-uss] of Perga wrote a book about slices of this solid.

A. Name this solid with a circular base and an apex.

Answer: (right circular) **cone**

B. Find the volume of a cone with a radius of 5 units and a height of 3 units.

Answer: **25 pi** cubic units

C. Find the slant height of a cone with a radius of 5 units and a height of 3 units.

Answer: square **root** of **34** [accept **radical 34**; do not prompt on “34”]

6. Solar versions of this type of event are generally more dramatic than lunar ones.

A. Name this type of event in which one astronomical object blocks the view of another or passes into a shadow.

Answer: **eclipses** [or **occultations**]

B. This similar event occurs when an object is partially blocked, such as when Mercury or Venus passes between Earth and the Sun.

Answer: **transits**

C. This eclipse cycle lasting a little over 18 years has been known since ancient times. This cycle is shorter than the Inex [“EYE-necks”].

Answer: **Saros** cycle

7. The classical type of this procedure was studied by Ivan Pavlov.

A. Name this type of associative learning that can be classified as “operant” when it involves external rewards or punishments.

Answer: conditioning

B. Conditioning played a central role in this approach to psychology pushed by John B. Watson and B. F. Skinner, both of whom wrote books with the name of this approach in their titles.

Answer: behaviorism or behaviorist approach

C. This psychologist developed the Law of Effect by placing cats in boxes that required each cat to push a lever to get out of the box.

Answer: Edward (Lee) Thorndike

8. This poem begins with the sentence “This is the forest primeval [pry-MEE-vull].”

A. Name this epic poem about a woman’s search for Gabriel Lajeunesse [lah-zhoo-ness].

Answer: Evangeline(, *A Tale of Acadie*)

B. This Fireside poet wrote *Evangeline* as well as *The Song of Hiawatha*.

Answer: Henry Wadsworth Longfellow

C. Henry Wadsworth Longfellow started his poem about this person with the line “Listen, my children, and you shall hear.”

Answer: Paul Revere [accept “Paul Revere’s Ride”]

9. Doris Kearns Goodwin wrote *Team of Rivals* about this president and his cabinet.

A. Name this president from 1861 to 1865 who was succeeded by his second vice president, Andrew Johnson.

Answer: Abraham Lincoln

B. This person was Lincoln’s secretary of State. During Johnson’s presidency, he negotiated the purchase of Alaska.

Answer: William (Henry) Seward

C. This person was Lincoln’s secretary of the Treasury for most of Lincoln’s presidency. Lincoln then appointed him as Chief Justice.

Answer: Salmon P(ortland) Chase [do not accept “Samuel Chase”]

10. These blood vessels are often shown in blue on diagrams. They can be classified as pulmonary, systematic, superficial, or deep.

A. Name these vessels that carry blood to the heart.

Answer: veins

B. These two veins, the superior and the inferior, are large veins that bring blood to the right side of the heart.

Answer: venae cavae [VEE-nee KAY-vee or VEE-nuh KAY-vuh]

C. Give the Latin name for the innermost layer of a vein.

Answer: tunica intima

11. These sequences are alternating if their common ratio is negative.

A. Name this type of sequence in which each term equals a constant times the previous term.

Answer: geometric sequence

B. Find the common ratio if the fifth term of a geometric sequence is 10 and the eighth term is 640.

Answer: 4

C. Find the sum of all the terms in an infinite geometric series if the first term is 10 and the second term is 8.

Answer: 50

12. These elements form the right edge of the periodic table.

A. Identify this group of elements whose first two members are helium and neon.

Answer: noble gases [accept group 18 or aerogens; do not accept “inert gases”]

B. This rule traditionally explained the lack of reactivity of noble gases. It states that elements tend to bond so that there are eight electrons in their valence shells.

Answer: octet rule

C. This is the name of element 118, which was discovered in 2002. Theoretically, this element is less inert than other noble gases, but that might not matter because it decays quickly.

Answer: oganesson [oh-guh-NESS-ahn] [prompt on Og]

13. This international organization lasted from 1920 to 1946.

A. Name this organization that Woodrow Wilson called for in his Fourteen Points and which at one point had 58 members, though the United States never joined.

Answer: **League of Nations** [accept **LON**]

B. The Soviet Union was expelled from the League of Nations after it invaded this country in the Winter War in 1939. This country declared independence from Russia in 1917.

