

2023 Reinstein Set – Packet 2

Tossups

1. In 1948, this country’s presidential candidate **Jorge Eliécer Gaitán** [HOR-hay eh-lee-AY-sir gy-TAHN] was assassinated, leading to an unstable decade in which hundreds of thousands of people were killed. This country’s Common Alternative Revolutionary Force is the successor organization to a Marxist–Leninist guerrilla group that was part of a conflict in this country that also involved right-wing paramilitaries and the government for many decades. That group, which made money through kidnapping ransoms and cocaine, was this country’s FARC. This South American country used to control what is now Panama. Name this country whose capital is Bogotá.

Answer: (Republic of) **Colombia** [accept (República de) **Colombia**]

2. As a performer on this instrument, Timofei **Dokschitzer** [DOK-sheet-zur] popularized Alexander **Arutiunian’s** [ah-roo-CHOO-nee-un’z] concerto [“con-CHAIR-toe”] for it. Other noted performers of that concerto on this instrument are **Tine** [TEE-nuh] Thing Helseth and Maurice André. The first famous performer on this instrument was Anton **Weidinger** [VY-ding-ur], for who Joseph **Haydn** [“HIGH”-dun] wrote his last concerto, in E-flat major. This brass instrument has a shallow, bowl shaped mouthpiece, which is one difference between it and the cornet. Old versions of this instrument are similar to the modern bugle. Name this high brass instrument that now has valves but historically did not.

Answer: **trumpets**

3. This author described a narrator who is discouraged from reading books by **Musset** [moo-say] and encouraged to read books by Bergotte by his friend Bloch. The impressionist painter Elstir introduces this author’s narrator to Albertine, and the narrator admires Elstir’s paintings when visiting the home of the **Guermantes** [gair-mawnt] family. This author’s narrator has a flood of memories after tasting a crumb of madeleine. This author’s works are generally set in Combray, which is the home of Charles Swann. Name this French author whose works are collected into *Remembrance of Things Past*, which is now more commonly titled *In Search of Lost Time*.

Answer: (Valentin Louis Georges Eugène) Marcel **Proust** [proost]

4. Most fuel cells work by exposing this element to the **anode** ["AN-ode"] and then eventually exposing this element to oxygen at the cathode. **Toluene** [TAHL-yoo-een] is formed by replacing one of these atoms in a benzene molecule with a **methyl** [MEH-thul] group, which increases the number of these atoms because a methyl group has three atoms of this element. This element is the most abundant element in the universe. This element was used as a lifting gas for airships, but its usage decreased after the *Hindenburg* disaster. **Deuterium** [doo-TEER-ee-um] and **tritium** [TRIT-ee-um] are **isotopes** ["ICE-oh"-tohpss] of this element. Name this first element on the periodic table.

Answer: **hydrogen** [accept **H**]

5. The dot product of a vector from an orthonormal basis with itself equals this number. This number equals **Legendre's** [luh-zhahn-druh'z] constant, which is used in the prime number theorem. The base of a logarithm can equal any positive number except this number. In an identity matrix, all the diagonal entries are this number. This number is the only positive integer that is neither prime nor composite. If an event's probability equals this number, then the event is certain to occur. This number is the only positive number that equals its own reciprocal. Name this first counting number.

Answer: **1**

6. This body of water is southwest of the **Archipelago** [ark-uh-PEL-uh-goh] Sea, which is at the mouth of the Aura River at the city of Turku. The western end of this body of water is at the sea area **Kattegat** [KAT-uh-kat]. This body of water contains the islands **Hiiumaa** [HEE-uh-muh] and **Gotland** [GOHT-lund]. Ventspils and Gdańsk are cities on the coast of this body of water. The island of **Saaremaa** [SAH-ray-mah] is between this body and the Gulf of **Riga** [REE-guh]. The **Aland** [OH-lahnd] Islands separate this body from the Gulf of Bothnia, and **Kotlin** [KAHT-lin] Island is between this body and the Gulf of Finland. Name this sea that borders Estonia, Latvia and Lithuania.

