Ladue Invitational Spring Tournament IV

Written and edited by Ben Zhang, Jialin Ding, Kisan Thakkar, Enze Chen, Michael Prablek, and Sam Crowder

Round 8

Tossups

1. Elton Mayo modeled this experimenter's clinical methods for his Hawthorne Experiments. This man described himself as a genetic epistemologist and analyzed behavioral and operational "schemata." He poured blue liquid into a taller and thinner glass from an identically-sized beaker to demonstrate his idea of (*) quantity conservation. This psychologist's most famous theory describes the development of object permanence during the Sensorimotor stage, which precedes the Preoperational and Concrete Operational stages. For ten points, identify this Swiss psychologist who divided the development of children into four steps.

ANSWER: Jean Piaget

<KT>

2. This writer described a "black and brilliant creature" that has the "ancient name of fire" in his poem, "Salamander." He wrote another work claiming that poetry leads to interior liberation and has the ability to dramatically alter the world. This author of *The Bow and the Lyre* wrote a poem that begins, "a willow of crystal, a poplar of water" and is modeled after the (*) Aztec Calendar. His most famous work is a collection of nine essays, including "The Conquest and Colonialism" and "The Day of the Dead," which aim to analyze the culture of Mexico. For ten points, name this author of the poem "Sunstone" and *The Labyrinth of Solitude*.

ANSWER: Octavio Paz

<KT>

3. The quantum mechanical operator for this quantity is negative h-bar divided by twice the mass times the Laplacian, and the virial theorem calculates the total amount of this quantity for a system of particles. By the equipartition theorem, it is equal to three halves Boltzmann constant times temperature. This quantity's rotational analogue is proportional to moment of inertia times angular (*) velocity squared, and the change in this quantity is equal to the total work. Its linear form is equal to one-half mass times velocity squared. For ten points, identify this energy of objects in motion.

ANSWER: <u>kinetic energy</u> [prompt on "energy;" do NOT accept "potential energy"] <EC>

4. This artist depicted a bare-breasted muse playing a white harp next to a reclining Greek writer in his painting *Homer and Calliope*. In another of his works, a woman holds out her right hand and grasps two anguished children while Brutus sits on a klismos in a shadow to the left. In yet another work by this man, three (*) Roman soldiers salute a man with three swords. The French Revolution inspired a more controversial work by him, which shows a murdered man holding a note on a wooden box next to a bloody knife. For ten points, name this French artist of *Oath of the Horatii* and *The Death of Marat*.

ANSWER: Jacques-Louis David

<KT>

5. A goddess sends Allecto to enrage Queen Amata in an attempt to prevent this man from getting married a third time. This leader's son notes that his comrades are fulfilling a prophecy by eating the bread which they used as their tables. That son, (*) Ascanius, will go on to found Alba Longa. This hero is the product of Venus' love affair with his father Anchises. A large storm causes this man and his hunting companion to be trapped in a cave, the start of his romance with the Carthaginian queen Dido. For ten points, identify this Trojan hero whose descendants will found Rome, the subject of an epic by Vergil.

ANSWER: Aeneas

 $\langle BZ \rangle$

6. This work notes that "Dry bones can harm no one" before a rooster crows, "Co co rico co co rico". Another section of this work describes a character who "was once handsome and tall like you" but is now "a fortnight dead", named Phlebas the Phoenician. The phrases "Unreal city" and (*) "HURRY UP PLEASE IT'S TIME" repeat in this poem, which features sections like "What the Thunder Said" and "The Burial of the Dead". This work ends with a triple repetition of the Sanskrit word for peace, "Shantih, shantih, shantih". For ten points, identify this 434-line modernist poem written by T.S. Eliot which opens with the line, "April is the cruellest month".

