

Bulldog High School Academic Tournament 2014 (XXIII): Tonight I Can Write The Hardest Lines
Written by Yale Student Academic Competitions
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Packet 10 Tossups

1. The Navajo hero twins used these objects to guide the direction of lightning which turned monsters to stone. Dronacharya was a master of this object, and trained others to use them with the aid of a reflecting pool and a fish. Gandiva is one of these objects owned by Arjuna. One of these was stuck on the isle of Lemnos for nine years with a man suffering from snakebite; that example of these weapons, which was prophesied to help end the Trojan War, was given to Philoctetes by Heracles. For 10 points, name this weapon used by Paris to target Achilles' heel, and to aim at an apple by William Tell.

ANSWER: bows and arrows [do NOT accept or prompt on "arrows" alone] <MJ>

2. The Chandler wobble is a nutation affecting the location of these places that are on Earth, and contributes to their "wandering". These locations are the antipodes nearest to one another. The prevailing winds surrounding these locations are weak easterlies, and the most powerful jet streams circulate around and are named for these locations. Due to CFCs, the atmosphere over one of these locations usually has less than 100 Dobson units of ozone each September. These places are the only locations where lines of longitude intersect. For 10 points, name these locations at 90 degrees latitude that are on opposite ends of the Earth's axis of rotation.

ANSWER: the North and South poles of the Earth [accept North and South geographic poles; accept North and South terrestrial poles; accept North Pole; accept South Pole; do NOT accept any answer that mentions "magnetic"; do NOT accept "the people of Poland"] <AS>

3. This author wrote about a painter who kills himself after following a prostitute back to her brothel, taking opium, asking her to marry him, and getting rejected. Another of his protagonists is distracted by the rustle of a woman's dress after having difficulty addressing the title well-dressed object in Kazan Cathedral. A third protagonist created by this author dies after being scolded for calling secretaries unreliable. In that story by this author, Petrovich creates the title garment for Akaky Akakievich. For 10 points, name this Russian author whose "Petersburg Tales" include "Nevsky Prospect" and "The Overcoat," and who wrote about a detached body part in "The Nose."

ANSWER: Nikolai Vasilievich Gogol <JR>

4. William Railton designed one of these edifices surrounded by four bronze lions, which contains an inlaid bronze depiction of the Battle of Cape Saint Vincent. Another of these, which had a figure of Saint Peter added to it in the 1300s, depicts a siege of Dacia and was built at Apollodorus of Damascus's behest. Seventeen cast-iron rhomboid modules form an *Endless* one honoring Romania's war dead, by Brancusi. These structures honor Horatio Nelson and Trajan. Composite and Tuscan are two "orders" of these structures, whose capital looks frilly in examples of their Corinthian order for them. For 10 points, name these supports which hold up the Supreme Court's roof.

ANSWER: columns [prompt on "pillars"] <MJ>

5. Right after the War of 1812, this good led to a business boom on Mackinac Island. This good was obtained by *voyageurs*, who spread castoreum on the ground to help obtain it, and met each year at meetings called "rendezvous." Fort Astoria was established by a "Pacific" company in this enterprise by John Jacob Astor. Hudson's Bay Company was founded to edge into the trade of this commodity trade, which brought the Russians into Alaska. Quebec City was founded by Frenchmen to obtain it from Native Americans in the 1600s. For 10 points, name this profitable good traded in early colonial America, which required the trapping and skinning of beavers.

ANSWER: fur trade [or pelt trade; or beaver fur trade; or fur trapping] <MJ>

6. In the upper right of one of this artist's paintings, a man in a purple robe with an orange sash stands out in a sea of figures in grey and yellow. In lieu of a signature, many of his paintings show a hand gesture where the middle and ring fingers are held together and the other two splay out. This man showed a blue-clad St. John raising his arms to heaven on the left of his *Opening of the Fifth Seal*, and showed the gold-robed saints Stephen and Augustine by the title armor-clad nobleman in *Burial of the Count of Orgaz*. For 10 points, name this Spanish Renaissance painter of elongated figures, who painted his adoptive home in *View of Toledo* after emigrating from Crete.

