

2015 Virginia Tech Academic Competition Occasion (VTACO)

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Packet 1: Tossups

1. One of this author's protagonists visits a concentration camp with Holga and relives memories of his ex-wife Maggie, who had earlier committed suicide. In addition to writing about Quentin in *After the Fall*, this playwright wrote about Steve Deever, who takes the fall for Joe Keller's selling of defective airplane parts during World War II. This author of *All My Sons* wrote a play in which Abigail Williams accuses many townswomen of witchcraft, and another of his plays includes the brothers Happy and Biff. For 10 points, name this playwright who wrote about John Proctor in *The Crucible* and Willy Loman in *Death of a Salesman*.

ANSWER: Arthur Miller

2. Three-prime polyadenylation ("paw-lee-uh-DEEN-ul-AY-shun") occurs in this organelle, and one unit in this organelle contains scaRNAs ("SCAR-en-AZE"), which direct post-transcriptional modifications to another type of RNA found in it. Transport in and out of this site of Cajal bodies is dependent upon a GTPase known as Ran, and importins and exportins move proteins across its membrane. This organelle contains snRNPS ("snurps") that remove introns from pre-mRNA, and intermediate filaments form this organelle's namesake lamina. This organelle contains a smaller organelle responsible for creating ribosomes, the nucleolus. For 10 points, name this organelle that also contains chromatin, the control center of the cell.

ANSWER: Nucleus

3. This city was home to an 1848 uprising known as the "Five Days." An early ruler of this city, Ottone, ousted the della Torre family from it after achieving victory at the Battle of Desio. This city enacted the Golden Ambrosian Republic following the death of one of its rulers, and this city was the capital of the Cisalpine Republic. This city's last independent ruler was Ludovico il Moro, and Gian Galeazzo and Filippo Maria were members of this city's Visconti family. The Treaty of Lodi asserted that the rightful duke of this city was Francesco Sforza. For 10 points, name this northern Italian city that experienced an uneasy relationship with Florence and Venice.

ANSWER: Milano

4. One character in this novel attempts to teach beavers how to sing psalms. In addition to containing David Gamut, this novel sees some of its characters freed at the behest of the sage Tamenund. This novel sees Major Duncan Heyward profess his love for Alice, who is the half-sister of the mulatto Cora Munro. On the way to Fort Edward from Fort William Henry, the central party of this novel is ambushed by Magua, and this novel sees Uncas and Chingachgook accompany Natty Bumppo. For 10 points, name this second book of the *Leatherstocking Tales*, a work of James Fenimore Cooper.

ANSWER: *The Last of the Mohicans*

5. This was IKAROS's primary propulsion for the flyby of Venus. Its velocity was measured by Ulysses in 1994; that mission found that this phenomenon has slow and fast varieties. Those forms occur over streamers and coronal holes respectively. Jupiter's magnetic field interacts with this phenomenon, forming a "bow shock" and fluctuating in size with its intensity. Its interaction with Earth's magnetic field causes the auroras. Made up of charged particles, including protons and electrons, for 10 points, identify this phenomenon that flows outward from the sun.

ANSWER: Solar Wind [accept Solar Sail before "Ulysses"]

6. This man drew connections between climate and the quality of dialects in his *Essay on the Origin of Languages*, and he discussed Saint Preux's love for the title character in his novel *Julie, or the New Heloise*. This man claimed that the founder of society is the man who puts a picket in the ground and claims it in his *Discourse on Inequality*. This thinker included the character Sophie in his tract *Emile: or, On Education*, and this man's most famous work claims that "Man is born free, and everywhere he is in chains." For 10 points, name this French enlightenment thinker and author of *The Social Contract*.

ANSWER: Jean-Jacques Rousseau

7. The relationship between two forms of this operation is given by Green's theorem, and the order of iterated versions of this function does not matter according to Fubini's theorem. The Lebesgue method for performing this technique contrasts one named for Riemann, and one method for approximating these operations is Simpson's Rule. This operation can be performed "by parts," and indefinite versions of this operation have infinity or negative infinity in their bounds. For 10 points, name this calculus operation conventionally used for finding the area under a function.