ANSWER: The Waste Land

<KT>

7. This musician added the lyrics, "Oh, memory," to his version of Carmichael's song, "Stardust," and worked with pianist Earl Hines for the Weatherbird duet. He worked for Okeh Records with his Hot Seven group to produce "Potato Head Blues" and is regarded as one of the first (*) scat singers after the release of "Heebie Jeebies." In his most famous composition, he sings that he "hear[s] babies cry" and sees "trees of green, red roses too." For ten points, identify this African American jazz musician who was nicknamed "Satchmo" and sang "What a Wonderful World." ANSWER: Louis **Armstrong** [accept **Satchmo** before mentioned; accept **Pops**]

<KT>

8. This figure advised that if "the enemy advances, we retreat; the enemy tires, we attack; the enemy retreats, we pursue" in his book On Guerrilla Warfare. This man cracked down on his criticizers in the Anti-Rightist Movement after earlier letting (*) "a hundred flowers blossom," and his attempt to industrialize using backyard steel furnaces caused the greatest man-made famine in history. The Gang of Four was led by this man's wife, who had accompanied him on the Long March and during the civil war against the Kuomintang forces of Chiang Kai-shek. For ten points, identify this communist first leader of the People's Republic of China.

ANSWER: Mao Zedong

 $\langle JD \rangle$

9. One character in this show makes a sandwich made of a bagel and marshmallow cream for a child who is seen watching only an infomercial selling cutlery. That character in this show takes credit for killing the child's father, Spooge, with an ATM machine. That character, who uses the street name (*) "Diesel", teams up with "Heisenberg" in this show, who performs the title action after visiting an oncologist. For ten points, name this television series which sees former student Jesse Pinkman join chemistry teacher Walter White to manufacture methamphetamine in order to pay for cancer treatment.

ANSWER: Breaking Bad

<MP>

10. The Turquoise Mountain was an ancient city in this country whose only standing remains is the Minaret of Jam. The Bukhara pattern is found on many of this country's namesake handwoven rugs. Two Buddha statues in its Bamiyan valley were destroyed with dynamite in 2001. This country, home to the majority of world's Hazara population, is the world's leading producer of (*) opium. Its city of Jalalabad is located northwest of the Khyber Pass, while other cities include Herat and Kandahar. Dari and Pashto are the official languages of this country, which in recent years has been heavily influenced by the Taliban. For ten points, identify this country with capital at Kabul.

ANSWER: Islamic Republic of Afghanistan

<JD>

- 11. Several months before this event, a tablet predicting its occurrence was excavated from the tomb of the founder of Capua. The Sacred Way and a bridge over the Field of Mars were considered as possible settings for this event, whose key figure was given a warning note that went unread just prior to it. (*) Calpurnia tried to prevent that figure from attending this event, whose perpetrators were later killed at the Battle of Philippi. A statue of a man with 23 wounds was erected after this event, which occurred during a false meeting of senators at the Theatre of Pompey. For ten points, identify this event in which Cassius and Brutus stabbed a Roman dictator to death on the Ides of March.

 ANSWER: assassination of Julius Caesar [accept equivalents like "killing Caesar"]
- 12. Operation CHASE and Operation Steel Box were two efforts to destroy these things. A "Framework for the Elimination" of these objects was established after several hundred people died in Ghouta, and they were utilized in a 1988 massacre in Halabja ordered by Saddam Hussein to eliminate the (*) Kurdish population. The 2013 Nobel Peace Prize was awarded to the Organization for the Prohibition of these things, which were confirmed to have been used to kill civilians in Damascus during the Syrian civil war. For ten points, identify this type of munitions, which include sarin and mustard gas and have been banned along with biological weapons.

ANSWER: chemical weapons [accept poison gas; prompt on "sarin", "nerve gas", or "mustard gas"; prompt on "weapons of mass destruction; prompt on "CW"] <BZ>

13. Several Hindus and Jains observe this practice in an event known as *Ekadashi*, which occurs roughly every eleventh day. Women may perform this action on *Karva Chauth*, and Mormons are asked to practice it the first Sundays of each month. In Judaism, this action occurs on the Tenth of (*) Tevet. Muslims recite the Fajr prayer before engaging in this practice, and in the evening, they end their ritual by using dates and water in an event called *iftar*. Jews are required to perform this action on Yom Kippur. For ten points, identify this abstention of food practiced by Muslims during the month of Ramadan.

ANSWER: <u>fasting</u> [accept equivalent word forms, e.g. "<u>to fast</u>"] <KT>

14. According to legend, a man with the surname Truelove was renamed Eyre after saving one man's life in this battle. One side in this battle arrived at Pevensey and feigned retreat after they were unable to break through the shield wall formed by fyrds and (*) housecarls. The leader of the losing side in this battle succeeded Edward the Confessor and had earlier won the Battle of Stamford Bridge, but was later killed by an arrow in the eye as depicted in the Bayeux Tapestry. For ten points, name this 1066 battle in which Harold Godwinson was defeated by a Norman force led by William the Conqueror.