ANSWER: El Greco [or Domenikos Theotokopoulos] <JR>

7. This number is the dimension of the phase space of a free particle confined to a plane. For the Earth-Sun system, the Lagrange point of this number is the furthest from the Sun. One statement given this number describes the areal velocity of a certain system as constant. The spin projection quantum number has this many possible values. Systems with more than this number of gravitating bodies are non-integrable. The moment of inertia is proportional to mass times this power of linear dimension. This number of parallel lines represents a capacitor in a circuit diagram. For 10 points, which numbered law of Newton states that " F equals ma "?

ANSWER: two [or L2; or Kepler's second law; or two-body problem; or squared; or second power; or Newton's second law] <AS>

8. Name or description acceptable. A public statement primarily about this person by Tony Appleton vaulted Appleton to fame. He was the dedicatee of a 2013 Paul Mealor composition, "Sleep On." Doctor Marcus Setchell signed a document concerning this person, which was displayed on an easel. At an October ceremony attended by equestrian Zara Phillips, this person ritually joined the Anglican Church. In 2013, he and his parents thrilled crowds outside the Lindo Wing of St. Mary's Hospital. "Alexandra" was among odds-makers' favorite potential names for this royal before his July birth. For 10 points, name this eventual heir to the British throne, Kate Middleton's son.

ANSWER: the Royal Baby [or Prince George Alexander Louis of Cambridge; or the Prince of Cambridge; or George Alexander Louis Mountbatten-Windsor; prompt on "Cambridge"; prompt on "Windsor"; prompt on "Mountbatten-Windsor"] <JW>

9. This organization's leaders included Eric Drummond, who was succeeded by Joseph Avenol. It helped resolve disputes over the city of Memel and the Aaland Islands. This organization oversaw the allocation of Class A, B, and C territories known as "mandates," and the three types of "sanctions" permitted by its covenant could not prevent one of its members from occupying the Ruhr valley. Henry Cabot Lodge derailed the US's plans to join this organization by preventing the Treaty of Versailles from being ratified. For 10 points, name this failed transnational organization which was much weaker than its successor, the UN.

ANSWER: League of Nations <MJ>

10. In one of this author's poems, a speaker says to "plunge your hands in water...stare in the basin / And wonder what you've missed." Another of his poems states that "Accurate scholarship" can tell us "What huge imago made / A psychopathic god." One of his poems say to "prevent the dog from barking with a juicy bone." This author of "As I Walked Out One Evening" wrote that "We must love one another or die," and used the line "Stop all the clocks" to start his "Funeral Blues." For 10 points, name this English poet of *The Age of Anxiety*, who sat in a "dive" and reacted to the outbreak of World War II in his poem "September 1, 1939."

ANSWER: Wystan Hugh "W.H." Auden <JR>

11. A type of this practice in Hinduism involves a meal known as bhiksha prepared for a religious leader. Maimonides stated that the highest form of this action results in self-reliance for those affected by it. In Buddhism, this action is known as Dana and can involve either spiritual or physical objects. The Hebrew word for this practice in Judaism literally means "righteousness." In Islam, the *nisab* is a minimum mandated amount for this practice, which is mandated by the third pillar, Zakat. For 10 points, name this religious practice which Jews call *tzedakah*, and is often solicited in churches by collection plates.

ANSWER: almsgiving [or charity; or tithe; or giving to the poor; accept equivalents] <MW>

12. This nation's leaders included a man who received the mythical sword "Heaven's Will" from a golden turtle. This nation repeatedly sacked the city of Vijaya, the capital of the Champa. At the battle of Bach Dang River, this nation repelled a Mongol invasion. This nation looks back to the rebellion of the Trung sisters for inspiration. A monk in this country was photographed setting himself on fire a few years after it defeated French colonial forces at the battle of Dien Bien Phu. For 10 points, name this Southeast Asian nationality once ruled by the Nguyen ("ngWIN") dynasty, whose communist north captured Saigon and renamed it Ho Chi Minh City.

ANSWER: Vietnam [or Dai Viet; or Socialist Republic of Vietnam; or Cong hoa Xa hoi chu nghia Viet Nam] <JR>

13. Unlike a similar molecule, this compound typically has about thirty subunits between alpha-1-6 branches. Phosphorylated monomers are connected to AP during the synthesis of this compound. This polymer gelatinizes after water penetrates its granules, because its crystal structures decompose when amylopectin swells. This polysaccharide turns dark purple in the presence of iodine solution, and is converted to maltose by the cleavage of its alpha-1-4 glycosidic linkages by amylase. Many staple foods like potatoes are rich in this complex carbohydrate. For 10 points, identify this long-branched glucose polymer used by plants for energy storage.