ANSWER: Integral [accept word forms]

8. This man declared himself dictator through his "Organic Decree of Dictatorship," and this man's first major expedition was repulsed by the Llanero ("yuh-NARE-oh") cavalry of Jose Tomas Boves. After that, this man was forced into exile, where he wrote his "Letter from Jamaica." This man led the Admirable Campaign and advocated a federal system in his Cartagena Manifesto, and he won battles at Boyaca, Carabobo, and Junin. This man's forces also won at Ayacucho under his general Antonio Jose de Sucre. For 10 points, name this South American general nicknamed "The Liberator," the namesake of a country with its capital at La Paz.

ANSWER: Simon de Bolivar

9. This man designed a never-built mile-high skyscraper called The Illinois, and this man engraved the motto "For the worship of God and the service of man" in another of his designs. In addition to the designing the Unity Temple, this man used dendriform columns in the Great Workroom of the Johnson Wax Headquarters. One of this man's designs lies on the campus of the University of Chicago, and another was commissioned by the Kauffman family and uses a cantilevered design. For 10 points, name this Prairie School architect who created such works as the Robie House and Fallingwater.

ANSWER: Frank Lloyd Wright

10. Dispersive media cause this equation to become dependent upon frequency or wavelength, and this equation follows Fermat's Principle of Least Time. Conducting media have a complex value for one quantity in this equation, and metamaterials satisfy this law by having a negative value for that same quantity. This law can be used to find the largest possible angle of incidence that still results in a refracted ray, the critical angle. For 10 points, name this law relating the angles of incidence and refraction of light passing through a boundary, commonly stated as $n_1 \sin \theta_1 = n_2 \sin \theta_2$.

ANSWER: Snell's Law

11. This country's largest television network, Televisa, has been accused of selling favorable political coverage, the culmination of which prompted the "I Am 132" protests. In 2012, the cross-party "Pact for [this country]" convened to reevaluate Pemex, this country's state-owned petroleum company. Ángel Aguirre Rivero resigned as governor following the mass kidnapping of forty-three students in this country's city of Iguala. This country's 2012 presidential election saw the PRI candidate succeed Felipe Calderón. For 10 points, name this country whose president Enrique Peña Nieto is locked in conflict with its many drug cartels.

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

12. Loholt is the son of this man, and one of this man's half-sisters is Elaine. This mythical figure slayed a giant on Mont Saint Michel, and he defeated Roman emperor Lucius Tiberius in Gaul. This man was conceived after his father disguised himself as Gorlois and traveled to Tintagel to sleep with Igraine. This figure died at the battle of Camlann at the hands of his son by Morgause, the usurper Mordred. This son of Uther Pendragon received his most famous sword from the Lady of the Lake. For 10 points, name this husband of Guinevere and wielder of Excalibur who presided over the Knights of the Round Table from Camelot.

ANSWER: King Arthur

13. In this novel, John Farlow moves to South America upon the death of his wife Jean, and another character in it is affected by the death of his childhood love Annabel Leigh. In this novel, Charlotte is struck by a car upon reading her husband's diary, and another character hooks up with Charlie Holmes while staying at Camp Q. This novel sees Mrs. Pratt encourage the title character to star in the Beardsley School's production of *Enchanted Hunters*, which was written by Clare Quilty. For 10 points, name this novel detailing Humbert Humbert's pursuits of the nymphet Dolores Haze, a work by Vladimir Nabokov.

