

# 2015 NSC - Official Scoresheet

Round	13	Room	
Bracket			
Reader			

Team									Team								
Player Names																	
Q#					Bonus	Steals	Ques. Total	Run. Score					Bonus	Steals	Ques. Total	Run. score	
1																	
2																	
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20																	
TB1																	
TB2																	
TB3																	
SD																	
Player 20s																	
Player 10s																	
Point totals																	
Final score																	
	Substitutions before Tossup 11								Substitutions before Tossup 11								
	Out:				In:				Out:				In:				
	Out:				In:				Out:				In:				

Circle winning team above. Clearly mark if game goes to OT/SD. Fill out "Point totals" row completely.  
If there are substitutions, please note tossups by each player in "20s" and "10s" rows. Below is for Tab Room use only:

RH	RS	BH	BS	Left	Right	BH	BS	RH	RS
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### PACE NSC 2015 - Round 13 - Tossups

1. The ratio of two isotopes of this element is calibrated using troilite from the Canyon Diablo Meteorite. This element's namesake cycle begins with assimilative and dissimilative reduction from organic material until it is re-incorporated into organic matter. The removal of this element from fossil fuels can be done with the Claus process. A column of superheated water is used to extract this element in the (\*) Frasch process. It is found bonded to lead in the mineral galena. An acid of this element is often naturally formed by weathering pyrite; along with nitric acid, that acid is the principal component of acid rain. For 10 points, name this element that is responsible for the smell of brimstone and whose odor is reminiscent of rotten eggs.

ANSWER: sulfur [or S] <Jose>

2. Because it was deteriorating, one of these things was replaced by its artist after Steven Cohen bought the work for \$8 million in 2004. These creatures dominate the bottom of an 1899 painting where the words "Anna - Key West" can be read. One of these things, preserved in formaldehyde, comprises Damien Hirst's *The Physical Impossibility of Death in the Mind of Someone Living*. A man standing in front of Morro Castle drives a (\*) spear down towards one of these things in a 1778 painting. These creatures can be seen in the foreground while a water spout swells ominously behind the black man in Winslow Homer's *The Gulf Stream*. For 10 points, name these sea creatures, one of which is about to eat Brook Watson in Havana harbor in a John Singleton Copley painting.

ANSWER: sharks [or tiger sharks; prompt on installation before "creatures"; prompt on first-line buzzes of animal carcasses or animal corpses] <Bentley>

3. The Tur Halakhic law code developed in this present-day country outlined divisions of law that correspond to each of the four rows of jewels on the priestly breastplate. A rabbi born in this country declared giving money out of pity to be the lowest form of charity, and articulated thirteen principles of faith. The Xueta community of crypto-Jews arose in this country, the birthplace of the author who traveled throughout the Middle East before writing his namesake (\*) Mishnah Torah. Jews living in this country developed the language Ladino, and were called "marranos" after converting to Christianity. Most Sephardic communities developed in this country. For 10 points, name this country, from where Jews were expelled in 1492 via the Alhambra Decree issued by Ferdinand and Isabella.

ANSWER: Spain [or Espana; or Kingdom of Spain; or Reino de Espana] <Gupta>

4. The speaker of Percy Shelley's "To a Lady, with a Guitar" compares himself to this character, who delivers an epilogue in which he is "echoed by the prompter" in W.H. Auden's *The Sea and the Mirror*. The actor playing this character is instructed to use a "quainte device" to make food disappear during a banquet. This character mentions a "sea-change / into something rich and strange" in a speech that begins with the line (\*) "Full fathom five thy father lies", given to convince another character of Alonso's death in a shipwreck. This character was trapped in a pine by Sycorax, and was freed by a character who rewards him for matchmaking Ferdinand and Miranda. For 10 points, name this servant of Prospero, a spirit who causes the title storm of Shakespeare's *The Tempest*.

ANSWER: Ariel <Carson>

5. From classical times through the 19th century, the main source of this substance in Europe was Almaden in Spain. This substance is at the bottom of cells in which the Castner-Kellner process is performed, in which it serves as a cathode. This substance was used along with saltwater in vats for the "patio process" to extract silver ores at sites in New Spain such as Potosi. A bond between it and sulfur exists in each molecule of the preservative (\*) thimerosal, and it also exists bonded to sulfur in the ore cinnabar. Qin Shi Huangdi allegedly died by taking pills of this substance to extend his lifespan. For 10 points, name this metal, the only one which is liquid at room temperature.