Answer: **Baltic** Sea

7. This dynasty established the **Canghai** [CHAHNG-“hi”] commandery when it controlled part of the Korean peninsula after the reigns of Wen and Jing. This dynasty sent Zhang **Qian** [CHEE-en] on diplomatic missions that can be considered the opening of the Silk Road. It is common for Chinese people to name the characters in their alphabet after this dynasty. An interregnum from this dynasty was eventually ended when **Liu Xiu** [lyoo shyoo] gained control from a leader supported by the Red Eyebrows in 25 CE. Name this dynasty that ruled between the **Qin** [chin] dynasty and the Three Kingdoms.

Answer: **Han** dynasty

8. This molecular geometry can occur with an sd^2 [“S D two”] hybridization, though it most often occurs with the same hybridization as the tetrahedral shape, which is sp^3 . This molecular geometry is exhibited in **chlorate** [KLOR-“ate”] anions [AN-“eye”-ahnz], **phosphine** [FAHSS-feen], **hydronium** [“hi”-DROH-nee-um], and ammonia. The difference between this shape and **trigonal** [TRIG-uh-nul] planar is that this shape is influenced by the existence of a lone pair, which forces this shape to be three-dimensional. Name this molecular shape based on a steric number of 4, with one lone pair and three atoms bonded to the central atom.

Answer: **trigonal pyramidal** geometry [prompt on partial answers]

9. At the beginning of a short story by this writer, a lieutenant is asked how much farther and replies “I don’t know. A mile, ten miles, a thousand.” In that story by this author, Sun Domes are destroyed by indigenous people. In a novel by this author, Clarisse McClellan says “I rarely watch the parlor walls or go to races or Fun Parks.” Early in that novel, this author depicts the protagonist’s wife Mildred being saved after taking too many sleeping pills. This author described a Mechanical Hound that helps locate people who own books. Name this author of “The Long Rain”, which was included in *The Illustrated Man*; and *Fahrenheit 451*.

Answer: Ray (Douglas) **Bradbury**

10. Within these features, raised land is called horst [pause] and sunken land is called graben [GRAH-ben]. These features usually include a hanging wall and foot wall. The Sunda [SOON-duh] megathrust is a particularly long example of this type of feature. Bends in these features create rift valleys. These features are a fracture or set of fractures between two blocks of rock. Some of these features are classified as dip-slip or oblique-slip, but the transform type of these features is an example of the strike-slip type. The movement of these features causes earthquakes. Name these features such as the New Madrid one and the San Andreas one.

Answer: (geological) **faults** [prompt on **fracture** zones or **seismic zones**]

11. While at trial, this person told the judge “You have trampled under foot every vital principle of our government.” When fined 100 dollars, this person stated “I shall never pay a dollar of your unjust penalty”, and the judge did not enforce the penalty. Soon after that, this person showed up uninvited at the centennial celebration of the Declaration of Independence and took the stage, saying “We ask justice, we ask equality.” This person often worked closely with Elizabeth Cady Stanton, whom she replaced as head of the National American Woman Suffrage Association. Name this woman who was arrested for voting in New York in 1872.

Answer: Susan B. **Anthony** [accept Susan Brownell **Anthony**]

12. A mask of this person is on the back of the head of Rachel Harrison’s *Alexander the Great* sculpture. A poem by Vachel Lindsay inspired Fred Torrey to depict this person wearing a robe in a sculpture outside the West Virginia State Capitol. A very famous sculpture of this person shows him using sign language to give his initials. That sculpture is in a memorial to this person at the end of a reflecting pool. This person’s head is to the right of the heads of George Washington, Thomas Jefferson, and Theodore Roosevelt on Gutzon Borglum’s Mount Rushmore National Memorial. Name this person whose photograph, taken by Mathew Brady, is on the five-dollar bill.

Answer: Abraham **Lincoln**

13. One of these things is named Section 179, and the act of using it is called expensing. A special one of these things exists in the U.S. for people who cannot see better than **20/200** [“twenty, two hundred”] in their better eye or have a field of vision that is 20 degrees or less. Alimony payments that were agreed to in 2019 or later cannot be used in this way. Contributions to **Keogh** [KEE-oh] plans and Health Savings Accounts are “above-the-line” examples of these things. The itemized type of these things must be listed on Schedule A of Form 1040. Name these things, such as charitable donations, that are subtracted from gross income to calculate taxable income.