ANSWER: Lolita

14. This man lampooned the Jews in his domain with his Capitulary for the Jews, and this man once made peace with the Lombards by marrying the daughter of Desiderius, whom he promptly divorced to marry Hildegard. Scholars under this ruler included Alcuin of York and this man's biographer, Einhard. After a failed siege of Zaragoza, this man's retreating army was defeated by the Basques at the Battle of Roncevaux ("RON-suh-VO") Pass, leading to the creation of an epic named for his general Roland. For 10 points, name this son of Pepin the Short and King of the Franks who was crowned Holy Roman Emperor in 800 by Pope Leo III on Christmas day.

ANSWER: Charlemagne [or Charles the Great; or Carolus Magnus; or Karl der Grosse; prompt on "Charles"]

15. This politician struck a deal with Robert Moton to gain African-American support after gaining popularity from his plan for flood relief in Mississippi. This man served as Head of the U.S. Food Administration during World War I. This president created the Reconstruction Finance Corporation and signed the Norris-LaGuardia Act, and he chose Charles Curtis as his running mate in an election in which he ran against Al Smith. This man responded to a certain calamity by signing the Smoot-Hawley Tariff. For 10 points, name this president whose tenure saw the crash of the stock market, the namesake of many shantytowns during the Great Depression.

ANSWER: Herbert Hoover

16. The first known occurrence of this action was done by Robert Cornelius in 1839, and controversy stirred in June when a girl named Breanna performed this action at Auschwitz. A legal battle over copyright between David Slater and Wikimedia occurred after a monkey took this action. A popular song by The Chainsmokers revolves around this action, which Ellen DeGeneres famously did with a group of celebrities at the 2014 Oscars, leading to the most retweeted tweet ever. For 10 points, name this action taken by Barack Obama at Nelson Mandela's funeral, often undergone on Instagram where a user takes their own picture.

ANSWER: Taking a Selfie [accept equivalents such as taking your own picture before mentioned, prompt on answers like "taking a picture"]

17. One work by this composer depicts the struggles of the Druids of the Harz Mountains in their attempts to practice pagan rituals. In addition to *Die erste Walpurgisnacht*, this composer wrote a work inspired by his visit to Fingal's Cave on the island of Staffa, his *Hebrides Overture*. This composer, who took more than fifteen years to complete his collection *Songs Without Words*, incorporated the Roman saltarello and Neapolitan tarantella in one of his symphonies. This man's most famous work includes a notable "Wedding March." For 10 points, name this German composer of the *Italian* symphony as well as the incidental music to *A Midsummer Night's Dream*.

ANSWER: Jakob Ludwig Felix Mendelssohn Bartholdy

18. One character in this work is blamed for the murder of his friend Henry Clerval and is imprisoned in Ireland. That same character in this work enjoys the works of Cornelius Agrippa and Albertus Magnus. In this work, the Captain Robert Walton recounts the story of the main character to his sister, Margaret Seville. Another character in this work observes Felix and Agatha and reads *Paradise Lost*, and he also murders William and Elizabeth. For 10 points, name this work in which the title doctor's creation drowns himself in the Arctic Circle, an epistolary novel of Mary Shelley.

ANSWER: Frankenstein, or the Modern Prometheus

19. This artist depicted the Virgin Mary, Jesus, and St. Dominic handing out flowers in his *Feast of the Rose Garlands*. Another of his paintings depicts Shapur I of Persia carrying out the title action on Mount Ararat. In addition to creating *The Martyrdom of the Ten-Thousand*, this man executed a work in which an hourglass, empty scale, and magic square sit above a winged figure, and another of his works shows a man on horseback riding up to a figure with horns and a pig's snout. For 10 points, name this artist behind *Melencolia I* and *Knight, Death, and the Devil* who also created the woodcut *The Four Horseman of the Apocalypse*.

ANSWER: Albrecht Dürer

20. The Inga Falls Dam lies on this body of water, and its tributaries include the Sangha and Kasai rivers. This river's source is in the mountains of the East African Rift, and it creates the Livingstone and Boyoma Falls. This river creates the Malebo pool, and it crosses the equator twice. Flowing through the cities of Leopoldville and Stanleyville, this river is the longest westward-flowing river in the world. For 10 points, name this river running through Brazzaville that shares its name with two countries in Africa and is also known as the Zaire.

