Terrapin Invitational Tournament 2013: "Make your own judgments, but we wrote this set in good faith"
Packet by Ike and Tanay Kothari

Tossups

1. In one work by this author, Mengo explains that poetry is like a baker making doughnuts; some poems turn out fluffy, others get burnt. This author caused controversy in his own day for believing that all tragedies should only be three acts long. In one of his works, which takes its title from Aesop, the Countess Diana lusts after her secretary Teodoro. Another of his works opens with the entrance of a knight from the Order of Calatrava before Laurencia, Jacinta and others murder him. That work ends with King Ferdinand and Queen Isabella appearing to pardon an entire village, who repeatedly insist that the title entity committed a crime. This author wrote *The Dog in the Manger*. For 10 points, identify this author of *Fuente Ovejuna*, a prolific playwright of the Spanish Golden Age.
ANSWER: **Lope** de Vega
[edited]

2. While in a study, the main character of this work recalls a man dissecting a dog for cosmic *vitae*. The main character of this game brutally killed a little girl after she escaped from jail using a hole that her mother made, which causes him to go insane. This game's protagonist visits a morgue to get a vaccine from a day-old body so that he can survive toxic fungi in the sewer, which is connected to a cistern. Characters in this game include Johann Weyer and Cornelius Agrippa, the latter of whom has a head that you get to take with you. The only way to increase the amount of light in this game is to make use of tinderboxes or to find more oil for your lamp. Its title phenomenon afflicts Daniel, a man in the 19th century who explores Castle Brennenburg to kill the Baron Alexander. For 10 points, identify this horror Indie game subtitled "The Dark Descent," in which you can't actualy attack, but only run and hide from monsters.
ANSWER: *Amnesia*: *The Dark Descent*
[edited]

3. One artist with this last name created a prismacolor pencil drawing called *In the Beginning* as part of *The Birth Project*. That artist co-founded a house with Miriam Schapiro and made a project that includes 999 names of women around the sides of a triangular installation. In 1968, Christo and Jean-Claude were able to wrap the Museum of Contemporary Art found in a city of this name, which is also home to Lorado Taft's *Fountain of Time*. This is the last name of the artist of *The Dinner Party*. The city of this name is home to Henry Moore's *Nuclear Energy*, Alexander Calder's *Flamingo* and Anish Kapoor's *Cloud Gate*. For 10 points, identify this Midwest city home to the Sears Tower.
ANSWER: **Chicago**
[edited]

4. This empire's most prolific leader established its capital at Roluos, where he ordered the construction of a namesake group of temples with monasteries. One leader of this empire engineered the successful capture of the Mon Empire, whose previous incarnation, the Funan Empire, had sparred unsuccessfully with Chendla. A religious complex constructed in this empire features "face towers" that show a smiling king. Those formerly gold-covered towers were described by emissary Zhou Daguan upon his visit to this empire's city of Bayon. A switch from primarily worshipping Shiva to worshipping Vishnu came about during the reign of this empire's King Suryavarman II, who constructed a temple complex called Angkor Wat. For 10 points, name this empire whose land now comprises much of Cambodia, and which gives its name to a Communist party led by Pol Pot.
ANSWER: **Khmer** Empire [do not accept "Khmer Rouge"]
[edited]

5. In astronomy, the Toomre Q parameter is inversely proportional to this property of a gas surface. The Lane–Emden equation contains a theta term raised to some index, where the theta term measures this quantity. Polytropes are solutions to that equation in which pressure is dependent upon this quantity. Structures that are named after this quantity are driven by orbital resonances that are multiples of the forcing frequency, which is a Lindblad resonance. Lin and Shu proposed that those structures of this name solve the winding problem of the arms of spiral galaxies. The escape velocity for an object equals the speed of light when this quantity is equal to mass divided by the volume of a sphere given by the corresponding Schwarzschild radius. For 10 points, identify this quantity, often designated *rho,* that is extremely high for black holes, because matter has been squeezed together so tightly.
ANSWER: **density** [accept **density** waves; prompt on "pressure" before mention; prompt on "waves"]
[edited]