Answer: **deductions** [accept **sections of the Internal Revenue Code** before “this way”]

14. The title character of this poem says “Grieve not, O wise one! For each it is better, his friend to avenge than with vehemence wail him.” Those words are spoken in this poem after **Aeschere** [ASH-uh-ruh] is killed and before a group finds a lair under a bloody lake. While there, the title character of this poem finds a giant sword that melts after being used to cut off the head of a corpse. This poem’s title character uses that sword when **Hrunting** [RUN-ting] is ineffective. The hero of this poem helps **Hrothgar** [RAWTH-gar], the king of the Danes. Name this Old English epic poem about the killing of Grendel.

Answer: ***Beowulf***

15. The two common forms of the **Schrödinger** [SHRAY-ding-ur] equation are named based on whether they depend on this quantity. Planck’s constant is given in units of energy times units of this quantity. The basic unit of this quantity is an **SI** [“S-I”] base unit defined by transitions in a cesium atom. Power equals work divided by this quantity. When calculating displacement under constant acceleration from rest, the square of this quantity is multiplied by half the acceleration. The reciprocal of this quantity is frequency. Name this quantity that is measured in seconds.

Answer: **time**

16. The decision in *Katzenbach v. Morgan* quoted this case’s opinion about government actions, saying “Let the end be legitimate.” The unanimous decision in this case stated that the words “necessary and proper” should “be considered as synonymous”. This case gave implied powers to the federal government. Referring to state actions, this case’s decision stated “An unlimited power to tax involves, necessarily, a power to destroy.” This case’s named plaintiff was a cashier. Name this 1819 case involving the operation of the Second Bank of the United States in Baltimore.

Answer: ***McCulloch v. Maryland*** [prompt on **Maryland**]

17. The subject of one poem by this writer is “He who, from zone to zone, guides through the boundless sky thy certain flight, in the long way that I must tread alone, will lead my steps aright.” In that poem, this writer said “There is a Power” which relates to both the writer and the bird he is addressing. A longer poem by this writer ends, “By an unfaltering trust, approach thy grave, like one who wraps the drapery of his couch about him, and lies down to pleasant dreams.” That poem is this American poet’s consideration of death. Name this 19th-century poet who wrote “To a Waterfowl” and “Thanatopsis”.

Answer: William Cullen **Bryant**

18. Monastic people who are part of this belief system have an annual three-month retreat that ends with laypeople giving thanks during **Kathina** [kuh-TEE-nuh]. At the new moon, full moon, and quarter moon, adherents of this belief system observe **Uposatha** [oo-POH-suh-thuh], which includes a commitment to the Five Precepts. The conduct of monks and nuns in this belief system is governed by the **Vinaya Pitaka** [vee-NY-uh pee-TAH-kuh], which is within the **Tripitaka** [trih-pee-TAH-kuh]. The Pali Canon is the scripture of the Theravada school of this system. Name this belief system whose Noble Eightfold Path and Four Noble Truths are based on the ideas of Siddhartha Gautama.

Answer: **Buddhism** [or **Buddhist**; accept **Theravada** Buddhism or **Theravada** Buddhist before “Theravada”]

19. In this play, Francisco says “I saw him beat the surges under him, and ride upon their backs”, but Alonso replies “No, no, he’s gone.” Alonso is the King of Naples in this play, and those lines refer to his son Ferdinand. In this play, Alonso’s daughter Claribel had recently gotten married in Africa. Ferdinand is actually alive, and in this play, he falls in love with the daughter of the man who was the Duke of Milan before that title was taken away. In this play, the former duke’s daughter, Miranda, falls in love with help from the spirit Ariel after witnessing a shipwreck. Name this play by William Shakespeare that is set on an island and features the sorcerer Prospero.

Answer: *The **Tempest***

20. The satellite types of these things have a similar impact as satellite nucleic acids, both of which depend on a helper type of these things. These things are grouped based on how they synthesize messenger RNA in Baltimore classification. These things are enclosed by capsids, some of which are in the shape of an **icosahedron** [“eye”-KAH-suh-HEE-drum]. Many of the first studied examples of these things were bacteriophages, and the first one of these things discovered was named for causing tobacco plants to develop a “mosaic” pattern. This type of infectious agent can only multiply inside living cells. Name these things responsible for measles, influenza, and COVID.