ANSWER: Battle of Hastings

 $\langle BZ \rangle$

15. If p is a Mersenne prime, then p times the quantity "p plus one" times this number yields a perfect number. Evaluating the gamma function at this value yields pi raised to this number, which is the constant of proportionality in the Shoelace Theorem for finding the area of a polygon. This number is conjectured to be the real part of any non-trivial zero of the (*) Riemann zeta function, and taking the square root of a number x equals raising x to the power of this number. The area of a triangle equals base times height times this value, which is also the probability that a fair coin will land on heads. For ten points, identify this fractional value that can be doubled to equal one.

ANSWER: <u>one-half</u> [accept equivalents like <u>1/2</u>, <u>0.5</u>, etc]

<EC>

16. This author wrote a work in which Alexander's monologue about the nobility prevents the narrator from sleeping properly. He included "Hamlet of the Shchigrovsky District" in his collection A Sportsman's Sketches, and this author wrote a novel whose central character asserts that "people are trees in a forest" and later kisses another character after she hands him a rose. In that work, Pavel challenges the nihilist (*) Bazarov in a duel over Fenichka, and Arkady marries Katya instead of Madame Odintsova. For ten points, name this Russian author of Fathers and Sons.

ANSWER: Ivan Sergeyevich **Turgenev**

<KT>

17. An officer on one side in this war referred to his soldiers' putrid meat rations as "embalmed beef". One factor leading to this war was the policy of "reconcentration" that was enacted after the Ten Years' War by a man nicknamed "Butcher". After this war, the Insular Cases decided that the (*) "Constitution follows the flag" in the island territories that one side acquired. Several American victories in this war, such as those at El Caney, Kettle Hill, and San Juan Hill, were led by Theodore Roosevelt and his Rough Riders. For ten points, name this 1898 war in which the United States gained the Philippines and Cuba from an Iberian nation.

ANSWER: Spanish-American War

 $\langle BZ \rangle$

18. In humans, the environment in which these cells must develop is carefully regulated by the cremaster muscle, and Sertoli cells provide nutrients to these cells before they mature. In some plants, these cells are produced by the antheridia. These cells cause a release of calcium ions that prompts cortical granules to fuse with the perivitelline space, and contain a vesicle called an (*) acrosome that allows them to degrade part of the zona pellucida. In humans they travel through the vas deferens after maturing in the epididymis under the cooler temperatures provided by the scrotum. For ten points, name these flagellated cells that are produced in the testes and can fertilize eggs.

ANSWER: sperm cells [accept spermatozoa; prompt on "spermatid"]

 $\langle BZ \rangle$

19. In this work, Mr. Bumble and Edward Leeford agree to throw a locket and a ring in a river, while another scene shows Mr. Sowerberry and Noah Claypole fighting the protagonist. After wrongfully being accused of stealing a handkerchief, the protagonist of this work stays with (*) Mr. Brownlow and meets a girl named Nancy, who is later murdered by her boyfriend Bill Sikes. The Artful Dodger and the title character pickpocket in a group led by Fagin, who is hanged in the end of the novel. For ten points, name this Charles Dickens work about an orphan who asks, "Please, sir, I want some more."

ANSWER: Oliver Twist

<KT>

20. This compound is produced with graphite in the Bosch reaction, and organic reactions in this medium have been demonstrated to be faster than in toluene and cyclohexane by Sharpless. This compound notably has a solid-liquid boundary with a (*) negative slope on a phase diagram, and the absolute temperature scale is based on this compound's triple point. It is produced with carbon dioxide during combustion, and this molecule has a bent geometry and two lone pairs, allowing the formation of multiple hydrogen bonds that reduce its density when solid. For ten points, identify this "universal solvent" with formula H2O.

