



1. The binding of these molecules is described by their hapticity (hap-TIH-sih-tee). EDTA is an example of these objects used for purifying or preserving foods due to its ability to sequester metal ions. One of these objects may bind at several sites in a chelation (key-LAY-shun) reaction. Some examples, such as the carbonate ion, may bind at one site or more than one site; that is, they may be polydentate or monodentate. For 10 points, name these ions or molecules that bind to central atoms to form coordination complexes.

ANSWER: **ligands**

121-12-56-05101

2. This king issued the *paulette*, which allowed nobles to pay to make offices hereditary. He eliminated his country's debt through the advice of the Duc de Sully and built the Louvre and Pont Neuf (Pon Noo) before his assassination by Francois Ravaillac. This man fought two claimants who shared his name in a conflict that ended after he declared "Paris is well worth a mass" and converted to Catholicism. For 10 points, name this king of France who provided for toleration of Huguenots (HOOG-uh-nots) in the Edict of Nantes.

ANSWER: **Henry IV** of France [or **Henry III of Navarre**; prompt on **Henry**]

080-12-56-05102

3. Regions with a high concentration of this element but without much metabolizable iron are known as HNLC. An oxide of this element is the primary cause of eutrophication (YOO-tro-FEE-kay-shun) along with phosphates. A important process that uses a ruthenium catalyst to produce a compound of this element and hydrogen is the Haber-Bosch process. Lightning and rhizobia bacteria both contribute significantly to the "fixing" of this element. For 10 points, name this element essential for life that is found in ammonia.

ANSWER: **nitrogen**

066-12-56-05103

4. This man was prime minister when his country met with Russia at the Alvensleben Convention. In addition to forming the Three Emperor's League, he convinced one country to attend the Gastein Convention, which helped this man cause a war that ended at the Battle of Sedan. This deliverer of the "Blood and Iron" speech instituted an Anti-Catholicism program known as Kulturkampf. This man served under Wilhelm I before being let go by Wilhelm II. For 10 points, name this "Iron Chancellor" of Germany.

ANSWER: Otto Eduard Leopold von **Bismarck**

149-12-56-05104

5. It is not thiamine (THIGH-uh-meen), but this compound influences both retrograde and anterograde (ann-TEH-roh-grade) amnesia in Korsakoff's (KORE-suh-koffs) Syndrome. A moderate amount of this compound can lead to hepatic steatosis (stay-uh-TOH-sis), or fatty liver. Hepatitis and cirrhosis (sih-ROH-sis) are caused by prolonged exposure to this compound, which is converted to acetaldehyde (ah-sit-AL-dih-hide) by a namesake dehydrogenase (de-high-DRAW-gih-nase). A fetal syndrome may develop if it is present in high amounts during pregnancy. This depressant is fatal if it comprises .45% of the blood. For 10 points, name this compound whose abuse leads to intoxication.

ANSWER: **alcohol** [or **ethanol** or **C₂H₅OH**]

020-12-56-05105

6. Bezaleel Morrice wrote two poems about this man's translation of Homer, the first addressed to Thomas Tickell, whose translation Joseph Addison had originally supported over this man's. That quarrel formed the background to part of this man's *Epistle to Dr. Arbuthnot*. He coined the phrase, "A little learning is a dangerous thing" in his *An Essay on Criticism*. His other works include a mock epic about the Baron cutting Belinda's hair. For 10 points, name this poet of *The Rape of the Lock*.

ANSWER: Alexander **Pope**

003-12-56-05106

7. The Zala River flows into this country's largest lake, Balaton. Due to hyperinflation in the mid-twentieth century, this country replaced the pengo with a new monetary unit, the forint. This country had to cede two-thirds of its inhabitants and land as a result of the Treaty of Trianon after World War I. It is bordered to the north by Slovakia, to the east by Romania, and to the west by Austria. For 10 points, name this country with a capital located at Budapest.

ANSWER: Republic of **Hungary** [or **Magyar** Koztarsasag]

130-12-56-05107

8. One of this man's poems declares, "The expense of spirit in a waste of shame is lust in action." Another concludes, "Die single, and thine image dies with thee," urging a young man to marry. He inverted the blazon (blay-ZAHN) in a poem stating, "My mistress' eyes are nothing like the sun," about an unidentified "Dark Lady." Another of his poems concludes with the line, "So long lives this, and this gives life to thee." For 10 points, name this prolific writer of sonnets, including one beginning, "Shall I compare thee to a summer's day?"