Answer: **viruses** [accept **viri** or **virions**]

21. If vectors in a basis have this relationship, then all vectors in the space can be expressed as sums of components that can be calculated using dot products. If two non-zero vectors have this relationship, their dot product is zero. A line that has this relationship to a segment and is also the segment’s bisector can be generated by finding the locus of points **equidistant** [ee-kwih-“distant”] from the segment endpoints. If two intersecting lines form four congruent angles, then the lines have this relationship. If two lines have slopes that are opposite reciprocals, then the lines have this relationship. Name this relationship between lines that meet at 90-degree angles.

Answer: **perpendicular** [accept **right** angle or **normal**(ity) or **orthogonal**(ity); before “90-degree”, accept **90-degree** angle or **pi/2**-radian angle or **1/2pi**-radian angle]

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Bonuses

1. There are four of these numbers for each electron in an atomic orbital.

A. Name these numbers that are often represented by “ n ”, “ ℓ [‘ell’]”, “ m sub ℓ ”, and “ m sub s ”.

Answer: **quantum** numbers

B. The fourth quantum number, which equals positive or negative $1/2$, represents this quantity.

Answer: **spin** magnetic quantum number [accept magnetic **spin**]

C. The intrinsic electron magnetic moment caused by electron spin is approximately equal to this constant. This constant equals the elementary charge times the reduced Planck constant divided by twice the rest mass of an electron.

Answer: **Bohr magneton** [prompt on **magneton**]

2. This country fought off the Soviet Union from 1979 to 1989.

A. Name this country that the United States left after fighting a war there from 2001 to 2021.

Answer: (Islamic Republic of) **Afghanistan** [or Jomhuri-ye Eslami-ye **Afghanistan** or Islamic Emirate of **Afghanistan** or Imarat-e Islami-e **Afghanistan**]

B. This Islamist group controlled most of Afghanistan from 1996 to 2001 and regained control in 2021.

Answer: **Taliban**

C. This Islamist group, sometimes called the **Peshawar** [peh-SHUH-wur] Seven because it was an alliance of seven groups who organized in Pakistan, fought the Soviet Union during the 1980s.

Answer: (Afghan) **mujahideen**

3. According to folklore, the three types of this creature are the Nyalmo, Chuti, and Rang Shim Bombo.

A. Name this legendary Asian creature that is similar to the Abominable Snowman.

Answer: **yeti**

B. Yetis supposedly live in this major mountain range.

Answer: **Himalayas** [accept **Himalayan**]

C. Some scholars trace the belief in yetis to this religious tradition that exists as an alternative to Tibetan Buddhism.

Answer: Yungdrung **Bon** [accept **Bonpo**; prompt on **Yungdrung**]

4. In this novel, Digory and Polly go to Charn and wake up **Jadis** [JAY-diss].

A. Name this novel that reveals that wood from a magic apple tree was used to make the wardrobe.

Answer: *The **Magician's Nephew***

B. *The Magician's Nephew* is one of a series of books that collectively chronicle this magical country north of Archenland.

Answer: **Narnia**

C. This author wrote *The Chronicles of Narnia*.

Answer: C(live) S(taples) **Lewis**

5. Name these people who served as Secretary of War before the position was abolished in 1947:

A. This secretary under Andrew Jackson was controversial because he married Peggy O'Neill Timberlake only nine months after her first husband died.

Answer: John **Eaton**

B. This Secretary of War under Franklin Pierce would later become the president of the Confederate States.

Answer: Jefferson (F.) **Davis** [accept Jefferson (Finis) **Davis**]

C. Andrew Johnson was impeached for attempting to fire this Secretary of War.

Answer: Edwin (McMasters) **Stanton**

6. At the end of this novel, the protagonist thinks "After all, tomorrow is another day."

A. Name this novel about Scarlett O'Hara.

Answer: ***Gone with the Wind***

B. This author from Atlanta wrote *Gone with the Wind*.

Answer: Margaret (Munnerlyn) **Mitchell**

C. Scarlett and Melanie each donate this item when Dr. Meade comes around with a collection basket during a hospital fundraiser.