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

C. The first action by the League of Nations allowed Finland to maintain control over these islands even though its leaders wanted to be part of Sweden.

Answer: **Åland** [**AW-lund**] Islands

14. When a magistrate tells this play's title character that the treasury covers war expenses, she replies "That's our first principle—no War!"

A. Name this play in which the title character convinces women to refrain from sex in order to end the **Peloponnesian** [pel-uh-puh-NEE-zhun] War.

Answer: **Lysistrata** ["lie"-SISS-truh-tah or lih-sih-STRAH-tuh]

B. This person wrote *Lysistrata*, *The Clouds*, and *The Birds*.

Answer: **Aristophanes** [air-ih-STAH-fuh-neeZ]

C. *Lysistrata* opens with a discussion between the title character and this woman. This woman later repeats after Lysistrata to represent all of the women taking an oath.

Answer: **Calonice** [kal-UH-nee-kay]

15. When this Egyptian god's corpse was torn to pieces, his wife put them back together.

A. Name this husband of **Isis** ["EYE"-siss].

Answer: **Osiris** [oh-"SIGH"-riss] [or **Usir**]

B. **Apis** [AY-piss], which was this type of animal, merged with Osiris when he died. In another myth, Gilgamesh and **Enkidu** [en-KEE-doo] kill one of these animals that is sent by Ishtar.

Answer: **bulls** [prompt on **cattle**; do not accept "cow"]

C. The Great Temple of Osiris is in this town, where some people believed that the tomb of **Djer** [jeer] was actually the tomb of Osiris.

Answer: **Abydos** [uh-BY-dohss], Egypt

16. This character “longed to travel or to go back to her convent. She wished at the same time to die and to live in Paris.”

A. Name this title character who marries a doctor and has several affairs.

Answer: Madame **Emma Bovary** [accept either underlined name]

B. This author wrote *Madame Bovary*.

Answer: **Gustave Flaubert** [goo-stahv floh-bair]

C. Instead of Paris, Madame Bovary ends up living in this market town with her husband and daughter **Berthe** [bair-tuh].

Answer: **Yonville-l'Abbaye** [yohn-veel lah-bay]

17. This word means “center-seeking”.

A. Name this adjective used to describe the force or acceleration on an object in circular motion.

Answer: **centripetal** (force or acceleration) [do not accept “centrifugal”]

B. If there is uniform circular motion with a constant radius, then the centripetal acceleration varies directly with what power of the speed?

Answer: **second** power or power of **2** [or **squared**]

C. The magnitude of centripetal acceleration can also be expressed as speed times this scalar quantity, which is equal to tangential speed divided by radius.

Answer: **angular speed** or **angular frequency** [accept **circular frequency**; prompt on **omega**; do not prompt on “speed” or “frequency”]

18. This cathedral was built during the 12th and 13th centuries, and it suffered extensive fire damage in 2019.

A. Name this cathedral on the **Île de la Cité** [eel deh lah see-tay] in Paris.

Answer: **Notre-Dame** de Paris

B. Notre-Dame’s flying buttresses are examples of the use of this style of architecture that remained popular through the 16th century.

Answer: French **Gothic**

C. Notre-Dame was one of the first cathedrals to use this type of vault, which became common in Gothic architecture. It is named for its thin network of supports.

Answer: **rib**(bed) vault

19. This ruler was the son of Tolui [TOH-loo-ee] Khan and the brother of his predecessor Möngke [MOHNG-kay] Khan.

A. Name this grandson of Genghis Khan.

Answer: Kublai Khan [or Shizu]

B. Kublai Khan is considered the founder of this dynasty that was also called the Mongol dynasty.

Answer: Yuan dynasty

C. Kublai Khan moved the capital away from this city that is now in Mongolia. Kublai's brother Arig Böge [ar-ig BOHJ] tried ruling from this city, but Kublai captured him.

Answer: Karakorum

20. The least common multiple is used to find this value when adding or subtracting fractions.

A. Give this term for the number or expression on the bottom of a fraction.

Answer: denominator

B. Find the least common denominator if you are adding fractions whose denominators are 10 and 12.

Answer: 60

C. Find the least common denominator if you are adding fractions whose denominators are the following expressions: “ x squared times y cubed times z ” [pause] and “ x cubed times y times z squared”.

Answer: x cubed times y cubed times z squared [accept the x , y , and z portions in any order, but the words following each variable must match]