ANSWER: <u>water</u> [accept <u>H2O</u> or <u>dihydrogen monoxide</u> early] <EC>

21. Playfair's Law can be used to model the effects due to one of these entities, which have sizes typically between first and third order, as determined by the Strahler number. Knickpoints are sharp changes in the gradient profile of these features, which can also form bifurcations. Their lotic ecosystems are bordered by (*) bosques and biodiverse riparian zones, and these features can cut off to form oxbow lakes. They lie adjacent to floodplains and often branch out at their mouth to form a delta. For ten points, identify these hydrological features exemplified by the Nile and Amazon.

ANSWER: <u>river</u>s [accept <u>stream</u>s]

<EC>

22. This leader employed mangonels built by two Muslim engineers in the successful siege of Xiangyang. Later, this ruler ordered failed invasions of Java and Hakata Bay. This ruler divided his population into four social classes, defeated the Southern Song dynasty, and established (*) paper money as the sole currency. He was elected to his highest position by a kurultai after the death of his brother Mongke. *Il Milione* depicted one traveler's experiences in this man's court at Dadu. This leader, whose two invasions of Japan were stymied by *kamikaze*, was visited by Marco Polo. For ten points, identify this Mongol founder of the Yuan empire.

ANSWER: Kublai Khan

 $\langle JD \rangle$

Bonuses

1. Bonus: Sufferers of this disease were sometimes put into "iron lungs". For ten points each:

[10] Name this viral disease that causes paralysis and once afflicted Franklin D. Roosevelt.

ANSWER: **polio**myelitis

[10] This scientist developed an injectable vaccine for polio in 1955, which used inactive polioviruses.

ANSWER: Jonas Edward Salk

[10] In addition to using live, attenuated viruses, Albert Sabin's polio vaccine differed from Jonas Salk's in this other respect.

This property of Sabin's vaccine promoted intestinal immunity, but it lost favor due to complications.

ANSWER: oral vaccine [accept any answer indicating that it could be taken orally or by mouth]

 $\langle BZ \rangle$

2. Bonus: It was choreographed by Michel Fokine for Diaghilev's Ballet Russes Company. For ten points each:

[10] Identify this ballet in which Prince Ivan engages in the "Infernal Dance" and destroys the egg of Kashchei the Immortal after chasing the title creature in a magical realm.

ANSWER: The <u>Firebird</u> [accept <u>L'oiseau de feu</u> and <u>Zhar-ptitsa</u>]

[10] This composer wrote *The Firebird* and included a section called "Adoration of the Earth" in his work, *The Rite of Spring*.

ANSWER: Igor Fyodorovich **Stravinsky**

[10] Igor Stravinsky also wrote this three-movement choral symphony that references a book in the Hebrew Bible. Its second movement is a double fugue, and it lacks violins and violas.

ANSWER: Symphony of Psalms

 $\langle KT \rangle$

3. Bonus: Many Protestant denominations limit the number of these to two. For ten points each:

[10] Name this religious rites, seven of which are featured in Catholicism and which include baptism, marriage, and extreme unction.

ANSWER: sacraments

[10] Huldrych Zwingli claimed that the body and blood of Christ were not actually present in the consecrated bread and wine used in this sacrament, which conflicted with the Catholic doctrine of transubstantiation.

ANSWER: Eucharist or Communion

[10] The Utraquists' insistence on serving both the bread and the wine during the Eucharist contributed to a series of conflicts named for this Bohemian religious leader, who was executed at the Council of Constance.

ANSWER: Jan Hus [accept Hussite Wars]

 $\langle BZ \rangle$

4. Bonus: Hugh Thompson received the Soldier's Medal for his role in stopping this event. For ten points each:

[10] Identify this 1968 event in which American soldiers massacred hundreds of unarmed civilians in a hamlet codenamed "Pinkville." William Calley was the only soldier to be convicted for participation in this event.

ANSWER: My Lai massacre

[10] The My Lai massacre occurred during this war, which saw Ho Chi Minh lead the Communist North of a certain southeast Asian country to victory over the US-backed South.

ANSWER: Vietnam War

[10] Two months prior to the My Lai massacre, North Vietnam launched this surprise campaign despite calling for a ceasefire during the Lunar New Year. American opinion of the war plummeted following this campaign.

ANSWER: Tet Offensive

 $\langle JD \rangle$

- 5. Bonus: This element has the highest ionization energy, and its inert, low-density properties make it a common substance used to make balloons float. For ten points each:
- [10] Identify this lightest noble gas.