6. The cello opens playing artificial harmonics at the beginning of this composer's second piano trio, after which the violin plays a similar theme beginning a minor third higher. The second movement of one work by this composer features the celesta in dialogue with a solo instrument playing the main theme in artificial harmonics, and its first movement develops out of a staccato G-F flat-C flat-B flat motif. Besides his first cello concerto, this man wrote a viola sonata whose third movement quotes the *Moonlight Sonata* in 4/4 time. His symphonies include one whose fourth movement features the G minor of the tocsin clashes with the G major of the orchestra. He paired the "Elmira" theme with his musical monogram, D-E flat-C-B, in the nocturne third movement of his *Symphony No. 10*. The fourth movement of Bartók's *Concerto for Orchestra* parodies the 22-bar "invasion theme" of another of this man's symphonies. For 10 points, name this Soviet composer whose symphonies include *The Year 1905* and *Leningrad*.
ANSWER: Dmitri Dmitriyevich **Shostakovich**

8. The *Orphic Argonautica* contains a first-person account of an encounter with this figure that had the power to reverse waves. Several scholiasts claim that this villain was a thief that stole Heracles's cattle and was subsequently struck by one of Zeus's thunderbolts. In *The Odyssey*, Odysseus describes how he was trapped by the powers of this monster from sunrise until the time of day when a judge refuses to hear any more cases and goes home. An encounter with this creature in the *Aeneid* is presaged by Anchises pointing out a prophecy given by Helenos regarding this beast. After an encounter with this figure, Aeneas's crew washes ashore on the land of the cyclops. Odysseus saves himself from her by suspending himself from a fig tree until his raft is ejected. She sucks up water three times a day off the coast of Sicily. For 10 points, name this mythological alternative to Scylla.
ANSWER: **Charybdis**
[edited]

9. This man's interest in nature and birds helped pass the Weeks–McLean Migratory Bird Act and a later Migratory Bird Treaty with Canada. This man was forced to stop publishing due to a lawsuit brought against him by Aaron Sapiro. The memoirs of this man were largely written by journalist Samuel Crowther. This man teamed up with Rosika Schwimmer to fund a party boat that toured Europe under the guise of a "peace ship," and this man published the pamphlet *The International Jew*. Earlier, this man had published many of his political views in his own newspaper, *The Dearborn Independent*. This man paid his workers a revolutionary $5 a day, and he perfected the use of the assembly line to manufacture automobiles. For 10 points, name this American anti-Semite and automaker behind cars like the Model A and Model T.
ANSWER: Henry **Ford**
[edited]

10. For a sinusoidal input voltage with a given frequency, this type of circuit will also output a sinusoidal voltage of the given frequency. For some transport phenomena, responses with this property may be modeled using the Kubo formula. In the context of engineering, the principle of superposition only holds for systems with this property.

Along with time-invariance, impulse responses completely characterize dynamic systems with this property. The Dirac delta function of the difference between r and r' ["r prime"] is equal to a differential operator with this property applied to a Green's function. This property cannot be possessed by a set of differential equations that exhibit chaotic behavior. For 10 points, identify this property of equations that do not have quadratic or higher-order terms in them, which shares its name with an adjective that describes motion constrained to one dimension.
ANSWER: **linear** [prompt on "causal" before mention]
[edited]

11. At one point in this work, Dick authors the insincere poem "To a Common Prostitute" for Hilda, the wife of a minister with whom he has having an affair. In another section, the sexual libertine Ike Hall and Mac makes a cross-country journey. This work ends with a description of a hitchhiker in a section called "Vag." In the second volume, an account of the deeds and works of Thorstein Veblen is presented in the biographical section "The Bitter Drink." Near the end of this work, labor activist Mary French return from the execution of Sacco and Vanzetti. This series of books incorporates many newsreels and "Camera Eye" sections to convey a stream of consciousness style. Consisting of *The 42nd Parallel, 1919* and *The Big Money*, for 10 points, identify this trilogy of novels by John Dos Passos.
ANSWER: _U.S.A._ Trilogy [prompt on any of the three individual novels mentioned in the tossup]