ANSWER: Congo River [accept Zaire River before read]

TB. One of this poet's works gives thanks to "the brothers Wright," while another addresses a "luminary clock against the sky." In addition to writing "Kitty Hawk" and "Acquainted with the Night," this poet wrote that "The land was ours before we were the land's" in a poem read at John F. Kennedy's inauguration. In addition to "The Gift Outright," another poem by this man claims that "Good fences make good neighbors." The speaker of another of this man's poems asserts that a certain decision "has made all the difference." For 10 points, name this poet of "Mending Wall" who also wrote "The Road Not Taken."

ANSWER: Robert Frost

Packet 1: Bonuses

1. Its use has controversially been proposed to stop the spread of malaria. For 10 points each:

[10] Name this “granular white powder,” a pesticide responsible for the thinning of Bald eagle egg shells, whose use was banned in the United States in 1972.

ANSWER: DichloroDiphenylTrichloroethane

[10] This author wrote against the use of DDT in the chapter “A Fable for Tomorrow” of her most famous work, *Silent Spring*, which led to the pesticide’s ban.

ANSWER: Rachel Carson

[10] This word refers to the increase in a pesticide’s concentration as one ascends the food chain. It occurs after the accumulation of a pesticide in a low trophic level.

ANSWER: Biomagnification [or Bioamplification; or Biological Magnification; prompt on just “Magnification”]

2. The death of his incompetent son Feodor I would spark the Time of Troubles. For 10 points each:

[10] Name this 16th century Russian czar who killed his similarly-named son. While he may have suffered from mental illness, his early *zemskii sobor* reforms were not as awful as his name might suggest.

ANSWER: Ivan IV Vasilyevich [or Ivan the Terrible or Ivan Vasilevich; or Ivan Grozny; or Ivan the Awesome; or Ivan the Awe-Inspiring; or Ivan the Menacing]

[10] Ivan IV also led Russia in this war against a coalition of Denmark-Norway, Sweden, Poland, and Lithuania. His forces saw a defeat at the hands of Stephen Batory at the Battle of Wenden, and he was forced to cede this conflict’s namesake territory in the truces of Jam Zapolski and Plussa.

ANSWER: Livonian War

[10] This is the term given to the secret police force instituted by Ivan IV due to suspicions from the Livonian War. They were predominantly tasked with confiscating land from the Boyars.

ANSWER: Oprichnina [or Oprichniki]

3. His nephew, Iolaus, helped him slay the Lernean Hydra, and he cleaned the Augean stables in a single day by diverting a pair of rivers. For 10 points each:

[10] Name this son of Zeus and Alcmene who was assigned twelve labors by Eurystheus for killing his wife and sons.

ANSWER: Heracles [accept Hercules]

[10] Heracles’ first labor was to slay this beast whose hide was impenetrable from attack. He killed it by strangling it and may have used its hide as his armor.

ANSWER: Nemean Lion

[10] For his tenth labor, Heracles was sent to steal the red cattle of this giant. Heracles defeated his herdsman Eurytion before killing this monster with an arrow laced with the hydra’s blood.

ANSWER: Geryon

4. By the Arrhenius definition, these substances increase the concentration of hydronium ions when dissolved in water. For 10 points each:

[10] Name these substances, defined as proton donors in Brønsted-Lowry theory, which have a pH less than seven.

ANSWER: **Acids**

[10] These solutions, which consist of a mixture of a weak acid and its conjugate base or vice versa, are resistant to changes in pH. A natural example is blood.

ANSWER: **Buffers**

[10] This word describes compounds that can act as either an acid or a base, examples of which include zinc oxide and aluminum hydroxide.