ANSWER: mercury [or Hg; or quicksilver; prompt on amalgam] <Jackson>

6. In 2000, a sanctuary for these creatures was established on the Coromandel peninsula. Eco-activist Philip Anderton faked the death of one of these creatures to inspire outrage against the pesticide 1080, which has little effect on them. A giant one of these creatures was carved in chalk on Sling Hill in England by visiting soldiers. These creatures, the smallest ratites, include a small brown-colored population which outlasted a now-extinct eagle in the Haast area. The (\*) *tokoeke* and *roni* are varieties of these birds, which are distantly related to the predatory *moa* which once walked the same islands. Cloaks made from them were described by James Cook. For 10 points, name these enormous-egged flightless birds, whose name is also used to refer to human New Zealanders.

ANSWER: kiwi birds <Jackson>

7. To protect the Iazyges, this emperor ordered the construction of a fortification system called the Devil's Dykes. One of the best examples of *spolia*, or the reusing of earlier sculptural reliefs, is this emperor's triumphal arch next to the Colosseum. For unclear reasons, this man ordered his wife Fausta to be suffocated in an overheated bath. At the battle of Chrysopolis, this ruler, the first to use the (\*) *labarum*, prevailed over his rival Licinius. This man gazed skyward and saw the phrase "In this sign, you shall conquer," inspiring him to adopt the Chi-Rho standard to victory over Maxentius at the Battle of Milvian Bridge. This man built his new capital on the site of ancient Byzantium. For 10 points, name this first Christian Roman emperor.

ANSWER: Constantine the Great [or Constantine I; or Flavius Valerius Aurelius Constantinus Augustus] <Gupta>

8. This character is deeply affected by the performance of a barbershop quartet called the Four-Eyed Bastards at his eighteenth anniversary party. He has a vision of "Adam and Eve in the golden depths" while staring at a pair of boots taken from Roland Weary, who later convinces Paul Lazzaro to kill this character. This character attends the Ilium School of Optometry and marries Valencia Merble after he is released from the mental hospital where (\*) Eliot Rosewater introduces him to the novels of Kilgore Trout, and he has a child with Montana Wildhack after being abducted by aliens from Tralfamadore. For 10 points, name this character who survives the firebombing of Dresden and becomes "unstuck in time", the protagonist of Kurt Vonnegut's *Slaughterhouse-Five*.

ANSWER: Billy Pilgrim [accept either underlined portion] <Carson>

9. Nitroso or nitron compounds "trap" this quantity by forming an adduct measured in EPR spectroscopy. This quantity is high for octahedral complexes with low splitting energy. Coupling of this quantity makes doublets and triplets with peak ratios given by Pascal's triangle. This quantity allows molecular orbitals to be antisymmetric. In NMR, a magnetic field (\*) "flips" this quantity. Hund's rule of maximum multiplicity says that atoms maximize the total amount of this quantity. A single-barbed arrow represents this vector quantity in configuration diagrams. Two electrons in the same orbital must have the opposite value for this quantity by the Pauli exclusion principle. For 10 points, name this measure of intrinsic angular momentum.

ANSWER: spin [do not accept or prompt on "angular momentum"] <Silverman>

10. One of these events unfolded after the newspaper *Bessarabetz* published a story about a girl who committed suicide in a hospital. The Black Hundreds enthusiastically participated in these events. In his book *Two Hundred Years Together*, Aleksandr Solzhenitsyn controversially asserts that these events arose spontaneously, and Nikolai Ignatyev claimed that reducing them was the aim of passing the (\*) May Laws. They happened in Kishinev in 1903 and in Odessa multiple times, and were especially common in the Pale of Settlement during the reign of Alexander III. These events were often sparked by allegations of blood libel, wherein the targets supposedly used Christian blood to bake Passover bread. For 10 points, name these organized massacres of Jews.

ANSWER: Russian pogroms [accept things like killing Jews or violence against Jews until the end] <Bentley>

11. TPHA and FTA-ABS may be supported by a form of this technique to detect *Treponema pallidum*, the causative agent of syphilis. Biological samples are stabilized by cryofixation prior to undergoing a form of this technique. DAPI staining is performed before a kind of this technique that takes advantage of immunofluorescence. Live cell imaging uses a form of this technique incorporating time-lapse photography. Antonie van (\*) Leeuwenhoek popularized this technique, as did the coiner of the word "cell," Robert Hooke. In a simple form of this technique, a drop of sample is placed on a slide then covered with a coverslip. For 10 points, name this technique that comes in fluorescent, electron, and light varieties, which magnifies biological objects too small to see.

ANSWER: microscopy [accept word forms; or electron microscopy; or EM; or fluorescent microscopy; or light microscopy; or dark-field microscopy] <Gupta>

12. A writing system for people of this ethnicity was developed by Erdeni, who was patronized by a leader who declared his "Seven Grievances to Heaven." A monarch of this ethnicity put down the Revolt of the Three Feudatories and names a massive dictionary with over 40,000 entries. A leader of this ethnicity used flags to organize his troops as part of the Eight Banner System. These people forced all males to adopt their distinctive (\*) hairstyle of a long pigtail down the back of the head, the queue. These people were united under Nurhaci. The long-reining Kangxi Emperor belonged to this ethnicity. The namesake home of these people was invaded following the Mukden Incident and was ruled Puyi, a puppet for the Japanese. For 10 points, name these people who ruled China during the Qing dynasty.