12. One painting by this artist illustrates a moment in *Paradise Lost* in which the fallen angels are compared to fairies bewitching a peasant. This artist of *The Shepherd's Dream* studied alongside Jakob Bodmer, who appears in a self-portrait in which the artist is seen talking to him. He paid homage to Burgundian legend in *Kreimhild and Gunther*. His penchant for mythology led him to paint *Odysseus in Front of Scylla and Charybdis* and a painting showing a god in a boat next to Hymir, *Thor Battering the Midgard Serpent.* Jacques-Louis David's similar work inspired him to paint *Oath of the Rutli,* while Shakespeare influenced his *Lady Macbeth Sleepwalking*, one of his many works depicting her. He also painted an ethereal horse poking its head into a tent as an incubus lies on top of a passed-out woman on a bed. For 10 points, name this Swiss artist of *The Nightmare*.
ANSWER: Heinrich **Fuseli** [or Henri **Fuseli**]

13. One thinker who wrote about the principles of this religion supposedly explained to a king the meaning of the sword of a commoner, the sword of a feudal lord and the sword of an emperor, thus causing every swordsman to commit suicide in that kingdom. That thinker illustrated the principles of this religion by engaging in a debate with a man about what makes a fish happy. One story states that the founder of this religion stayed in his mother's womb for 81 years and was born with white hair. That man wrote its main text after a gatekeeper asked him to list 5,000 sayings that summarize his teachings. The inability to fully grasp the nature of reality caused one thinker who believed in this religion to ponder whether he was himself or a butterfly. For 10 points, Zhuāngzǐ and Lǎozǐ were thinkers associated with what Chinese religion?
ANSWER: **Tao**ism [or **Dào** jiào]
[edited]

14. One holder of this position had to step down following a series of riots about a divorce referendum in his country in 1974. A longtime holder of this office signed a namesake treaty with Austrian Foreign Minister Karl Gruber that secured autonomy for a northern part of his nation. Mariano Rumor's resignation from this office led to the rule of a leader who engineered the "Historic Compromise" between his party and the Socialists. Defeat at the Battle of Caporetto prompted the selection of a new holder of this office, who pulled out of the Paris Peace Conference and resigned when he failed to secure Fiume for his country. The Red Brigades orchestrated the kidnapping and murder of Aldo Moro, who held this office. For 10 points, name this position held by Vittorio Orlando.
ANSWER: **P**rime **M**inisters of **Italy** [or **Premiers of Italy**]
[edited]

15. Among the improvements made to this procedure are the introduction of an rfa mutation that makes a lipopolysaccharide coat more permeable to a certain substance, and the introduction of the pkm10 plasmid, which carries SOS repair genes and ampicillin resistance. An alternative to this procedure that uses a liquid substrate and a 96-well microplate is called the fluctuation method. The man who developed this procedure also improved it by inactivating the uvrB gene during it. In its original form, this procedure failed with substances like benzopyrene, because cytochrome P450 is needed to activate it. To fix that and promote growth during this assay, microsomes isolated from rat liver are mixed in. This procedure basically works by incubating *Salmonella typhimurium* on agar that has been spread with a small amount of histidine. For 10 points, identify this eponymous biological test for a mutagenic agent.
ANSWER: **Ames** test
[edited]

16. One author from this country wrote a novel that features a character whose favorite video game is the PS1 version of *Chrono Trigger*; that novel sees Ethan Jarlewski sabotage SpriteQuest by inserting a Ronald MacDonald like character into that video game. A different author from this country wrote about a magician who plays Robert-Houdin onstage; that novel is about Magnus Eisengrim and is the last of three to feature Dunstan Ramsay. This country is home to the authors of *Jpod* and *World of Wonders*. A different novelist from this country wrote a book that ends with its protagonist possibly joining the "Mayday" Resistance when she enters a van full of "Eyes," a secret police force. That novel is set in Gilead and focuses on Offred, a woman assigned to give birth for the sake of population. For 10 points, name this country of origin of Douglas Coupland, Robertson Davies and the author of *The Handmaid's Tale,* Margaret Atwood.
ANSWER: **Canada** [Why the hell the PS1 version? Its load time is fucking horrendous!]
[edited]