Answer: wedding **rings** [prompt on **jewelry**]

7. In 2-by-2 matrices that represent this type of transformation, the first and last numbers are opposites, and the other two numbers are equal to each other.

A. Name this type of transformation that has no effect when it is done over the y -axis to the graph of an even function.

Answer: **reflection** or **reflecting**

B. Find the new location of the point “3 comma 2” if it is reflected over the line “ y equals 10”.

Answer: **(3, 18)** [order matters; accept **$x = 3$ and $y = 18$**]

C. If the upper-left number in a 2-by-2 reflection matrix is three-fifths, what is the upper-right number? There are two possible answers, and you can give either of them.

Answer: **$4/5$** or **$-4/5$** [or **0.8** or **-0.8**; accept **plus or minus $4/5$** or **plus or minus 0.8**]

8. This object inspired a poet to write “Heard melodies are sweet, but those unheard are sweeter; / therefore, ye soft pipes, play on.”

A. Name this object addressed as “Thou still unravished bride of quietness, thou foster-child of silence and slow time.”

Answer: a **Grecian urn** [prompt on **urn**; accept “Ode on a **Grecian Urn**”]

B. This early-19th-century English poet wrote “Ode on a Grecian Urn” and “Ode to a Nightingale” before dying from tuberculosis at age 25.

Answer: John **Keats**

C. In “On First Looking into Chapman’s Homer”, Keats mistakenly wrote that this person “stared at the Pacific”.

Answer: (stout Hernán) **Cortés**

9. People from this region were known as merchants, traders, and colonizers in the 1st millennium BCE.

A. Name this region in what is now Lebanon and its surroundings, including the cities of **Byblos** [BIB-lohss], **Sidon** [SY-dun], and Tyre. Historians debate whether or not this region overlapped **Canaan** [KAY-nun].

Answer: **Phoenicia** [accept **Phoenicians**]

B. This modern capital of Lebanon dates back to an ancient city of Phoenicia.

Answer: **Beirut** [accept **Berot**]

C. This ancient Greek historian who wrote the book *Geography* claimed that Phoenicians both came from Bahrain and were the original settlers of the Balearic Islands.

Answer: **Strabo**

10. Much of the southern part of this peninsula is in the state of Quintana Roo.

A. Name this large peninsula in southeastern Mexico.

Answer: **Yucatán** Peninsula

B. The southeastern part of the Yucatán Peninsula is in this country whose capital is Belmopan.

Answer: **Belize**

C. The Yucatán Peninsula was the site of this Mayan city that included the Temple of the Frescoes and the Temple of the Descending God.

Answer: **Tulum** [accept **Zama**]

11. This movement is between a **minuet** [min-yoo-et] and a **passepied** [pass-pyay].

A. Name this third movement of *Suite bergamasque* [bair-gah-mask] that is based on a poem by Paul Verlaine.

Answer: “**Clair de lune**”

B. This composer wrote *Suite bergamasque*, *La mer*, and *Prelude to the Afternoon of a Faun*.

Answer: (Achille-)Claude **Debussy**

C. “Clair de lune” is in this unusual time signature. Dave Brubeck used it for most of “Blue Rondo à la Turk”.

Answer: **9/8** [“nine eight”] time

12. These things can be called articulations or articular surfaces.

A. Name these locations in the body, such as knees or elbows, that allow for movement.

Answer: **joints**

B. This fluid, sometimes called joint fluid, reduces friction at joints. The so-called “cracking” of joints is believed to occur when gases are released from this fluid.