ANSWER: **Amphoteric** [accept word forms]

5. The Ouachita River joins the Tensas River to form the Black River near Jonestown in this state. For 10 points each:

[10] Name this state with capital at Baton Rouge that also contains the city of New Orleans.

ANSWER: **Louisiana**

[10] This large estuary near New Orleans is connected by Chef Menteur Pass to Lake Borgne and is also connected to the Gulf of Mexico via the Rigolets Strait.

ANSWER: Lake **Pontchartrain**

[10] This third largest city in Louisiana is the seat of Caddo Parish and lies across the Red River from Bossier City, the home of Barksdale Air Force Base.

ANSWER: **Shreveport**

6. This country's dark ages came about after it was sacked by the Ayutthaya Kingdom, and Jayavarman II declared himself a Devaraja of this country's Khmer Empire. For 10 points each:

[10] Name this country, home to the prison Tuol Sleng as well as the Killing Fields while it was led by the Khmer Rouge of Pol Pot.

ANSWER: Kingdom of **Cambodia** [or **Kampuchea**]

[10] This Hindu and later Buddhist temple built in Yasodharapura broke from Shaivism traditions when it was dedicated to Vishnu. Its five towers are meant to represent those of Mount Meru.

ANSWER: **Angkor Wat**

[10] In addition to the annexation of the Champa Kingdom, the construction of Angkor Wat was overseen by the second Khmer king of this name. The first king of this name established diplomatic relations with the Chola dynasty.

ANSWER: **Suryavarman**

7. Its "frictional" form occurs when a worker is between jobs, and its "structural" variety occurs when a market's needed abilities do not match the skills of potential workers. For 10 points each:

[10] Name this economic status in which people are actively seeking but cannot find work.

ANSWER: **Unemployment**

[10] This economic curve, whose long-term merits were criticized by Friedman, suggests that decreased levels of unemployment correlate with higher rates of inflation.

ANSWER: **Phillips** Curve

[10] This economic law's "gap form" asserts that a one-percent increase in a nation's unemployment rate will result in a two-percent decrease in its GDP.

ANSWER: **Okun's** Law

8. It implicated Congressman Henry Wilson as well as Grant's Vice President, Schuyler Colfax. For 10 points each:
[10] Name this scandal in which Oakes Ames sold stock in the namesake company to other congressmen at discounted rates during Andrew Johnson's presidency.

ANSWER: **Crédit Mobilier** of America scandal

[10] This Harding-era scandal was the subject of an investigation by Thomas J. Walsh. It involved the leasing of Navy petroleum reserves in Wyoming and California to private oil companies at low rates without fair bidding.

ANSWER: **Teapot Dome** Scandal

[10] The Teapot Dome scandal was perpetrated by this Secretary of the Interior, who was convicted of taking bribes from Edward L. Doheny.

ANSWER: Albert **Fall**

9. The speaker of this poem asks its addressee "Why preyest thou thus upon the poet's heart?" For 10 points each:

[10] Name this poem that refers to its title field of study as the "true daughter of Old Time."

ANSWER: "**Sonnet—To Science**"

[10] This poem by the author of "Sonnet—To Science" asks "is there balm in Gilead?" and depicts the title creature on the "pallid bust of Pallas just above [the speaker's] chamber door."

ANSWER: "The **Raven**"

[10] This American poet wrote "Sonnet—To Science" and "The Raven" in addition to describing a "sepulchre there by the sea" in "Annabel Lee."

ANSWER: Edgar Allan **Poe**

10. This chart displays the luminosity for various stars, with the Sun assigned a reference value of one. For 10 points each:

[10] Name this doubly eponymous diagram plots spectral class against absolute magnitude. The main sequence stars fall along a diagonal in its center, and red supergiants like Betelgeuse are in its top right corner.

ANSWER: **Hertzsprung-Russell** diagram [or **H-R** diagram]

[10] This quantity measured in Kelvins lies along the x-axis of the H-R diagram. It is used alongside stellar radius to determine a star's luminosity, and stars with higher values of this quantity appear bluer.