17. One text that tries to define this entity praises the example of a prince who repudiates the arrogant word "tolerant" and is an essay that argues that dogmas and formulas are tools that suppresses man's natural gifts. The author of *Golgotha and Scheblimini* represented a tradition that ran counter to this entity along with Vico and Herder according to a book by Isaiah Berlin. An analogy that mass culture is like a factory producing goods is central to a book that argued this tradition paved the way for the rise of Nazism; that book was written by Adorno and Horkheimer. "Dare to Know" and "Man's emergence from his self-imposed nonage" are two ways that Immanuel Kant defined this movement in a short work that asks what it is. For 10 points, identify this 18th century intellectual tradition that champions reason and man, some of whose thinkers included Voltaire.
ANSWER: **enlightenment**
[edited]

18. In one part of this work, a character overturns the wine bowl of Lady Excess and uses a net to destroy a witch who is able to turn men into animals. That section of this work describes Acrasia, a sorceress who dwells in the "Bower of Bliss." One character in this work convinces the scheming flatterer Trompart to become his servant. Two hags named Impotence and Impatience are subordinates of Melager, who attacks Prince Arthur in this work after Palmer and his travelling companion visit his library. Its other characters include Belphoebe, a woman that rejects the advances of Braggadocchio. Only six books of this poem's 12 intended books were finished by the author. Its second book opens with the escape of Archimago, and its characters include Guyon and The Red Crosse Knight. For 10 points, identify this epic poem by Edmund Spenser.
ANSWER: The *Faerie Queene*

19. One theory of these entities models them as isotropic rods that require energy to bend. Central to that model is a quantity that is defined as the maximum distance that the rod can travel in a straight line before it bends in a

different direction. In addition to being described by the worm-like chain model, another theory of them relates the change in Gibbs free energy to the product of the ideal gas constant, absolute temperature, and a complex term that is a sum of the number of moles of these materials times the volume fraction of each one of these materials, plus some parameter chi to make an energy correction. The mixing of these substances in a solution is governed by Flory–Huggins theory, and biological examples of them include DNA, sugars and proteins. For 10 points, identify these compounds that consist of chemically bonded monomers.
ANSWER: **polymer**s
[edited]

20. One monarch from this state ordered the creation of a namesake set of astronomical tables that were used across Europe for centuries. One family that ruled this state originated from the illegitimate children of Eleanor of Guzmán, whose son was victorious at the Battle of Pontiel. A monarch from this state created a seven-part vernacular legal code and was succeeded by Sancho IV. With the help of John of Gaunt and Edward the Black Prince, a leader of this state nicknamed "the Cruel" defeated his half-brother at the Battle of Nájera. Members of this state revolted against Charles V in the Revolt of the Comuneros. The Trastámara house won a namesake "succession" war in this state, which has merged several times with León. For 10 points, name this Spanish region that was united by the marriage of its Queen Isabella to Ferdinand of Aragon.
ANSWER: Kingdom of **Castile**

Extras

21. This magnitude of the phase shift produced by this effect depends on whether the input is in a TE or a TM mode. That phase shift produced by this effect can used to produce a circularly polarized wave without the use of a birefringent material by the Fresnel rhomb. This effect produces an exponentially decaying electric field which can cause energy transfer between two media via optical tunneling as an evanescent wave is converted to a propagating wave. This effect occurs when the incident angle is greater than or equal to the inverse sine of the ratio of the smaller to the larger index of refraction. Optical fibers and waveguides use this effect to transmit information over large distances. For 10 points, name this effect that occurs when light incident upon an interface beyond the critical angle has zero transmission across the interface.
ANSWER: **total internal reflection** or **TIR** [prompt on partial answers]