ANSWER: Manchu people [or Manzu or Manju; or Jurchens; prompt on Chinese; do not accept or prompt on "Qing people"] <Bentley>

13. In a novel by this author, notes taken by Dr. Bormenthal relate the history of a character who adopts the worldview of the housing committee leader Shvonder after encountering Dr. Preobrazhensky. In a scene from another of his novels, a crowd of women are left standing in their underwear after the clothing they were given during a magic show disappears. In another of his novels, Ivan (\*) Bezdomny is sent to an asylum, where he meets an author who is told "manuscripts don't burn" after he is handed a copy of his own novel about Yeshua Ha-Notsri and Pontius Pilate. In that novel, Azazello and the talking cat Behemoth are among the retinue of Professor Woland, who is Satan in disguise. For 10 points, name this author of *Heart of a Dog* and *The Master and Margarita*.

ANSWER: Mikhail Bulgakov [or Mikhail Afanasyevich Bulgakov] <Brownstein>

14. In the *Iliad*, these people are called *antianeirai*, (AN tee ah nay rai) and Priam tells Helen about when he helped King Mygdon defend Phrygia against an attack by them. Heracles reaches a cordial, but short-lived agreement with a leader of these people aboard a ship, because Hera spread a rumor that Heracles was trying to abduct that leader. After killing one of these people and mocking the corpse, Achilles removes the helmet and feels (\*) remorse. These people annually mate with the Gargareans so their race doesn't die out, and they improve their archery by cutting off their right breast. A queen whose girdle is taken by Heracles, named Hippolyta, rules these people. For 10 points, name these warrior women in Greek mythology.

ANSWER: Amazons [prompt on women] <Gupta>

15. This force names the cross-terms composed of the product of two different generalized coordinates in the Euler-Lagrange equations. This force stabilizes the fourth and fifth Lagrange points. It opposes pressure in geostrophic flow. Because this force always acts perpendicular to the velocity of the bob at the end of (\*) Foucault's pendulum, it does no work on the bob. The magnitude of this force is given as two times the cross product of an angular velocity and a linear velocity. The namesake coefficient of this force is proportional to the sine of the latitude and the rotation rate of Earth. It explains why a ball thrown from a carousel appears to deflect, depending on the hemisphere. For 10 points, name this fictitious force seen in rotating reference frames.  
ANSWER: Coriolis force [or the Coriolis effect] <Silverman>

16. The economic independence of women was one of several links to this group's more ancient past elucidated by the sociologist Melville Herskovits. John Howard Griffin went undercover to study these people. The phrase "blaming the victim" was coined in a response to a Daniel Patrick Moynihan report on these people that critiqued the "tangled pathology" of their family structures. A book on these people concludes with a section on (\*) "sorrow songs"; that same book explores the "double-consciousness" these people face behind "the veil" when the "doors of Opportunity [are] closed roughly in his face". For 10 points, name this group of people, whose "Souls" are discussed in a book by W. E. B. Du Bois and were often subject to Jim Crow Laws after the Civil War.

ANSWER: African Americans [or black people; or Negroes; or black folk; accept Africans or Haitians until "John"; prompt on Americans] <Bentley>

17. A version of this architectural style that developed in America includes the Buffalo State Asylum and Boston's Trinity Church and is named for H.H. Richardson. Fontenay Abbey and other early Cistercian buildings were created in this style, as were Pisa Cathedral and its leaning tower. The Byzantine style in Western Europe began transforming into this one with buildings like Charlemagne's Palatine Chapel in (\*) Aachen. In England, this style is called "Norman" and includes the since-replaced original Westminster Abbey and the still-extant Tower of London. The successor to this style replaced its round arches with pointed ones. For 10 points, name this European architectural style that preceded the Gothic.

ANSWER: Romanesque [accept Norman until it is read] <Mehigan>

18. A literary character from this country poisons her devoutly-Catholic father Eugene after falling in love with the young priest Father Amadi. That character's creator is an author born in this country whose most recent novel is about two lovers, one of whom writes a blog partly titled "Raceteenth". Another literary work set in this country opens with a scene in which the protagonist tells the story of the "Not-I Bird" to the (\*) Praise-Singer. The author of *Purple Hibiscus* and *Americanah* is from this country, which is the setting of a play in which Simon Pilkings attempts to prevent the ritual suicide of Elesin Oba. For 10 points, name this African nation, the birthplace of Chimamanda Ngozi Adichie and the playwright of *Death and the King's Horseman*, Wole Soyinka.