ANSWER: William **Shakespeare** [or The **Bard**]

014-12-56-05108

9. During Juscelino Kubitschek's rule of this country, the capital was moved inland. Escaped slaves in this country formed settlements known as quilombos (KEE-lom-bows). The Canudo and Contestado rebellions occurred in this country. Getulio Vargas established the Estado Novo in this country. This country first gained independence under Pedro I, who had taken over as regent after the departure of Joao (JOH-ow) VI. For 10 points, name this South American country that was colonized by Portugal in the sixteenth century.

ANSWER: Federative Republic of **Brazil** [or Republica Federativa do **Brasil**]

140-12-56-05109

10. This man's works in Latin include *De Vulgari Eloquentia*, in which he argued for the literary use of the vernacular. One of his vernacular works intersperses poetry and prose in describing his love for a member of the Portinari family. That work is called *La Vita Nuova*. That aforementioned woman reappears in another work by this man, replacing Virgil as the his guide when he reaches the top of Mount Purgatory. For 10 points, name this Italian poet whose *The Divine Comedy* begins with the *Inferno*.

ANSWER: **Dante** Alighieri [or Dante **Alighieri**]

142-12-56-05110

11. Some of this game's puzzles involve a "lively" substance that "does not like the human skeleton." One of the characters finds herself answering to the name of "Caroline" in a conversation with Cave Johnson while her consciousness is in a potato battery. At the beginning of this game, the player character is rescued by Wheatley. For 10 points, name this 2011 sequel that sees Chell reunite with GLaDOS in Aperture Science, where she creates blue and orange constructs with the namesake gun.

ANSWER: **Portal 2** [do not accept or prompt on "Portal"]

142-12-56-05111

12. This author wrote about the sterile Joe Saul in a novel in play format entitled *Burning Bright*. This author wrote about a man called The Pirate who lives in a former chicken coop and a man who receives two houses in his grandfather's will in *Tortilla Flat*. In another novel by this author, Jim Casy is beaten to death by police, and the Joad family moves west looking for work during the Dust Bowl. For 10 points, name this author of *Of Mice and Men* and *The Grapes of Wrath*.

ANSWER: John Ernst **Steinbeck**

088-12-56-05112

13. In an unfinished work by this man, the title character is surprisingly not punished when he spills soup, and his stutter prevents him from defending himself when accused of mutiny. That character created by this man accidentally kills Claggart and is sentenced to hanging by Captain Vere. In one novel by this man, an unused coffin saves the life of the narrator after the *Pequod* sinks due to Captain Ahab's insane pursuit of the title white whale. For 10 points, name this author of *Billy Budd* and *Moby-Dick*.

ANSWER: Herman **Melville**

121-12-56-05113

14. Once every year, this people met with the Gargareans, a tribe that lived over the mountains. They came to the aid of the Trojans under a child of Ares who was killed by Achilles, Penthesileia (pen-thuh-sil-EY-uh). Theseus fought them off when they attacked Attica. Another ruler of these people had a girdle that Heracles had to obtain for one of his labors. Their rulers included Hippolyta, and they were known for removing their right breasts in order to fight better. For 10 points, name this ancient race of warrior women from Greek myth.

ANSWER: the **Amazons**

080-12-56-05114

15. This character's co-workers include Pilbow and Spivey, the latter of whom is, according to Dale Harding, incapable of doing his job without this character's assistance. She threatens to tell another character's mother about that character's relationship with the prostitute Candy, causing Billy Bibbit to commit suicide. This character is the subject of a bet that Randle McMurphy can drive her crazy in one week. For 10 points, name this tyrannical nurse from *One Flew Over the Cuckoo's Nest*.

ANSWER: Nurse **Ratched** [or **Big Nurse**]

003-12-56-05115



1A. This is a 10-second calculation question. What is the reference angle corresponding to an angle of 210 degrees?

ANSWER: **30** degrees

1B. This is a 10-second calculation question. What is the volume of a cone whose radius and height are the same as a right cylinder of volume 30 cubic units?

ANSWER: **10** cubic units

2A. What supercontinent merged with Laurasia (luh-RAY-shuh) to form Pangaea (pan-GEE-uh)?

ANSWER: **Gondwana**land (gone-DWOHN-uh-land)

2B. In Spanish, what formal, second-person singular pronoun is used in more formal situations, as opposed to *tu*?

ANSWER: **usted** [do not accept **ustedes**]

3A. What early Roman law code was crafted by a commission of ten men after the founding of the Republic?

ANSWER: Law of the **Twelve Tables**

3B. Recep Erdogan is the prime minister of what country, which condemned France's 2012 decision to criminalize denial of the Armenian genocide?