ANSWER: **helium** [accept **He**]

[10] Below the lambda point, helium behaves as one of these substances, which flow with zero viscosity. It can form a Rollin film as it creeps up the walls of a container.

ANSWER: superfluidity

[10] Helium-4 nuclei participate in this fusion reaction that follows the proton-proton chain and CNO cycle. Beryllium-8 is generated as an intermediate, and its final product can continue to fuse into oxygen-16.

ANSWER: triple-alpha process

<EC>

6. Bonus: A large stream of light from the right side illuminates the title tax collector of this work. For ten points each: [10] Identify this painting housed in the Contarelli Chapel, where it hangs with the "Martyrdom" and "Inspiration" of the central figure of this painting. Jesus and St. Peter gesture at the title figure, who sits in a table with four others.

ANSWER: The Calling of St. Matthew [accept The Vocation of St. Matthew]

[10] This Italian painted The Calling of St. Matthew as well as a version of Judith Beheading Holofernes.

ANSWER: Michelangelo Merisi or Amerighi da Caravaggio

[10] In this work by Caravaggio, Jesus, who wears a red and white dress, appears between Luke and Cleopas and glances at the chicken and fruits on the white table.

ANSWER: Supper at Emmaus

<KT>

7. Bonus: A "little" one of these events peaked during the 17th century. For ten points each:

[10] Identify these long-term periods of global cooling, the most recent of which saw humans migrate across the Bering land bridge from Siberia to North America.

ANSWER: ice ages

[10] Some of those who crossed the Bering land bridge formed the Anasazi culture, an ancestor to this modern people who live in apartments made of adobe mud and whose constituent tribes include the Hopi and the Zuni.

ANSWER: Pueblo

[10] This culture, whose distinctive stone points were discovered in New Mexico, were long held to be the first human inhabitants of the Americas. They share their name with the first king of the Franks.

ANSWER: Clovis culture [or Llano culture]

 $\langle JD \rangle$

8. Bonus: In April 2013, the drug company Novartis lost a patent case. For ten points each:

[10] Name this country, whose Supreme Court ruled that companies could continue making generic versions of Novartis's leukemia drug Gleevec.

ANSWER: India

[10] In August 2013, this country took steps to limit software patents. It was earlier the site of a police raid that led to the arrest of the owner of Megaupload, Kim Dotcom.

ANSWER: New Zealand

[10] In June 2013, the US Supreme Court ruled in *Association for Molecular Pathology v. Myriad Genetics* that these naturally occurring segments of human DNA could not be patented just because they were isolated.

ANSWER: genes

 $\langle BZ \rangle$

9. Bonus: It notes the struggle between Eros and Thanatos and introduces the concept of a death drive. For ten points each:

[10] Name this work which proposes "oceanic feelings" as a reason for religion and claims that mankind is unhappy as a result of society's attempts to repress its instinctive behavior.

ANSWER: Civilization and Its Discontents

[10] The author of *Civilization and Its Discontents* also analyzed these entities in a book about the "Interpretation" of them, and described them as a sort of "wish fulfillment" and a "Royal Road to the Unconscious Mind."

ANSWER: dreams

[10] This Austrian founder of psychoanalysis wrote Civilization and Its Discontents and The Interpretation of Dreams.

ANSWER: Sigmund Freud [or Sigismund Schlomo Freud]

 $\langle KT \rangle$

10. Bonus: For ten points each: answer the following about the current British monarchy:

[10] The current Queen of the United Kingdom is this woman, who is married to Prince Phillip.

ANSWER: Elizabeth II or Elizabeth Alexandra Mary

[10] Elizabeth II is a member of this British royal house. This house was known as Saxe-Coburg and Gotha until George V changed it during World War I due to anti-German sentiment.

ANSWER: House of Windsor

[10] One of these celebrations took place in 2012 to mark the 60th anniversary of Elizabeth II's reign. The only other British monarch to have celebrated one of these is Victoria, and it took place 10 years after her Golden one.

ANSWER: **Diamond Jubilee**s [prompt on "Jubilees"]

 $\langle BZ \rangle$

11. Bonus: These systems often contain a "garbage patch" consisting of suspended volumes of plastic and synthetic debris. For ten points each:

[10] Name these large systems of rotating ocean currents caused by the Coriolis force.