ANSWER: Nigeria [or Federal Republic of Nigeria or British Nigeria] <Bentley>

19. John Clarke helped secure the royal charter for the colony based in this modern-day state. Six of its colonial governors, including "Judge" William Coddington, are buried in its Coddington Cemetery. John Sullivan failed to expel the British from this state in the first combined Franco-American operation in the Revolutionary War. Canochet's Fort was in this modern-day state where Josiah Winslow won the Great Swamp Fight. A less famous John Brown sunk the (\*) *Gaspee* off of this state's coast. In this last of the original thirteen colonies to ratify the Constitution, a haven for Antinomians was established by Anne Hutchinson. For 10 points, name this state where Roger Williams set up a refuge for religious dissidents in Providence.

ANSWER: Rhode Island and Providence Plantations <Bentley>

20. The composer of this piece re-used the music from his earlier duet "No, di voi non vo fidarmi" in one movement. In Mozart's re-orchestration of this piece, a difficult clarino trumpet solo is transferred to the horn. The first choral movement of this piece closes with a plagal cadence on the words "hath spoken it." This piece includes an instrumental *Pifa* interlude which is sometimes referred to as a (\*) "Pastoral Symphony." The first aria in this piece promises to make "The crooked straight and the rough pieces plane" and is titled "Every Valley Shall Be Exalted." Part 3 of this work opens with the soprano aria "I know that my redeemer liveth." For 10 points, name this oratorio by George Frideric Handel which includes the "Hallelujah Chorus."  
ANSWER: Messiah <Rosenberg>

21. This ruler fired his foreign minister, the Duke of Choiseul, for supporting Spain during the Falklands Crisis. This man supported his father-in-law Stanislaw I during the War of the Polish Succession. His forces temporarily captured the Austrian Netherlands after Maurice de Saxe won the Battle of Fontenoy, but he gave up these gains in the Treaty of Aix-la-Chapelle. This king aligned his country with Austria during the (\*) Diplomatic Revolution, which occurred a mere decade after his country had allied with Prussia in the War of the Austrian Succession. Madame Pompadour was a long-time mistress of this king. For 10 points, name this French king who lost his North American territories after the French and Indian War, and was the grandson of the previous "Sun" king.

ANSWER: Louis XV [prompt on Louis] <Wang>

22. One of this author's narrators stumbles upon a broken device labeled with "hot" and "cold" switches and surmises that it contained strong magic. That character from a short story by this author is told to avoid the "Dead Places" where ruined monuments to the god "ASHING" lie. Jack Ellyat and Clay Wingate join different armies in an (\*) epic poem by this man that depicts its title character's trial in Charles Town. One of this author's title characters is told "some will call you Ichabod" in a story that includes Judge Hathorne among a set of jurors. In that story, Jabez Stone is successfully acquitted despite breaking his contract with Mr. Scratch. For 10 points, name this author of "By the Waters of Babylon", *John Brown's Body*, and "The Devil and Daniel Webster".

ANSWER: Stephen Vincent Benet <Cheng>

23. In an experiment at this location, the first-ever SCRAM mechanism, a vat of cadmium solution, was introduced. The actual goal of that experiment at this location was to determine the reproduction factor in the four-factor formula. A giant square balloon surrounded the apparatus of that experiment at this location in order to remove all air. That experiment at this location was overseen by Arthur Compton, head of the Metallurgical Laboratory. That experiment at this location used 57 layers of a (\*) graphite cubic lattice for deceleration and was conducted underneath a football field, on an abandoned squash court. For 10 points, name this university where a 1942 experiment led by Enrico Fermi produced the world's first self-sustained nuclear reaction.

ANSWER: University of Chicago [prompt on UC; prompt on Illinois until "university" is read] <Silverman>

24. This man supposedly made a bet with the Earl of Lonsdale that Harry Bensley couldn't travel around the world pushing a baby carriage and wearing a knight's helmet. This man gave Edward S. Curtis 60,000 dollars to finance *The North American Indian* ethno-photography project. Edward Clark Potter sculpted mane-less lions for this man's library on Madison Avenue and East 36th Street, New York. This co-owner of the White Star Line (\*) merged the Thomas-Houston Company with one founded by Thomas Edison to form General Electric. This American-born man lent the US 65 million dollars to halt the Panic of 1893, and established the first billion dollar company via a merger that created US Steel. For 10 points, name this financier whose namesake bank merged with Chase Manhattan in 2000.

ANSWER: John Pierpont Morgan <Bentley>



### PACE NSC 2015 - Round 13 - Bonuses

1. A function has this property when " $f(a) = f(b)$ " if and only if  $a = b$ . For 10 points each:

[10] Name this property of functions, which means that they do not output to the same value more than once.

ANSWER: injectivity [accept word forms, accept one-to-one, but do not accept "one to one correspondence"]

[10] This is the set of values that a function outputs, in contrast to its inputs, or the domain.