ANSWER: **Temperature**

[10] Found in the bottom-left corner of an H-R Diagram, these stars are remnants of red giants that lack the mass to fuse carbon and have shed their outer layer to form a planetary nebula. Since nuclear fusion no longer occurs, these stars will eventually lose all energy and go dark.

ANSWER: **White Dwarf** [prompt on "Degenerate"]

11. This poem asserts that "old age should burn and rave at close of day." For 10 points each:

[10] Name this villanelle whose speaker commands its addressee to "rage, rage against the dying of the light." It was written while its poet's father was dying.

ANSWER: "**Do not go gentle into that good night**"

[10] This Welsh poet of "And death shall have no dominion" wrote "Do not go gentle into that good night." He also wrote the play *Under Milk Wood*.

ANSWER: Dylan **Thomas**

[10] The speaker of this Thomas poem remembers when he "was young and easy under the apple boughs / About the lilting house and happy as the grass was green."

ANSWER: "**Fern Hill**"

12. The artist's wife Betsy served as the model for the central figure of this painting, and it depicts the Olson House in the distance. For 10 points each:

[10] Name this painting depicting a polio-stricken woman lying in a field looking towards a house and barn in the distance.

ANSWER: Christina's World

[10] In addition to creating many depictions of the Kuerner Farm, this American realist painted *Christina's World*.

ANSWER: Andrew Wyeth

[10] Wyeth also created 240 pictures of his neighbor, a woman with this first name. She sits naked on a stool looking away from the viewer in Wyeth's *Lovers*.

ANSWER: Helga

13. It involves drinking from the Well of Zamzam and circling the Ka'aba. For 10 points each:

[10] Name this pillar of Islam that requires every able-bodied Muslim to make a pilgrimage to Mecca at least once in their life.

ANSWER: Haji [or Haġġ]

[10] This pillar requires adherents to pray regularly, usually five times a day. Adherents must pray in the direction of a *qibla*, which itself faces Mecca.

ANSWER: Salat [or Salah; or Salawat]

[10] This is the term used for fasting in Islam. Its practice during the month of Ramadan is one of the Five Pillars.

ANSWER: Sawm [or Siyam]

14. The second section of this work, "Artifices," contains stories like "Three Visions of Judas" and "The Form of the Sword." For 10 points each:

[10] Name this short story collection whose first section contains such stories as "The Library of Babel" and "The Garden of Forking Paths."

ANSWER: Ficciones

[10] *Ficciones* is a work of Jorge Luis Borges, who hails from this country. Another member of its literary tradition is the author of *The Kiss of the Spider Woman*, Manuel Puig.

ANSWER: Argentina [or Argentine Republic; or República Argentina]

[10] This other Argentine author detailed the misadventures of Horacio Oliveira in *Hopscotch*, a novel whose final ninety-nine chapters he designated as "expendable."

ANSWER: Julio Cortázar

15. This work's composer wrote that he was "all for honoring [the title figure] at income tax time." For 10 points each:

[10] Name this work commissioned by Eugene Goossens that took its title from a Henry A. Wallace speech asserting that it was the "Century of [the title figure]."

ANSWER: Fanfare for the Common Man

[10] This American composer included the theme from his *Fanfare for the Common Man* in his Third Symphony. He also quoted the "Camptown Races" in his *Lincoln Portrait*.

ANSWER: Aaron Copland

[10] This earlier American composer wrote "Camptown Races." He is also known for such works as "Old Folks at Home" and "Oh! Susanna."

ANSWER: Stephen Foster

16. This country's namesake sonnet is sometimes named for one of its 14th century literary masters, Petrarch. For 10 points each:

[10] Name this country whose more modern literary history includes the author of *If on a winter's night a traveler*, Italo Calvino.