ANSWER: Republic of **Turkey**

4A. This is a 20-second calculation question. Randy can paint a room in 5 hours. Julie can paint a room in 3 hours. Mark can paint a room in x hours. It takes 50 minutes to paint the room with all three working together. How long does it take Mark to paint a room by himself?

ANSWER: **1.5 hours** [or **90 minutes**]

4B. This is a 20-second calculation question. A data set is depicted on a stem-and-leaf plot. The first row has stem 2 and leaves 0, 1, 3, and 7. The second row has stem 3 and leaf 3. The third row has stem 4 and leaves 1 and 5. What is the mean of this data set?

ANSWER: **30**

5A. Which thinker advocated toleration for all religious viewpoints, excepting Catholicism and atheism, in his *A Letter Concerning Toleration*, and also advocated the idea of a tabula rasa in his *An Essay Concerning Human Understanding*?

ANSWER: John **Locke**

5B. What simplest aldehyde has the formula CH_2O and is used to preserve corpses?

ANSWER: **formaldehyde** [or **methanal**]

6A. What cells deposit calcium and form the matrix of the bone tissue?

ANSWER: **osteoblasts** (AH-stee-oh-blasts)

6B. What second largest city in Spain is the capital of Catalonia and is on the shore of the Mediterranean Sea?

ANSWER: **Barcelona**

7A. Guns and butter are the goods typically charted on what graph, which is convex and downward-sloping, and shows the possible combinations of quantities of goods that can be made with a given set of resources?

ANSWER: **PPC** [or **production possibility frontier**; or **production possibilities frontier**]

7B. The Cape May Ferry travels across the bay named for what river that runs through New Jersey and past Philadelphia?

ANSWER: **Delaware** River

8A. This is a 30-second calculation question. A weighted die comes up as a 6 30% of the time. What is the probability of rolling at least 3 sixes in four rolls?

ANSWER: **0.0837** [or **8.37%**]

8B. This is a 30-second calculation question. Compute the determinant of the matrix with first row [2 3 -1], second row [3 4 2], and third row [0 -2 -5].

ANSWER: **19**

9A. Wikipedia shut down on January 18th to protest what controversial anti-piracy law?

ANSWER: **SOPA** [or **Stop Online Piracy Act**]

9B. The inputs of the dot product are what type of object that can be represented as a one dimensional matrix?

ANSWER: **vectors**

10A. What painting by Edward Hopper is set in a diner whose three patrons avoid eye contact with one another?

ANSWER: **Nighthawks**

10B. Whose orchestral piece *The Chairman Dances* is an "out-take" from his opera *Nixon in China*?

ANSWER: John Coolidge **Adams**



1. This composer included works like "Frozen Tears," "Will o' the Wisp," and "The Weather-vane" in his song cycle *Winterreise*. A piano quintet by this composer is named after a movement featuring variations on "Die Forelle" (for-EHL-a), another of his *Lieder* ("leader"). This man's incidental music for the play *Rosamunde* has been used to complete another of his works. For 10 points, name this composer of the Trout Quintet, whose eighth symphony is the "Unfinished."

ANSWER: Franz **Schubert**

088-12-56-05117

2. This type of variable is returned by the C function malloc. They can cause programs to crash when they are "wild" or "dangling". In C, linked lists are linked using these variables. The indexing of arrays is done using these variable's namesake arithmetic. In C, these variables can be dereferenced using the asterisk operator. Their void type can refer to objects of any type. For 10 points, name these variables that reference the address of a function or variable in memory.

ANSWER: **pointers**

066-12-56-05118

3. The retirement of one star for this baseball team was described in John Updike's essay "Hub Fans Bid Kid Adieu." During this team's "Impossible Dream" season, it featured the last winner of the hitting Triple Crown, Carl Yastrzemski (yah-STREM-ski). A year after this team was knocked out of the playoffs by an Aaron Boone home run, a pitcher for this team won in the ALCS while wearing a bloody sock. This team overcame a three games to none deficit in the 2004 ALCS under the management of Terry Francona. For 10 points, name this team which fell apart in September 2011 and is the rival of the Yankees.

ANSWER: Boston **Red Sox** [or **Boston** Red Sox; prompt on **Sox**]

149-12-56-05119

4. One poet belonging to this literary movement "doubt[s] not that God is good, well-meaning, kind" but cannot understand why he "bid him sing." Besides Countee Cullen, another member of this movement wrote the lines "he slept like a rock or a man that's dead" in his poem "The Weary Blues." That poet also wrote about how his "soul has grown deep like the rivers" in "The Negro Speaks of Rivers." For 10 points, name this literary movement named for a New York neighborhood whose writers included Langston Hughes.