ANSWER: range [or image]

[10] Given the graph of a function, one can tell if it is injective using a test named for one of these things. The arctangent function has two different asymptotes of this type.

ANSWER: horizontal lines/asymptotes <Jose>

2. This novel includes the diary of Silas Flannery, an author who spies on women at a hotel and meets a UFO cult. For 10 points each:

[10] Name this novel in which the protagonist is continually frustrated by encountering incomplete sections of novels like *Outside the town of Malbork*.

ANSWER: *If on a Winter's Night a Traveler* [or *Se una notte d'inverno un viaggiatore*]

[10] The odd-numbered chapters of Italo Calvino's *If on a Winter's Night a Traveler* use this unusual narrative mode in which they describe the actions of you, the Reader.

ANSWER: second-person narrative

[10] Albert Camus made use of the second person in this 1956 novel, which consists of a series of dramatic monologues delivered to you, a stranger, by the "judge-penitent" Jean-Baptiste Clemence.

ANSWER: *The Fall* [or *La Chute*] <Brownstein>

3. In 1988, the government of Hong Kong passed a resolution distinguishing these people from political refugees, making it easier to detain new ones upon arrival. For 10 points each:

[10] Identify this term for refugees unable to secure an American airlift, who began a mass exodus in 1975. Some of these people were preyed upon by pirates, and others ended up on Galang Island in Indonesia.

ANSWER: Vietnamese boat people [prompt on descriptive answers such as Vietnamese refugees]

[10] The boat people took to the sea after the fall of this capital of South Vietnam. An iconic photograph shows people climbing a ladder to get into one of the last American helicopters evacuating this city.

ANSWER: Saigon [or Ho Chi Minh City]

[10] Some boat people ended up in a refugee camp on Bidong Island in this country, where lots of Communists took up arms during the *Darurat*, also called its namesake Emergency.

ANSWER: Federation of Malaysia <Bentley>

4. Federal organizations such as the Drug Enforcement Agency may issue the "administrative" type of these documents, which do not require approval of a judge. For 10 points each:

[10] Name these court orders issued to compel production of evidence or witness testimonial. Appearance by recipients is literally required "under penalty" for these writs, unlike most summonses.

ANSWER: subpoena

[10] Opposing counsel performs this type of interrogation of a witness during a trial. Following this action, the lawyer who called the witness may be given a redirect.

ANSWER: cross-examination [prompt on examination]

[10] This term is used to describe a witness whose testimony is of consequence to the trial. After 9/11, the government used a statute for this type of witnesses in order to detain suspects and secure their testimony.

ANSWER: material <Smart>



5. Kurt Schwitters called this type of artwork "Merz." For 10 points each:

[10] Identify this technique whose name comes from the French word for "pasting", and often uses newspaper clippings glued together. Hannah Hoch's *Cut with the Kitchen Knife* is an example of the photomontage type.

ANSWER: collage

[10] Richard Hamilton's seminal pop art collage *Just what is it that makes today's homes so different, so appealing?* contains a man holding an oversized Tootsie pop and a woman wearing one of these things on her head.

ANSWER: lampshade

[10] This French artist used a variant of collage called decoupage to create cut-outs such as *The Swimming Pool* and a second version of his *Blue Nude*. He also painted *The Joy of Life*.

ANSWER: Henri Matisse [or Henri-Émile-Benoît Matisse] <Bentley>

6. Bill Barber played this instrument on Miles Davis' album *Birth of the Cool*. For 10 points each:

[10] Identify this non-standard jazz instrument which was better suited for outdoor playing in Dixieland jazz bands than a double bass.

ANSWER: tuba

[10] A variety of tuba designed for marching is named for this "March King" of "Semper Fidelis" and "The Stars and Stripes Forever".

ANSWER: John Philip Sousa

[10] Dixieland-style jazz bands also employed someone to play this instrument. Earl Scruggs came up with a namesake plucking style for playing this instrument in bluegrass bands.

ANSWER: banjo <Bentley>

7. These animals were ineffectually banned from Paris after one of them startled the horse of the first-born son of King Louis VI, causing that son to be thrown to his death. For 10 points each:

[10] Identify these animals, whose most common domestic variety is the Yorkshire. Archaeologists of ancient Israel look for the bones of these animals to determine if Jews had settled on a site or not, as Jews viewed these animals as unclean.

ANSWER: pigs [or boars or wild pigs]

[10] This country fought the so-called Pig War with the Austro-Hungarian Empire in the early 20th century after the empire banned the import of pigs from this country. A prince of this country was defeated in a battle on the Field of Blackbirds.

ANSWER: Kingdom of Serbia

[10] Razorbacks, a form of wild pig, were brought to present-day United States by this explorer who served as captain of the horse in Francisco Pizarro's conquest of Peru. This conquistador died while cavorting around Louisiana in search of gold in 1542.