Bonuses

1. Sitnikof introduces this character to the main character of the work in which she appears. For 10 points each:
[10] Name this wealthy widow who hosts various intellectuals at her home. At the end of the novel she appears in, her sister Katya marries Arkady Kirsanov.
ANSWER: Madame Anna Sergeneev **Odintsof** [prompt on "Anna"; accept **Odintsova**]
[10] Madame Odintsof appears in this work, in which Arkady is friends with the student Bazarov. It is by Ivan Turgenev.
ANSWER: *Fathers and Sons*
[10] Bazarov is considered a prime example of this kind of figure from Russian literature. Other characters who fit this description include Oblomov and Turgenev's character Chulkatarin.
 ANSWER: the **Superfluous Man**

2. The chief relic donned by Russian monarchs, Monomakh's Cap, is named for a leader of this state. For 10 points each:
[10] Name this state that ended with the Mongol victory at the Battle of the Kalka River. It was centered on a namesake city located on the Dnieper River.

ANSWER: Kievan **Rus**
[10] A hundred-year-old prophetess named Malusha allegedly gave birth to this leader of the Kievan Rus', whose Christianization of the state was continued by his son, Yaroslav the Wise.
ANSWER: **Vladimir I** of Kiev [or **Vladimir** Sviatoslavich **the Great**]
[10] Vladimir I's Christianization eased tensions between the Kievan Rus' and this empire, who later used Rus' men as part of the Varangian Guard.
ANSWER: **Byzantine** Empire [or Byzantium; or Eastern Roman Empire]

3. This work argues that imagination allows human subjects to "nihilate" their experiences, thus placing one of its titular concepts at the center of human experience. For 10 points each:
[10] Name this work that argues humans experience themselves as a temporally specific "For-itself" being. This work attributes "bad faith" to human actors who do not accept the mutability of the self.
ANSWER: *Being and Nothingness*
[10] This author and philosopher wrote *Being and Nothingness*. He also wrote of Antoine Roquentin's Chestnut-tree provoked revelations in *Nausea*.
 ANSWER: Jean-Paul **Sartre**
[10] This other existentialist wrote *All Things Are Possible*, which lamented Socrates's loquaciousness, arguing that "Socrates and Pascal talked so much for fear they would start crying." Wikipedia insists that since his thought was so hopeless, he championed a "philosophy of despair."
ANSWER: Lev **Shestov**

4. "Jess" Bhamra gets a soccer scholarship at the end of a movie named for this athlete. For 10 points each:
[10] Name this longtime midfielder for the English national team whose wife was a member of the Spice Girls. His most recent title came with the Los Angeles Galaxy.
ANSWER: David (Robert Joseph) **Beckham**, OBE
[10] This teammate of Beckham is captain of both the Irish national team and the Los Angeles Galaxy. This prolific goalscorer for Tottenham Hotspur in the mid-2000s scored the final goal in the 2012 MLS Cup final.
ANSWER: (Robert David) "Robbie" **Keane**
[10] Beckham now plays for Paris Saint-Germain, whose main goal scorer is this acrobatic Swede. This man scored four goals, including a legendary overhead bicycle kick from over thirty yards away, in a rout of England in 2012.
ANSWER: Zlatan **Ibrahimović**

5. Mesopredator release is one manifestation of an ecological phenomenon hypothesized by Nelson Hairston, Frederick Smith, and Lawrence Slobodkin as part of the "green world hypothesis." For 10 points each:
[10] Name that phenomenon, whose top-down version describes how predators suppress populations of their prey, thus reducing pressure on members of lower namesake levels.
ANSWER: **trophic cascade**
[10] In many ecosystems containing trophic cascades, the predators are this kind of species, which have a disproportionately large impact compared to their abundance or biomass.
ANSWER: **keystone** species
[10] Trophic cascades operate in the context of these networks which show the feeding relationships between organisms in a community, and are composed of interlocking food chains.
ANSWER: **food web**s or **food cycle**s