ANSWER: **Harlem Renaissance**

105-12-56-05120

5. Indirect evidence for waves that carry radiation of this type was provided by the Hulse-Taylor binary pulsar. Newton's concept of "action at a distance" implied that this could have an infinite speed. The bending of light due to it is known as its namesake lensing. It is caused by the curvature of spacetime in GR. On the earth's surface, 9.8 meters per second squared is the acceleration due to this. For 10 points, name this weakest of the four fundamental forces, which depends upon an object's mass.

ANSWER: **gravity** [or **gravitational**]

142-12-56-05121

6. Halls in which this religion is practiced are called "honden." Many of the tales behind this religion are found in the *Record of Ancient Matters*, which tells the story of Jimmu. Steps leading up to places of worship for this religion are known as Torii. Ryujin (RYE-oo-jin) is the water deity in this religion, and Izanagi's purification after entering Yomi led to the birth of Amaterasu in this religion's mythology. For 10 points, name this religion that worships the kami (KAH-mee) and is practiced mainly in Japan.

ANSWER: **Shintoism**

149-12-56-05122

7. In one episode of this show, creatures state "The circle must be broken," which is a reference to the electric field that surrounds a giant brain located in Warehouse 15. Harold Saxon is a character on this show whose existence was foretold to the protagonist by the Face of Boe. Sec, who leads the Cult of Skaro, is a Dalek and therefore the sworn enemy of this show's Time Lord protagonist. For 10 points, name this BBC show that follows a time-traveling, police-box-using adventurer.

ANSWER: **Dr. Who**

149-12-56-05123

8. In certain areas, these events originate in the Benioff (BEHN-ee-off) Zone. These events are modeled by elastic-rebound theory. These events can cause liquefaction, and phenomena associated with these events cause a "shadow zone." Those phenomena are S and P waves. They are measured on the moment magnitude scale. They can cause tsunamis when they occur underwater, and they are followed by aftershocks. For 10 points, name these events that occur at fault boundaries and were measured using the Richter scale.

ANSWER: **earthquakes**

124-12-56-05124

9. This artist painted his first wife, Camille Doncieux (don-SHOE), in *Woman in a Green Dress*. Late in life, this artist painted weeping willow trees to honor dead soldiers from World War I. He showed an edifice at different times of day, showing the changes of color that the tones of sunlight illuminate, in a series of paintings of Rouen (roo-EN) Cathedral. Another of his paintings, depicting the harbor at Le Havre (HOV), gave its name to an artistic movement. For 10 points, name this French Impressionist who created *Impression, Sunrise*.

ANSWER: Claude **Monet** (moe-NAY)

040-12-56-05125

10. The Euler-Mascheroni ("oiler" mah-scuH-ROH-nee) constant is the limit as n goes to infinity of the harmonic series minus this function of n . In a sorted array with n elements, performing this operation on n approximates the worst case time for a binary search. In chemistry, placing a lowercase p in front of a quantity indicates that this function was performed on it. Differentiating this function for x yields a function proportional to one over x . For 10 points, name this operation, the inverse of exponentiation.

ANSWER: **logarithm** [accept **taking the logarithm**; or **finding the logarithm**; or **log of x**; or obvious equivalents, accept natural **logarithm** before binary search]

121-12-56-05126

11. One novel set in this country deals with the political awakening of Demetrio Macias. This country, where the novel *The Underdogs* was written, was also where the nun Sor Juana de la Cruz wrote her poetry. Perhaps the most noted author from this country wrote a novel about Harriet Winslow encountering an American who dies in this country, *The Old Gringo*, as well as a novel about a man who acquired the Bernal estate to begin his rise to power. For 10 points, name this home country of the author of *The Death of Artemio Cruz*, Carlos Fuentes.

ANSWER: **Mexico** [or **Estados Unidos Mexicanos**; or **United Mexican States**]

019-12-56-05127

12. A case of libel against this President led to the arrest of Benjamin Franklin Bache, the editor of the *Aurora*, due to one law signed by this man. This President in power during the "quasi-war" with a former ally lost support after the passage of the Alien and Sedition Acts, which came about after the poor reception of three delegates in France in the XYZ Affair. For 10 points, name this man who lost during the Revolution of 1800 to Thomas Jefferson after serving as the second President.