ANSWER: Hernando De Soto [or Fernando De Soto] <Bentley>

8. The child is dubbed the "best philosopher" in this poem, whose author later added seven stanzas to answer its questions "Whither is fled the visionary gleam? Where is it now, the glory and the dream?" For 10 points each:

[10] Name this poem that opens with the speaker's observation that "There was a time when meadow, grove, and stream, / the earth, and every common sight, / to me did seem / apparell'd in celestial light."

ANSWER: "Ode: Intimations of Immortality from Recollections of Early Childhood" [or "Great Ode"]

[10] "This English Romantic poet of "Tintern Abbey" collaborated with Samuel Taylor Coleridge on the collection *Lyrical Ballads* and wrote "Ode: Intimations of Immortality."

ANSWER: William Wordsworth

[10] As with many of his poems, Wordsworth's Great Ode was inspired by a conversation with this woman, who is addressed directly in the last stanza of "Tintern Abbey." A descriptive answer is acceptable.

ANSWER: Wordsworth's sister [or Dorothy Wordsworth; or Dorothy Mae Ann Wordsworth] <Gupta>

9. This text's introduction states matter-of-factly that "life is but a motion of limbs," implying that parts of the State can be understood to be like springs or wheels using a completely materialist worldview. For 10 points each:  
[10] Name this book of early modern political philosophy whose four major sections are "Of Man," "Of the Commonwealth," "Of a Christian Commonwealth," and "Of the Kingdom of Darkness."

ANSWER: Leviathan: Or, the Matter, Forme, and Power of a Commonwealth Ecclesiasticall and Civil

[10] This man, who translated Thucydides' ancient Greek histories into English at the tender age of 90, put forward his absolutist political philosophy in *Leviathan*.

ANSWER: Thomas Hobbes of Malmesbury

[10] The intro to *Leviathan* also coined this 2-word phrase, a metaphor likening the state or commonwealth to an individual human, organs and all.

ANSWER: civil body politic [prompt on body] <Jackson>

10. This phenomenon occurs because the index of refraction depends on the wavelength. For 10 points each:

[10] Name this phenomenon in which white light passing through a prism can be separated into the visible spectrum.

ANSWER: dispersion

[10] Specifically, dispersion may occur because the phase and group velocities are not equal, and therefore, the light appears to propagate in these small linear combinations of individual travelling waves. Their overall shape is called an envelope.

ANSWER: wave packets

[10] The variation of index of refraction with wavelength also leads to this undesirable effect, in which there are fringes of color around the image focused by a lens.

ANSWER: chromatic aberration [prompt on partial answers] <Silverman>

11. It wasn't in England, but participants in the time period of this name could take advantage of Free Stores run by a group known as the Diggers. For 10 points each:

[10] Identify this name given to a period of 1967 that kicked off with the Monterey Pop Festival.

ANSWER: Summer of Love

[10] The Summer of Love took place in and around this American city's Haight-Ashbury neighborhood. In the 70s, Harvey Milk became the first openly gay man elected to a public office in this city.

ANSWER: San Francisco

[10] At the earlier Human Be-In in San Francisco, this man coined the phrase, "turn on, tune in, drop out". This man had previously been fired from Harvard along with Richard Alpert for his experiments with LSD and other psychedelic drugs.

ANSWER: Timothy Leary <Bentley>

12. Answer the following about the key of D major, for 10 points each.

[10] Johann Pachelbel used the key of D major to write what type of piece, in which the same melody is introduced in multiple voices at different times to produce an overlapping effect?

ANSWER: canons

[10] Because it follows the key of G major on the circle of fifths, the key of D major has two of these accidentals that call for a note to be raised by a half-step.

ANSWER: sharps

[10] A D major triad can be changed into a D dominant seventh chord by adding this note whose minor key has three flats.

ANSWER: C [or C-natural] <Kim>

13. Rete ridges are extensions of this region, which lacks blood vessels and is derived from the ectoderm, like enamel and the nervous system. For 10 points each:

[10] Name this region affected by superficial, or first-degree burns. It is composed of keratinocytes and pigment-producing melanocytes.

ANSWER: **epidermis** [or **cornified layer**; or **stratum corneum**; or **clear layer**; or **translucent layer**; or **stratum lucidum**; or **granular layer**; or **stratum granulosum**; or **spinous layer**; or **stratum spinosum**; or **basal layer**; or **germinal layer**; or **stratum basale**; or **stratum germinativum**; or **Malphigian layer**; or **stratum malphigi**; prompt on **skin**]

[10] The epidermis is the outer layer of this largest mammalian organ, which provides insulation and protection from the environment.