ANSWER: starch [or amylum; accept amylopectin before it is read; accept amylose before "alpha-1-6 branches" is read and prompt afterwards; do not prompt on or accept "glycogen"] <GL>

14. One area of this city is home to the triangular prism-shaped Torre Insignia and a massive run-down apartment complex designed by Mario Pani. The Ajusco Mountains lie southwest of this city, and a roundabout in this city circles a golden angel on a column that celebrates its country's independence. This city's Plaza de las Tres Culturas was the site of student anti-government protests in 1968. A presidential residence, Los Pinos, is found in this city's sprawling Chapultepec Park, and its Metropolitan Cathedral and National Palace overlook the Zócalo. For 10 points, name this populous city built on the former site of Tenochtitlan in the country south of the United States.

ANSWER: Mexico City [or Ciudad de México; or México, Distrito Federal; or México, D.F.; prompt on "México"] <ATo>

15. At the end of this play, one character remembers being "so happy for a time" and praying to the Virgin while wearing her wedding dress. An insomniac in this play is sensitive about her swollen rheumatic hands and her husband's snoring. Doc Hardy's competency is challenged in this play, in which a stingy character throws away his acting potential by only playing one role for most of his career. In this play, Jamie's difficulty finding work leads to chiding from his father James, and Edmund's tuberculosis is cause for concern for Mary, who is addicted to morphine. For 10 points, name this semi-autobiographical play about the Tyrone family, by Eugene O'Neill.

ANSWER: Long Day's Journey into Night <LL>

16. Beethoven's works in this genre include one inspired by Collin's tragedy *Coriolan*. Another work in this genre opens with a string version of the Orthodox hymn *Troparion of the Holy Cross*. Beethoven wrote four of these works for the various versions of *Fidelio*. Beethoven's incidental musics for *The Ruins of Athens* and *Egmont* begin with works in this genre; these instrumental works generally introduce operas. The most famous work in this genre, a musical depiction of the Battle of Borodino, includes a quotation of the *Marseillaise* and 16 cannon shots. For 10 points, name this orchestral genre, Tchaikovsky's works in which include *The Year 1812*.

ANSWER: concert overtures <JR>

17. One theory of this phenomenon added the "existential" and "naturalistic" components of it in the second edition of *Frames of Mind*. The componential, experimental, and practical types of it appear in Sternberg's "triarchic" theory, which resists the unified "g-factor" measure of it. Howard Gardner supports the theory that this thing is "multiple". Measures of this have steadily increased in accordance with the Flynn effect. The Stanford-Binet metric assesses this phenomenon, which is often measured as 100 times a ratio between a person's real age and mental age. For 10 points, name this generalized concept of human mental ability, measured by a namesake "quotient."

ANSWER: intelligence [do not accept or prompt on "IQ"; do not accept or prompt on "intelligence quotient"] <MJ>

18. This author wrote about Mrs. Pritchard, who tries to get Powell Boyd and his friends off of Mrs. Cope's property before the boys burn it, in "A Circle in the Fire." This author ended another story with the gripe that someone should have been there to "shoot" a woman "every minute of her life," and depicted Julian's racist mother flipping out aboard a bus in "Everything that Rises Must Converge." She wrote of Red Sammy's restaurant and a road trip to Florida in a short story in which a grandmother and her family are killed by The Misfit. For 10 points, name this Catholic Southern Gothic author who died of lupus after writing "A Good Man Is Hard to Find."

ANSWER: Mary Flannery O'Connor <NW>

19. Depending on the value of this quantity, azeotropes are classified as "positive" or "negative". A device for measuring this quantity is called an ebullioscope. This quantity increases as the pressure on a substance increases. Substances are separated based on differences in this quantity in distillation. A liquid whose temperature is higher than this quantity is said to be superheated. This temperature is colligatively increased when a solute is added to a liquid, and is highest for substances with strong intermolecular forces. For 10 points, name this temperature at which a liquid becomes a gas.