6. Name some British painters connected with the Royal Society of Arts. For 10 points each:
[10] This first president of the Royal Academy was closely connected with the Royal Society. He painted *Sarah Siddons as the Tragic Muse* and was a rival to Gainsborough.
ANSWER: Joshua **Reynolds**

[10] This man made paintings for the exhibitions of the Society of Arts. He is known for his "scientific" paintings that incorporate *chiaroscuro*, such as *An Experiment on a Bird in An Air Pump*.
ANSWER: Joseph **Wright** of Derby
[10] This Edmund Burke enthusiast is best known for his incredibly epic *The Progress of Human Knowledge and Culture*, a series of six paintings for the Royal Society of the Arts. Since he hardly got paid for it, he ate bread and apples only while painting it for seven or eight years, but he got to choose the subject matter.
ANSWER: James **Barry**

7. It was escalated by Otto von Bismarck's decision to release the Ems Dispatch publicly. For 10 points each:
[10] Name this yearlong conflict that ended with the Treaty of Frankfurt, which transferred control of Alsace-Lorraine to the winning side. That nation's forces had triumphed at Sedan after forcing a retreat at Gravelotte.
ANSWER: **Franco-Prussian** War [or **Franco-German** War; or **War of 1870**]
[10] France's defeat in the Franco-Prussian War ended the Second French Empire and brought this man back to power. He quashed the Paris Commune before yielding his job as President of France to war hero Patrice de MacMahon.
ANSWER: (Marie Joseph Louis) Adolphe **Thiers**
[10] This Frenchman was appointed War Minister after the war and is believed to have planned a coup. He led a group of rabid followers with his namesake philosophy, which advocated revenge against Germany and the restoration of the monarchy.
ANSWER: Georges Ernest (Jean-Marie) **Boulanger**

8. He wrote "Farewell, thou child of my right hand, and joy; my sin was too much hope of thee, lov'd boy." For 10 points each:
[10] Identify this English poet of "On My First Son," also known for saying "I loved the man, and do honour his memory on this side idolatry as much as any" when referring to Shakespeare in his book *Timber*.
ANSWER: Ben **Jonson**
[10] Jonson also wrote lyrics such as "Drink to me only with thine eyes" in a group of poems addressed to this woman.
ANSWER: **Celia**
[10] One of the so-called "Tribe of Ben" poets was this Cavalier poet that wrote "Stone Walls do not a prison make, nor iron bars a cage" in "To Althea, From Prison."
ANSWER: Richard **Lovelace**
edited

9. Name some dudes who went to the Constitutional Convention in Philadelphia. For 10 points each:
[10] This Virginian was one of only three people there who didn't sign the Constitution. He drew up the Virginia Declaration of Rights and is the namesake of a university in Virginia.
ANSWER: George **Mason**
[10] This delegate from Pennsylvania later became a Senator from New York notably had a peg-leg. He wrote much of the preamble to the Constitution, and was apparently pleased enough with his work to sign it.
ANSWER: Gouverneur **Morris**
[10] This delegate from Massachusetts also later served as a Senator from New York. He ran on two consecutive Federalist tickets in the first decade of 1800s as Vice President.
ANSWER: Rufus **King**

10. Although Laura initially believes this man is too proud, she agrees to marry him and witnesses the brief motherhood of Rose Portion while waiting for him. For 10 points each:
[10] Name this explorer who attempts a cross-continental journey that is funded by Laura's uncle, Mr. Bonner. He

dies and is memorialized with a statue in the end of the novel in which he appears.
ANSWER: Johann Ulrich **Voss**
[10] An Aboriginal boy named Jackie leads *Voss* across the outback in a novel by Patrick White that is set in this country.
ANSWER: **Australia**
[10] Vivid descriptions of the Australian outback are a staple subject of this poetic style, whose constituent works are usually ballads. Writers associated with this genre include Banjo Paterson and Dorothea Mackellar.
ANSWER: **bush** poetry