ANSWER: **skin**

[10] The fourth one of these transforming growth factor beta proteins is needed to differentiate the epidermis from the ectoderm, and its function in dorso-ventral patterning is inhibited by noggin and chordin. This protein family is named for its role in forming cartilage and the namesake tissue.

ANSWER: **bone morphogenetic proteins** [or **BMPs**; or **BMP4**] <Gupta>

14. Parts of these creatures are often sent to the Middle East, where they are used to make expensive *saijani* hilts for *jambiya* daggers. For 10 points each:

[10] Identify these creatures which have become victims of record-high amounts of poaching in South Africa over the past five years. Poachers often sell the horns of these large pachyderms to ivory traders.

ANSWER: **rhinoceros** [or black **rhinoceros**; or white **rhinoceros**; or **Diceros bicornis**; or **Ceratotherium simum**]

[10] In May 2015, this UN agency issued the Indian government a warning about the impending extinction of the Great One-Horned Rhino due to poaching in Manas Wildlife Sanctuary. This agency maintains a list of World Heritage Sites.

ANSWER: **UNESCO** [or **United Nations Educational, Scientific and Cultural Organization**]

[10] Also in May 2015, police seized 1300 kilograms of ivory and rhino horns, some still bearing fresh blood, from the house of a Chinese national living in this country. This country is currently led by Filipe Nyusi.

ANSWER: Republic of **Mozambique** [or República de **Moçambique**] <Carson>

15. During his period of imprisonment this party derisively nicknamed his founder "the Absent One," or *el Ausente*. For 10 points each:

[10] Name this spectrum of movements and political parties founded by Jose Antonio Primo de Rivera, and named for an ancient military formation.

ANSWER: **Falange** [or **Falange** Espanola (**es-PAN-yola**) de la JONS; or **FE de las JONS**; accept word forms, such as **Falangists**]

[10] Francisco Franco rallied Falangist support in this European war that took place from 1936 to 1939.

ANSWER: **Spanish Civil** War [or Guerra **civil espanola**]

[10] The Falangists had a very poor showing at the 1936 election, which was won by the Popular Front helmed by this Prime Minister, who resigned his office in 1939 when he was about to lose the war, and died in exile in France.

ANSWER: Manuel **Azaña** (**ah-ZAN-ya**) [or Manuel **Azaña** Diaz] <Gupta>

16. The author's readings in Homer, as well as his recent translation of Esaias Tegnér's poem "The Children of the Lord's Supper", inspired him to write this poem in dactylic hexameter. For 10 points each:

[10] Name this 1847 epic poem about an Acadian girl who travels across America in the wake of the Great Upheaval in search of her lost love Gabriel Lajeunesse.

ANSWER: **Evangeline**, *A Tale of Acadie*

[10] *Evangeline* was written by this American poet, who added his poem "The Midnight Ride of Paul Revere" to his collection *Tales of a Wayside Inn*. He also wrote *The Song of Hiawatha*.

ANSWER: Henry Wadsworth **Longfellow**

[10] Longfellow urges the reader to "Be not like dumb, driven cattle" and to "Be a hero in the strife!" in this 1838 poem, which also notes that the title concept is "real!" and "earnest!", and that "the grave is not its goal".

ANSWER: "A **Psalm of Life**" <Carson>

17. In this book, a great burning star named Wormwood falls on a third of the world's rivers and springs, turning them bitter and deadly. For 10 points each:

[10] Name this book, the final one in the New Testament. It has many apocalyptic images and is traditionally believed to have been written by the apostle John.

ANSWER: Book of the **Revelation** of Saint John the Divine [prompt on **Apocalypse** of John; do not accept or prompt on "Revelations"]

[10] In the Book of Revelation, this is the number of plagues accompanying the pouring of bowls, the number of spirits of God, the number of churches of Asia, and the number of trumpets sounded after breaking this number of seals.

ANSWER: **seven**

[10] The seven seals protect one of these objects. John gains the ability to prophesy after eating a smaller one of these objects that tastes sweet in his mouth, but feels bitter in his stomach.

ANSWER: a **scroll** <Cheyne>

18. Near the end of this novel, the voice of El Tilcuete relays that Father Renteria went off to fight in the Cristero War. For 10 points each:

[10] Name this seminal Mexican novel in which Juan Preciado travels to the town of Comala and learns the story of the title town boss. This novel by Juan Rulfo was a formative influence on Gabriel Garcia Marquez.

ANSWER: **Pedro Paramo**

[10] Unusually, *every* narrator in Juan Rulfo's *Pedro Paramo* has this property, as does every resident of Comala within the novel. Ivan Ilych attains this status in a Leo Tolstoy short story.

ANSWER: they're all **dead** [or **deceased**; or is a **ghost**]

[10] Pedro Paramo's killer, Abundio, has this relation to Pedro. In *King Lear*, Edmund has this relationship to the Duke of Gloucester.