ANSWER: boiling point [or vaporization point/temperature; prompt on "volatility" or word forms] <AS>

20. This man smashed an army of the Lusignan family at the Battle of Mirabeau. During this man's reign, Prince Louis landed at Kent and invited himself into the Tower of London. This man was suspected of murdering his sixteen-year-old nephew Arthur of Brittany. When Hubert Walter died during this man's reign, this man rejected Stephen Langton as the Pope's chosen successor to the Archbishopric of Canterbury, leading to instant excommunication. He was defeated at the battle of Bouvines, which led to resistance from his barons and agreeing to limit his powers at Runnymede. For 10 points, name this king who, in 1215, signed the Magna Carta.

ANSWER: King John Lackland <LL>

21. This trait is correlated with an increase in the bicondylar angle. This adaptation is enabled by the anterior positioning of the foramen magnum at the center of the skull's base, and the shift away from an abducted hallux also facilitates it. The current accepted consensus is that large cranial capacity developed after this trait, facilitated by the three major spinal curves and earliest found in genera like *Ardipithecus*. Evidence for this trait in *Australopithecus afarensis* is provided by the Laetoli Footprints, and chimps use knuckle-walking instead of this trait. Seen after babies stop crawling, this is, for 10 points, what evolutionary trait which allows humans to stand and walk upright? ANSWER: habitual **bipedalism** [or obligate **bipedalism**; or **bipedality**; or being a **biped**; or **walking** on **two legs**; accept equivalents; accept **walking upright** until mentioned; prompt on "walking" until "walk"] <JW>

Bonuses

1. In a novel titled for one of these locales, the character "You" encounters the character "She," and the character "I" is diagnosed with lung cancer. For 10 points each:

[10] Name these places. In another novel titled for one of these places, Hans Castorp encounters characters like Lodovico Settembrini in a Swiss sanatorium.

ANSWER: mountains [accept *Soul Mountain*; accept *Lingshan*; accept *The Magic Mountain*; accept *Der Zauberberg*]

[10] This country exiled Gao Xingjian, who wrote about that confusing mix of "You" and "She" and "I" in *Soul Mountain*. *Romance of the Three Kingdoms* is set here.

ANSWER: People's Republic of China [or Zhongguo]

[10] This other, more recent, Chinese Nobel laureate in literature wrote about a Shandong family making wine and fighting the Japanese in his novel *Red Sorghum*.

ANSWER: Mo Yan [accept Guan Moye; do not accept or prompt on "Yan" or "Moye"] <JR>

2. This war began with a coup against the Second Republic, which was launched by several generals in July of 1936. For 10 points each:

[10] Name this war in which Republican forces lost to Francisco Franco's Nationalists.

ANSWER: Spanish Civil War [or Guerra Civil Española; or Fourth Carlist War; or Cuarta Guerra Carlista]

[10] This leader names a brigade of Americans that fought on the Republican side of the Spanish Civil War. He stressed the "better angels of our nature" in a high-profile speech.

ANSWER: Abraham Lincoln

[10] Franco's Falange held a right-wing, "National" variant of this ideology, which champions the labor union or production unit as the fundamental unit of society.

ANSWER: National Syndicalism [or syndicalist ideology; or anarcho-syndicalism] <MW>

3. Answer some questions about DNA replication, for 10 points each.

[10] Watson and Crick proposed this model of DNA replication in which only one strand of the newly formed double helix is newly synthesized from a template.

ANSWER: semi-conservative model

[10] DNA synthesis is performed by this class of enzyme, which starts at a primer and adds nucleotides in a "5-prime to 3-prime" direction.

ANSWER: DNA polymerase

[10] DNA gyrase relieves the strain induced in DNA by these conformations, in which a DNA strand is over- or under-wound. DNA in these conformations can form toroids or plectonemes.

ANSWER: supercoils [or word forms] <DL>

4. Answer some questions related to the host country of the 2014 Winter Olympics, Russia, for 10 points each.

[10] Massive protests erupted in this country, Russia's neighbor, after its president Viktor Yanukovich opted to sign an agreement with Russia instead of the EU in December 2013. Yulia Tymoshenko is in jail in this country.

ANSWER: the Ukraine [or Ukrayina]

[10] Islamist militants were blamed for two December suicide bombings in this Russian city. Formerly called Stalingrad, it is on the western bank of Europe's longest river.

ANSWER: Hero City of Volgograd [or Gorod-Geroy Volgograd]

[10] Also in December, Vladimir Putin pardoned this Russian oligarch, once the head of the oil company Yukos, who was arrested in 2003 on fraud charges.