ANSWER: gyres

[10] Thermohaline circulation in the oceans is driven by this property of water affected by temperature and salt content. It explains why warm water flows to the surface, and can be computed as mass divided by volume.

ANSWER: density

[10] The Indian Ocean gyre can reverse to create this seasonal weather phenomenon lasting from June to September that is responsible for 80% of India's rainfall.

ANSWER: monsoons

<EC>

12. Bonus: It collapsed soon after being depicted on a certain state quarter. For ten points each:

[10] Identify this rock formation in the White Mountains that until 2003 hung off the side of Cannon Mountain. From the north, it looks like a human face.

ANSWER: Old Man of the Mountain [or Great Stone Face; or the Profile]

[10] The Old Man of the Mountain is located in this New England state, whose Presidential Range features such peaks as Mount Washington.

ANSWER: New Hampshire

[10] Until 2010, Mount Washington held the record for the highest speed of this natural phenomenon on Earth's surface, at 231 miles per hour. Chicago's nickname implies that it gets lots of this phenomenon.

ANSWER: wind

<JD>

13. Bonus: In this work, Lady Bracknell believes that Miss Prism never had returned a perambulator from several years ago. For ten points each:

[10] Identify this play in which both Jack Worthing and Algernon Moncrieff adapt the title pseudonym, confusing Gwendolen Fairfax and Cecily Cardew.

ANSWER: The Importance of Being Earnest, A Trivial Comedy for Serious People

[10] This Irish playwright and novelist wrote *The Importance of Being Earnest* and a work in which Dorian Gray stabs Basil Hallward to death.

ANSWER: Oscar Fingal O'Flahertie Wills Wilde

[10] This poem by Oscar Wilde details a man who murdered his wife, "did not wear his scarlet coat," and "walked amongst the Trial Men." It famously declares that "each man kills the thing he loves."

ANSWER: *The <u>Ballad of Reading Gaol</u>* [pronounced "redding jail", but accept other pronunciations] <KT>

14. Bonus: The plaintiffs in this case were accused of selling uninspected chickens. For ten points each:

[10] Name this 1935 Supreme Court Case that ruled a certain piece of New Deal legislation had overreached itself because the namesake company did not engage in direct interstate commerce.

ANSWER: <u>Schechter Poultry Corp. v. United States</u> [accept "<u>sick chicken</u> case"]

[10] The Court's decision in *Schechter* was a setback for the New Deal programs of this president, who attempted to remedy the Great Depression after Hoover failed.

ANSWER: Franklin Delano Roosevelt [or FDR]

[10] Name either the federal agency invalidated by *Schechter Poultry Corp v. US* or the law that created it. Under this program, participating businesses displayed a blue eagle.

ANSWER: <u>National Recovery Administration</u> or <u>NRA</u>; or <u>National Industrial Recovery Act</u> or <u>NIRA</u> <BZ>

15. Bonus: Poseidon and Apollo built the walls of this city on the orders of Laomedon. For ten points each:

[10] Identify this city that was ruled by Laomedon's son Priam and home to heroes like Aeneas and Hector. The *Iliad* chronicles the war against this city, which was sacked after Greek soldiers entered it in a wooden horse.

ANSWER: Troy [or Ilium; accept Trojan war]

[10] An eagle carried this beautiful Trojan prince to Olympus, where he served as cupbearer to the gods. Hermes compensated for his abduction by giving a pair of divine horses to his father Tros.

ANSWER: Ganymedes

[10] Ganymede replaced this goddess of youth as cupbearer on Olympus, who married Heracles after his deification.

ANSWER: Hebe

<BZ>

16. Bonus: This work's third section describes Jim's affair with Lena Lingard in college. For ten points each:

[10] Name this novel in which Jim Burden develops strong feelings for the title member of the Shimerda family, who later marries Cuzak. It is set in Black Hawk, Nebraska.

ANSWER: My Antonia

[10] This American author wrote My Antonia, O Pioneers!, and Death Comes for the Archbishop.

ANSWER: Willa Sibert Cather

[10] This bishop is the protagonist of *Death Comes for the Archbishop* and spends his life expanding the Roman Catholic Church in New Mexico with his friend Joseph Vaillant.