ANSWER: Italy [or Italia; or Italian Republic; or Repubblica italiana]

[10] This other modern literary light from Italy wrote about a fake conspiracy called "The Plan" in his *Foucault's Pendulum* and about William of Baskerville's investigation of a murder in a monastery in *The Name of the Rose*.

ANSWER: Umberto Eco

[10] The title character of this other Eco novel saves Niketas Choniates during the Fourth Crusade's sack of Constantinople and undertakes a mission to visit the mythical realm of Prester John.

ANSWER: Baudolino

17. Answer the following about people who pushed the boundary of the definition of the word "art," for 10 points each.

[10] In addition to adding a mustache to the *Mona Lisa* in his *L.H.O.O.Q.*, this artist behind *Nude Descending a Staircase No. 2* was known for readymades such as *Fountain*, which depicts an upside-down urinal.

ANSWER: Marcel Duchamp

[10] Damien Hirst's *The Physical Impossibility of Death in the Mind of Someone Living* consists of one of these animals. A John Singleton Copley painting pairs Brook Watson with one of these animals.

ANSWER: Sharks

[10] This American is perhaps best known for "combines" like *Monogram*, which consists of a stuffed goat passing through an automobile tire.

ANSWER: Robert Rauschenberg

18. Its power was established by the Second Armistice at Compiègne, but it retained only limited authority in the Wehrmacht-occupied Zone occupée. For 10 points each:

[10] Name this Nazi puppet state during World War II that was opposed by the Free French movement.

ANSWER: Vichy France

[10] This marshal served as the Chief of State of Vichy France. He had earlier achieved military success by commanding the Second Army at the Battle of Verdun.

ANSWER: Philippe Pétain

[10] In order to avoid conscription by the Vichy government into forced labor for Germany, many Frenchmen joined these pockets of rural rebels with a name meaning "thicket."

ANSWER: Maquis ("mah-KEY") [or Maquisards]

19. In 2012, Henry Okah, the former leader of the MEND, accused this nation's president of orchestrating the October 2010 Independence Day bomb attacks. For 10 points each:

[10] Name this African nation whose president, Goodluck Jonathan, rules from Abuja.

ANSWER: Federal Republic of Nigeria

[10] In 2014, Nigeria faced the kidnapping of 276 female students from Chibok by this Islamic terrorist group, whose name translates to "the deception of western education is forbidden."

ANSWER: Boko Haram [or Jama'atu Ahlis Sunna Lidda'Awati Wal-Jihad]

[10] This man succeeded Mohammed Yusuf as the leader of Boko Haram following Yusuf's death. Most doubt the Nigerian army's report that he was killed in the Battle of Kodunga.

ANSWER: Abubakar Shekau [prompt on "Darul Tawheed"]

20. Its general form includes gravitational lensing and gravitational redshift. For 10 points each:

[10] Name this theory expounded by Einstein as a revision of Newtonian dynamics. Its "special" form sets light as the universal speed limit and also includes the equation "E equals m c squared."

ANSWER: **Relativity**

[10] Along with Lorentz contraction, this is one of the primary consequences of the constancy of the speed of light outlined in special relativity. A misapplication of it results in the twin paradox.

ANSWER: **Time Dilation**

[10] Special relativity is often formulated in this space, contrasted with Euclidean space. This system is comprised of three traditional space dimensions and an additional time dimension.

ANSWER: **Minkowski** Spacetime

TB. Classes of this disease include sarcomas, lymphomas, and carcinomas. For 10 points each:

[10] Name this wide group of diseases that stem from the inability of cells to undergo apoptosis. They result in malignant tumors.

ANSWER: **Cancers**

[10] This process, coming from the Greek for "displacement," is the spread of cancer from one organ to another part of the body not directly connected to it, usually through the bloodstream or lymphatic system.

ANSWER: **Metastasis** [accept word forms]

[10] These are genes that have the potential to cause cancer by evading apoptosis. Some the most common ones result in the permanent activation of the Ras protein.

ANSWER: Proto-**oncogenes**