ANSWER: Mikhail Borisovich Khodorkovsky <ATo>

5. This pioneering analytic philosopher defined names logically as disguised "definite descriptions" in "On Denoting." For 10 points each:

[10] Name this British atheist thinker and nuclear disarmament activist. He worked with Whitehead to axiomatize math centuries after Newton in *Principia Mathematica*.

ANSWER: Bertrand **Russell**

[10] This man helped Bertrand Russell kick off analytic philosophy after writing *Principia Ethica*. His proof of the external world starts by asserting "Here is a hand."

ANSWER: George Edward "G. E." **Moore**

[10] G.E. Moore's "Refutation of Idealism" targets this nutty Irish bishop, who thought matter didn't exist at all. His slogan "to be is to be perceived" isn't actually *that* nutty, since God is always perceiving everything.

ANSWER: Bishop George **Berkeley** <MJ>

6. He allegedly stabbed his "foot-washing" Baptist father with a pair of scissors. For 10 points each:

[10] Name this reclusive character who sews a boy's torn pants and saves a girl dressed up as a ham when she is attacked on the way home from a Halloween pageant.

ANSWER: **Boo Radley** [or **Arthur Radley**; accept any underlined part]

[10] Boo Radley and Scout Finch are characters in this only novel by Harper Lee. Scout's lawyer father Atticus defends the black man Tom Robinson against the racist Ewells in this book.

ANSWER: **To Kill a Mockingbird**

[10] In *To Kill a Mockingbird*, Boo Radley leaves gifts like chewing gum, Indian pennies, and twine in this location. Other items found here include a broken pocket watch and two soap figures resembling Jem and Scout.

ANSWER: a knothole in an oak **tree** in the Radleys' front yard [accept any answer that indicates empty space within the trunk of a tree; prompt on partial answers] <HX>

7. The one-to-one neutralization of this strong base with hydrochloric acid yields salt water. For 10 points each:

[10] Name this common base. Somewhat inconveniently, it is deliquescent.

ANSWER: **sodium hydroxide** [or **lye**; or **NaOH**]

[10] If you get sodium hydroxide on you, it will start turning your skin into soap by hydrolyzing these lipids, which are esters of glycerol. High blood levels of these are strongly correlated with low levels of HDL.

ANSWER: tri**glycerides** [or tri**acylglycerols**; or tri**acylglycerides**]

[10] One way of producing esters is via the Fischer synthesis, which combines a carboxylic acid with one of these compounds. These compounds are characterized by an -OH group, and a comestible one has formula CH₃CH₂OH.

ANSWER: **alcohols** <AS>

8. Answer these questions about unconventional accounts of US history, for 10 points each.

[10] This legal document was designed to protect wealthy class interests according to Charles Beard's "economic interpretation". It contains the three-fifths compromise and a preamble starting "We the People...".

ANSWER: **Constitution** of the United States of America

[10] This advisor to JFK wrote an economic history of the Depression in *The Great Crash*, and wrote about America's postwar economy in *The Affluent Society*.

ANSWER: John Kenneth **Galbraith**

[10] This admittedly-lefty historian wrote from disadvantaged perspectives, such as the Arawak Indians and factory mill girls, in his *A People's History of the United States*.

ANSWER: Howard **Zinn** <MJ>

9. The tenor soloist in this work plays Uriel, and during one of his recitatives, the orchestra depicts a sunrise with a slow rising D major scale. For 10 points each:

[10] Name this oratorio that begins with a musical representation of chaos in C minor. Its German libretto, by Gottfried van Swieten, draws on Biblical sources as well as *Paradise Lost*.

ANSWER: *The Creation* [or *Die Schöpfung*]

[10] *The Creation*, along with *The Seasons*, is one of the late oratorios by this composer. He wrote the "Military" and "Surprise" symphonies and is often known as the father of the symphony and the string quartet.

ANSWER: Franz Joseph Haydn

[10] This F-sharp minor symphony by Haydn, his forty-fifth, takes its nickname from its ending, which has the players of the orchestra exit one by one until two violinists remain.