Answer: **synovial** [sy-NOH-vee-ul] fluid

C. Some joints also have these thin-walled, fluid-filled sacs to help reduce friction.

Answer: synovial **bursae** or synovial **bursas**

13. In this novel, Rosa the Beautiful is mistakenly poisoned.

A. Name this novel about Rosa's sister Clara del Valle ["VIE"-ay].

Answer: *The **House of the Spirits*** [or *La **casa de los espíritus***]

B. This author wrote *The House of the Spirits* and *City of the Beasts*.

Answer: Isabel (Angélica) **Allende** ["eye"-EN-day] (Llona)

C. Clara's daughter loves Pedro Tercero but marries a man from this country when she thinks Pedro is dead.

Answer: **France** [or **French** Republic or République **française**]

14. Red-green color blindness is an example of this kind of inherited trait.

A. Name this type of trait based on genes located on the X or Y chromosome.

Answer: **sex-linked** trait(s)

B. This blood-clotting disorder has A and B types that affect boys who inherit it from their mothers, and it has a C type that is not sex-linked.

Answer: **hemophilia**

C. This type of breeding experiment is performed to determine whether a trait is sex-linked.

Answer: **reciprocal cross**(ing)

15. At the local type of this extremum, the derivative changes from positive to negative.

A. Name this point that is higher than other points on a graph.

Answer: (local or relative) **maximum** [or **maxima**]

B. Give the x -coordinate of the local maximum of the graph of " y equals sine x ", where x is in radians and the domain is from 0 to 2 pi.

Answer: **pi/2** or **1/2 pi**

C. Give the y -coordinate of the local maximum of the graph of " y equals cosecant x ", where x is in radians and the domain is from 0 to 2 pi.

Answer: **-1** [do not prompt on "1"]

16. Objects that obey this law undergo simple harmonic motion.

A. Identify this law, often used to model springs, in which force is proportional to the opposite of displacement. This law is named for an English scientist.

Answer: **Hooke's** law

B. If an object such as a spring is stretched beyond this point, then it is permanently changed.

Answer: **elastic limit** [prompt on **yield** point or **yield** strength]

C. This quantity is similar to the constant in Hooke's law, but it equals force per area divided by deformation, instead of just force divided by deformation.

Answer: **Young's modulus**

17. Samuel Gompers led this union from 1886 to 1894 and again from 1895 until his death in 1924.

A. Name this union that merged with the Congress of Industrial Organizations in 1955.

Answer: **American Federation of Labor** or **AFL**

B. This other union was viewed by the AFL as too radical. In 1917, the offices of this union were raided, and 101 of its leaders were found guilty of violating the Espionage Act.

Answer: **Industrial Workers of the World** or **IWW** [accept the **Wobblies**]

C. The first union led by African-Americans to be chartered by the AFL was this union started by A. Philip Randolph.

Answer: **Brotherhood of Sleeping Car Porters** [accept **BSCP**]

18. This term is defined as "a state of feeling very unhappy, uneasy, or dissatisfied".

A. Give this term that often describes the distress caused by a conflict between gender identity and the gender assigned at birth. It is experienced by some, but not all, people who are transgender.

Answer: **dysphoria** [accept gender **dysphoria**]

B. This prefix is used to describe people whose gender identity matches their gender assigned at birth.

Answer: **cis**(gender)

C. Transgender men are sometimes given this type of hormone that the body uses to develop male characteristics. Testosterone is the primary example of this type of hormone.

Answer: **androgen**(s)

19. This sculptor is generally credited for creating both a plaster model and a bust of King Akhenaten [AH-keh-NAH-ten].

A. Name this famous sculptor who worked in the 14th century BCE in what is now the town of Amarna.

Answer: **Thutmose** [TOOT-mohss] [accept **Djhutmose** or **Thutmosis** or **Thutmes**]

B. The best-known work by Thutmose probably is the colored bust of this Egyptian queen. The bust is now displayed in Berlin.

Answer: (Neferneferuaten) **Nefertiti** [neh-fer-TEE-tee]

C. Thutmose succeeded this sculptor, whose portrait with his wife Taheret [TAH-huh-ret] might be the oldest self-portrait.

Answer: **Bek** [accept **Bak**]

20. The ceiling and floor functions are sometimes considered this type of function, but some definitions of this type of function require them to have finitely many pieces.

A. Give this name for piecewise-constant functions.

Answer: **step** functions [accept **staircase** functions]

B. This step function is sometimes called the unit step function. It outputs 1 for positive inputs and 0 for negative inputs.

Answer: **Heaviside** step function

C. Evaluate the floor function for -3.7 .

Answer: **-4**