ANSWER: John **Adams**

023-12-56-05128

13. In the movie *Sun Valley Serenade*, this man's band popularized the song "Chattanooga Choo Choo." This man's band included Tex Beneke on the saxophone, Wilburn Schwartz on clarinet, and Bobby Hackett on guitar. A movie about this man's life included cameos by Gene Krupa and Louis Armstrong and starred James Stewart as this man. This man's signature song was "Moonlight Serenade." For 10 points, name this American trombonist of the big band era who disappeared over the English Channel while touring with the Army Air Force Band during World War II.

ANSWER: Glenn **Miller**

030-12-56-05129

14. In one story, this author claims that the Earth's continents were pulled off of the molten moon. That story is found in this man's *t zero*, which is narrated by Qfwfq (q-f-w-f-q), who also narrates "The Distance of the Moon," in this man's *Cosmicomics*. The country of Cimmeria appears in a novel by this man including the first chapter of *Outside the Town of Malbork*. In that novel, every other chapter is written in second person. For 10 points, name this Italian author of *If on a winter's night a traveler*.

ANSWER: Italo **Calvino**

149-12-56-05130

15. American troops during this war spearheaded the Meuse-Argonne Offensive. The first appearance of U.S. troops during this war was at the Battle of Hamel, with those troops often known as Doughboys. The Creel Committee helped monitor the home front during this war. The American Expeditionary Force during this war was commanded by John Pershing. For 10 points, name this war that Woodrow Wilson "kept us out of" until after his 1916 reelection.

ANSWER: **World War I** [or **First World** War; or **Great** War]

040-12-56-05131



1. This poet described "the innumerable caravan which moves to that mysterious realm, where each shall take his chamber in the silent halls of death." In one work, this poet asked the title creature, "Seeks't thou the plashy brink of weedy lake?" and "Whither, 'midst the falling dew... dost thou pursue thy solitary way?" One poem by this author is written "to him who in the love of nature holds communion with her visible forms" and has a Greek title. For 10 points, name this American poet of "To a Waterfowl" and "Thanatopsis."

ANSWER: William Cullen **Bryant**

124-12-56-05132

2. In the presence of a vacuum, this force can create a cold weld between smooth metals and is dependent on molecular forces. Coulomb's (KOO-loms) law states that it is independent of sliding velocity. This force increases with the roughness of surfaces. Amontons' laws state that this force is proportional to the applied load and independent of area of contact. The coefficient of this force is symbolized mu and is greater for the static form than for the kinetic form. For 10 points, name this force that opposes motion.

ANSWER: **friction**

124-12-56-05133

3. One party in this case was represented by future Supreme Court Associate Justice Abe Fortas, and the other side was argued by Bruce Jacob. This case stemmed from a burglary in a pool hall in Panama City, Florida. This case overturned the earlier ruling in *Betts v. Brady* by holding that states did not have the power to selectively apply a certain right. For 10 points, name this Supreme Court case in which the Sixth Amendment was held to provide the right to an attorney for those who could not afford one.

ANSWER: **Gideon** v. *Wainwright*

040-12-56-05134

4. One revolt in this state was started by General Mariano Vallejo, whose cause received help when troops on the *Congress* came to this state under Robert F. Stockton. This state's conquest was also led by Stephen Kearny, who came into conflict with one of this state's first senators, John C. Fremont. For 10 points, name this Western state that was the location of the Bear Flag Revolt, and which, shortly afterwards starting at Sutter's Mill, became the site of the 1849 gold rush.

ANSWER: **California**

023-12-56-05135

5. Adding an ethylene (EH-thuh-leen) group to this compound forms the monomer unit of polystyrene. Fully hydrogenating this compound forms cyclohexane. Huckel supposedly determined this compound's structure by dreaming of a snake chasing its own tail. When two of its rings are joined together, it becomes naphthalene (NAP-thuh-leen) and when a methyl (MEH-thul) group is added to it, it becomes toluene (TOHL-yoo-een). It is often symbolized by a circle inside of a hexagon. For 10 points, name this aromatic compound with formula C_6H_6 .

ANSWER: **benzene** [accept **C_6H_6** before mentioned]

127-12-56-05136

A Maurice Ravel concerto written for Paul Wittgenstein, who was injured in World War I, is perhaps the most notable piece of piano music with what playing restriction?

ANSWER: written for the **left hand** [or can be played with the **left hand** alone; prompt on answers such as "written for only **one hand**"]

127-12-56-05137

This is a calculation question. Fifteen coins, all either quarters or nickels, have a total value of \$2.55. How many of the coins are quarters?

ANSWER: **9**

127-12-56-05137