ANSWER: "Farewell" Symphony [or "Abschieds-Symphonie"] <KK>

10. This woman conducted her business over an ethylene vent which may have caused hallucinations. For 10 points each:

[10] Name this priestess in the ancient Greek world, whose slogans were "Know thyself" and "Nothing overmuch." This woman gave prophecies near a site where a giant serpent was slain.

ANSWER: the oracle at Delphi [or Delphic oracle; or Pythia; prompt on "oracle"]

[10] The oracle of Delphi served this handsome Greek god of poetry, music, and light.

ANSWER: Apollon [or Phoebus Apollo]

[10] This other deity, the teacher of Triptolemus, was revered with hallucinogens at the Eleusinian mysteries, where a liquid called *kykeon* made devotees see weird stuff.

ANSWER: Demeter [or Ceres] <MJ>

11. This author once wrote a play that had no characters and the stage "littered with miscellaneous rubbish," called *Breath*. For 10 points each:

[10] Name this Irish playwright of *Krapp's Last Tape* and *Endgame*.

ANSWER: Samuel Beckett

[10] In this Beckett play, Lucky is pulled on a leash, and Vladimir and Estragon sit by a tree hoping for the title character, who never comes.

ANSWER: Waiting for Godot [or En attendant Godot]

[10] Lucky is whipped by this wealthier, fatter character, who eats chicken and drinks wine in front of Vladimir and Estragon.

ANSWER: Pozzo ("POT-zoe") <LL>

12. Answer some questions about Las Vegas, for 10 points each.

[10] This luxury hotel and casino includes the Centurion, Forum, and Palace towers, and includes the Colosseum entertainment venue.

ANSWER: Caesars Palace Las Vegas Hotel and Casino

[10] In this movie, the characters Phil, Stu, and Alan stay at Caesar's Palace, try to return a tiger to Mike Tyson, and find their missing friend Doug.

ANSWER: *The Hangover* [do not accept or prompt on "*The Hangover Part II*" or "*The Hangover Part III*"]

[10] This star of *Due Date*, stand-up comic, and member of the *Comedians of Comedy* tour portrays Alan in *The Hangover*. In the movie, he wins \$82,400 after reading *The World's Greatest Blackjack Book*.

ANSWER: Zachary Knight "Zack" Galifianakis <LL>

13. Answer some questions about photographic portraits of women, for 10 points each.

[10] Created for the Resettlement Administration, this Dorothea Lange photograph shows Florence Owens Thompson frowning as two of her children bury their faces in her shoulders.

ANSWER: Migrant Mother

[10] A refugee from this country wore a tattered red scarf in a 1984 Steve McCurry photograph for *National Geographic*, which contrasts with her wide green eyes.

ANSWER: Islamic Republic of Afghanistan

[10] This girl appeared topless in a 2008 Annie Leibovitz photograph with dark, tousled hair, clutching a blanket. The image, which ran in *Vanity Fair*, was controversial because this model was only fifteen at the time.

ANSWER: Miley Ray Cyrus [or Destiny Hope Cyrus; prompt on "Cyrus"] <GL>

14. Answer the following questions about heroes of the early Roman Republic, for 10 points each.

[10] In times of need, the Republic could appoint a man to this supreme command office, replacing its two consuls for up to six months. Sulla held this emergency office for years.

ANSWER: dictator

[10] In the 450s BCE, this man left his plow to save a Roman army surrounded by the Aequi, and nobly resigned the dictatorship after 16 days to tend his farm after his duty was completed.

ANSWER: Lucius Quinctius Cincinnatus

[10] This man originally fought the Veii on behalf of Rome, but later defected to Veii, and was only dissuaded from conquering Rome by his weeping mother and wife.

ANSWER: Gaius Marcius Coriolanus [or Caius Martius Coriolanus] <FM>

15. The deviser of this sequence used it to describe rabbit breeding. For 10 points each:

[10] Name this sequence, whose n^{th} number gives the number of ways to tile a 2-by- n rectangle with 2-by-1 blocks. Each term after the second is the sum of the previous two terms, and it begins 1, 1, 2, 3, 5, 8.

ANSWER: Fibonacci sequence

[10] The ratio of consecutive Fibonacci numbers converges to this quantity, which also appears in Binet's formula for directly calculating Fibonacci numbers.

ANSWER: the golden ratio [or phi; or one plus the square root of five, all divided by two; or mathematically-equivalent answers]

[10] The terms of the Fibonacci sequence can be written in terms of the preceding terms of the sequence as " F sub n equals F sub n -minus-one plus F sub n -minus-two". That type of recursive relation is given this name.