ANSWER: **bastard** son [or **illegitimate** son; or **natural son**; prompt on **son**; prompt on **father-son**; prompt on **child**] <Jackson>

19. As a baby, this hero is drowned in a basket, then burnt on a pyre, then finally hung from a tree, but each time he magically survives. For 10 points each:

[10] Name this hero who sleeps with a beggar girl that turns out to be his sister, massacres the tribe of Untamo, and then commits suicide by falling upon his own sword.

ANSWER: **Kullervo**

[10] As a youth, Kullervo is brought up by Ilmarinen, who has this profession shared by the Greek god Hephaestus and the Roman god Vulcan.

ANSWER: **smiths** [or **blacksmiths**; or **forge** gods; or obvious equivalents]

[10] Ilmarinen partners up with Lemminkainen and this other Finnish hero, the protagonist of the *Kalevala*, to recover the magical Sampo from Louhi, queen of Pohjola.

ANSWER: **Vainamoinen** <Kim>

20. Dextrose, a form of glucose, gets its name because it does this. For 10 points each:

[10] Name this behavior demonstrated by compounds prefixed with the letters D and L. Polarimetry, a method of quantifying this behavior, can be used to assess the purity of compounds.

ANSWER: **optical rotation** [or **optical activity**; or **rotating** the plane of polarization of plane-polarized **light**; or **rotating light**; or obvious equivalents]

[10] The purity of these compounds can be measured using a polarimeter. These compounds must have a tetrahedral carbon with four different substituents, and mixtures of them are called racemates.

ANSWER: **enantiomers** [or **chiral** molecules; prompt on **isomers**; prompt on **stereoisomers**]

[10] Separation of enantiomers often requires the chiral form of this technique. The various forms of this process separate components based on how quickly they move through a stationary phase.

ANSWER: chiral **chromatography** <Silverman>

21. This event occurred during an argument about an earlier incident, in which a pregnant woman suffered a miscarriage after being beaten for wearing revealing clothing. For 10 points each:

[10] Name this 1581 event, accomplished with a scepter in the presence of Boris Godunov, that was depicted in an Ilya Repin painting in which its perpetrator looks horrified.

ANSWER: **Ivan the Terrible killing his son** [or **Ivan IV's murder of his son**; r **Ivan the Terrible's murder of Ivan Ivanovich**; prompt on **Ivan's murder of his son**; prompt on **Ivan killing Ivan**; prompt on the **death of Ivan Ivanovich** or anything that doesn't indicate that it's a murder]

[10] Ivan's relationship with his son began to deteriorate when the prince had asked for command of troops at Pskov, which was unsuccessfully besieged by this Polish king during his otherwise fruitful Livonian campaign.

ANSWER: Stephen **Bathory** [or Istvan **Bathory**; or Steponas **Batoras**]

[10] The Stroganov family financed Ivan's campaign to start the conquest of this vast region of Russia, which was not finished until Vitus Bering led the Great Northern Expedition to map the Arctic coast.

ANSWER: **Siberia** <Gupta>

22. While living in this place, an author wrote a long letter to his former lover, Lord Alfred Douglas, titled *De Profundis*. For 10 points each:

[10] "Name this prison in which an Irish author served part of his sentence for committing homosexual acts. That author later wrote a "Ballad of" this place that includes the line "yet each man kills the thing he loves."

ANSWER: **Reading** Gaol [Gaol is said like "jail," but accept phonetic pronunciations; or **Reading** Prison; or "The Ballad of **Reading** Gaol"]

[10] This author of "The Ballad of Reading Gaol" also wrote plays like *A Woman of No Importance* and *The Importance of Being Earnest*.

ANSWER: Oscar **Wilde** [or Oscar Fingal O'Flaherty Wills **Wilde**]

[10] In "The Ballad of Reading Gaol," "the coward" is said to "kill the thing he loves" by performing this action, as opposed to "the brave man" who does it "with a sword."

ANSWER: "the coward does it with a **kiss**" [or equivalent answers like "**kissing** them"] <Weiser>

23. The dedicated shader units of varieties of these computer parts have been used to solve physics problems. For 10 points each:

[10] Identify these computer parts whose memory may be used to store triangle meshes and texture maps; in laptops they are often integrated with the CPU.

ANSWER: **GPU** [or **graphics cards**; or **video cards**; or **Graphics Processing Unit**; or **Graphical Processing Unit**; or **VPU**; or **Visual Processing Unit**]

[10] Suites such as ocl-Hashcat Plus use GPUs to quickly crack these things, which are often salted and put through a secure hashing function. These things tend to be more secure when they're comprised of longer sets of characters.

ANSWER: **passwords**

[10] Secure hash functions are designed to minimize the number of these events where different inputs produce the same hashed output. In a regular hash table, chaining is a way to resolve these conflicts.

ANSWER: **collision**s <Bentley>