ANSWER: Jean Marie Latour

<KT>

17. Bonus: It must travel as a mechanical wave through a medium, and thus is absent in outer space. For ten points each:

[10] Identify this phenomenon that is studied in acoustics and commonly measured in decibels.

ANSWER: sound

[10] A sound wave is this type of wave in which the direction of vibration is parallel to the direction motion. They can be contrasted with transverse waves.

ANSWER: **longitudinal** waves [accept **compression**al waves]

[10] These regions of reduced density follow regions of compression in a longitudinal wave.

ANSWER: rarefactions

<EC>

18. Bonus: Although his performance of "Isn't She Lovely" for *The X Factor* auditions ended in failure, he would later join and name the group he is best known for. For ten points each:

[10] Identify this English singer who had a tumultuous relationship with Taylor Swift, but still has outrageously gorgeous curls.

ANSWER: Harry Edward Styles

[10] Harry Styles is the youngest member of the band One Direction, which was featured in this 2013 summer film, produced by Morgan Spurlock, that documented their daily lives and path to success.

ANSWER: One Direction: <u>This is Us</u> [prompt on "1D3D"]

[10] Harry Styles is also quite popular on this social media app owned by Twitter that allows users to post short video clips up to 6 seconds long. Cat videos are also very popular on this app.

ANSWER: Vine

<EC>

19. Bonus: One of its main characters commits suicide after killing Allie Cone. For ten points each:

[10] Name this work in which two Indian-Muslim actors are magically saved from a plane explosion, causing Farishta to change his personality to that of archangel Gibreel, and Chamcha to the Devil's.

ANSWER: The Satanic Verses

[10] This Kashmiri Indian author received a fatwa from Ayatollah Khomeini for writing *The Satanic Verses*. He also wrote *Midnight's Children*.

ANSWER: Sir Ahmed Salman Rushdie

[10] This narrator of *Midnight's Children* was born at the exact time India became an independent nation, giving him telepathic powers. His nemesis, Shiva "of the knees", is also endowed with such powers.

ANSWER: Saleem Sinai [accept either underlined portion]

<KT>

20. Bonus: He discussed self-similarity and "roughness" in his work, How Long is the Coast of Britain?. For ten points each:

[10] Name this mathematician whose namesake set is related to the Julia set and is the set of all possible values c in the complex plane such that "z squared plus c" is bounded.

ANSWER: Benoit B. Mandelbrot

[10] Mandelbrot's work primarily concerned these self-similar patterns, examples of which include the Sierpinski triangle and Koch snowflake.

ANSWER: fractals

[10] This property associated with metric spaces has a non-integer value for fractals. This property for the west coast of Great Britain is 1.25, while for spheres it is 3.

ANSWER: <u>dimension</u> [accept <u>Hausdorff</u>-Besicovitch <u>dimension</u>]

<EC>

- 21. Bonus: One character in this work cooks an abortifacient for the title character's dog. For ten points each:
- [10] Name this play written by Auguste Strindberg in which the valet Jean decapitates a little bird after engaging in a scandalous relationship with the title character, who later decides to commit suicide with a razor.

ANSWER: Miss Julie

[10] In *Miss Julie*, the protagonist previously holds a relationship with this type of animal named Diana, who later becomes untrustworthy. In *The Call of the Wild*, Buck is a creature of this type.

ANSWER: **dog**s [prompt on any specific type of dog]

[10] In this novel by Strindberg, the protagonist Arvid Falk converses with the painter Sellen and the sculptor Olle Montanus about Stockholm society in the title cafe.

ANSWER: The Red Room

<KT>

22. Bonus: The American filibuster William Walker became president of this country in 1856 but was ousted a year later. For ten points each:

[10] Identify this country now ruled by Daniel Ortega from Managua.

ANSWER: Republic of Nicaragua

[10] Daniel Ortega first came to power in the wake of the Nicaraguan Revolution as the leader of this party, which was opposed by the Contras.

ANSWER: <u>Sandinista</u>s [<u>Sandinista</u> National Liberation Front; or Frente <u>Sandinista</u> de Liberación Nacional; or <u>FSLN</u>] [10] This family held control over Nicaragua for several decades of the 20th century before being overthrown in the Nicaraguan Revolution. Of the three members of this family who became president, two were named Anastasio.

ANSWER: Somoza family

<JD>