ANSWER: recurrence relation [accept difference equation] <ATo>

16. If you're talented and Greek and in literature, you're probably blind. For 10 points each:

[10] This work features the blind bard Demodocus, who makes the protagonist weep after he sings of the liaison between Ares and Aphrodite at the court of King Alcinous.

ANSWER: *The* Odyssey [or Odusseia]

[10] This blind Greek poet used stock phrases such as "wine-dark sea" and "rosy-fingered Dawn" in *The Odyssey*.

ANSWER: Homer [or Homeros]

[10] In Sophocles' *Oedipus Rex*, this blind seer tells Oedipus that he's married to his mom, causing Oedipus to jump on the blindness bandwagon. This seer also appears in Sophocles' *Antigone* and Eliot's *The Waste Land*.

ANSWER: Tiresias <GL>

17. Answer these questions about the military personnel of Australia, for 10 points each.

[10] British Australia was originally a colony for these people. Military officers transported a thousand of them in the First Fleet.

ANSWER: **convicts** [or **criminals**; or **prisoners**]

[10] This World War I battle, a disaster planned by Winston Churchill, was fought largely by the ANZAC corps of Australians and New Zealanders. Mustafa Kemal gained fame defending Turkey here.

ANSWER: Battle of **Gallipoli** [or **Dardanelles** Campaign]

[10] After World War II, Australia intervened in this modern-day Asian country during its decades-long "Emergency," in which Communist Chin Peng led guerrilla troops against the Commonwealth.

ANSWER: **Malaysia** [or **Malaya**, as it was called then] <MJ>

18. This language's European prestige dialect, Castilian, calls the letter Z "theta" rather than "seta." For 10 points each:

[10] Name this Romance language which includes the formal second-person pronoun "Usted" and the less formal "tu". Speakers of this language express liking with the impersonal verb *gustar*.

ANSWER: **Spanish** language [or **español**; or **castellano**]

[10] This tense is used for Spanish verbs indicating past actions that happened at one moment or discrete actions that occurred and are now over. It is contrasted with the imperfect.

ANSWER: **preterite** [or **pretérito**]

[10] This word is the 3rd person plural preterit form of the verb *ir*, meaning "they went," and the 3rd person plural preterit form of "ser," meaning "they were".

ANSWER: **fueron** <MJ>

19. Accuracy is a function of both trueness and this property. For 10 points each:

[10] Name this property of a measuring system which explains the degree to which measurements are reproducible.

ANSWER: **precision**

[10] While highly precise measurements do not have large random errors, they may have large errors of this type. Unlike random errors, these errors can be compensated for if their cause is known.

ANSWER: **systematic** error [or **systematic** bias]

[10] To remove systematic error from a measuring apparatus, one should perform this procedure, in which one adjusts the apparatus to accord with a standard apparatus that is known to lack systematic errors.

ANSWER: **calibration** [or word forms] <AS>

20. Many churches are bedecked in the color purple to mark this liturgical season. For 10 points each:

[10] Name this set of weeks preceding Christmas.

ANSWER: **Advent**

[10] This figure from Isaiah's prophecy is asked to "come, o come...and ransom captive Israel" in a hymn often sung during Advent. This Hebrew name means "God is with us."

ANSWER: **Emmanuel** [or **Immanuel**]

[10] This segment of the Catholic liturgical calendar runs from Pentecost to Advent, and again from just after Epiphany until Ash Wednesday. Rites are at their most basic during this time span.

ANSWER: **Ordinary Time** <MJ>

21. Some interesting bonds of this type feature just two electrons shared among three atoms. For 10 points each:

[10] Name this type of chemical bond. They are characterized by electron pairs being shared between the participating atoms.

ANSWER: **covalent** bonds

[10] As a rule of thumb, a covalent bond is said to be nonpolar if the difference in electronegativity between the two atoms is less than this value.

ANSWER: **0.4** [accept any value numerically between **0.3** and **0.5**, inclusive]

[10] In molecular orbital theory, this property of a covalent bond is equal to half the difference between the number of bonding and antibonding electrons. Bonds for which this quantity equals 3 can be found in alkynes.

ANSWER: bond **order** <AS>