11. Answer the following about opera genres. For 10 points each:
[10] The founder of the school of opera named after this city is Alessandro Scarlatti, but not one of his 114 operas survives to this day. The 18th century opera movement named after this city includes figures like Antonio Sacchini.
ANSWER: **Naples**
[10] This 19th century style opera is usually contrasted to *opéra comique* and features lavish productions and far-flung historical events. Representative examples include *Robert the Devil* by Meyerbeer and *The Mute Girl of Portici*.
ANSWER: **grand** opera
[10] This composer's *William Tell* is in the grand opera style. He also composed *The Barber of Seville*.
ANSWER: Gioachino **Rossini**

12. Answer the following about proof techniques. For 10 points each:
[10] This proof technique works by proving a base case, then assuming that some statement is true for case *n*, then proving it for *n* + 1. It is often called the mathematical equivalent to recursion.
ANSWER: **induction**
[10] This variant on induction requires that you assume the statement is true from your base case up to and including *n*. It is useful when you must invoke case *n* – 1 and below.
ANSWER: **strong** induction
[10] A different unrelated proof technique is this one, which shows that some entity exists by actually developing an algorithm to make that entity, or by providing an example of it. Bernays and some whackos believe in a whacky mathematical philosophy that states the only way to prove a mathematical structure exists is through this technique.
ANSWER: proof by **construction**

13. A reaction occurs spontaneously when the change in this quantity is less than zero. For 10 points each:
[10] Name this quantity defined as enthalpy minus temperature times entropy.
ANSWER: **Gibbs free energy** [prompt on partial answer]
[10] This principle states that the structure of a transition state resembles whichever, of the reactants or the products, is closer to it in Gibbs free energy.
ANSWER: **Hammond**'s postulate [or the **Hammond**–Leffler postulate]
[10] This principle states that if two reactive intermediates interconvert rapidly before turning irreversibly into different products, the ratio of products formed depends only on the difference in free energy of transition states.
ANSWER: **Curtin–Hammett** principle

14. Identify the following about important figures in the history of geography. For 10 points each:
[10] This Belgian-born cartographer is known today for his namesake style of projection, which distorts the poles.
ANSWER: Gerardus **Mercator**
[10] Adolf Hitler's ideas of *lebensraum* were influenced by this German geographer, who taught Rudolf Hess, who then gave Hitler a garbled form of his ideas. He is considered to be a founder of geopolitics.
ANSWER: Karl **Haushofer**

[10] This man, sometimes held to be the first geographer because he coined that word, was an ancient Greek scholar that calculated the circumference of the earth. He also invented a primitive form of latitude and longitude.
ANSWER: **Eratosthenes**

15. *The Institutes of the Christian Religion* champions this idea, which was addressed at the Synod of Dort. For 10 points each:
[10] Identify this doctrine, an example of which is unconditional election.
ANSWER: **predestination**
[10] This French theologian was a major proponent of predestination. He reformed the church in Geneva and wrote *The Institutes of the Christian Religion* while in Basel.
ANSWER: John **Calvin**
[10] This other doctrine of Calvinism basically asserts that all humans have been born into a state of evil and that they will continue to do evil. The only ones who are saved by it have the "irresistible grace" of God.
ANSWER: **total depravity**

16. It states that the one over the focal length is equal to n divided by R, all minus one over R, where n is the refractive index and R is the radius of curvature. For 10 points each:
[10] Identify this formula from optics.
ANSWER: **lensmaker**'s formula or equation [do not accept the "lens equation"]
[10] The lensmaker's formula is derived from this simpler equation, which simply relates the angles of incidence and refractive indices for light travelling through an interface of two materials.
ANSWER: **Snell**'s law
[10] For light that is being diffracted by a lens or what have you, the Fraunhofer equation works in this regime. This regime describes a diffraction pattern in which the radiation pattern is at a large distance from the aperture.
ANSWER: **far-field** limit

17. Skanderbeg defected from this force at the Battle of Niš to begin his resistance against Murad II. For 10 points each:
[10] Name these infantry units that served as the personal military force for Ottoman leaders. They were disbanded after Mahmud II quelled an uprising of its members in 1826.
ANSWER: **Janissaries**
[10] Janissaries replaced these mercenary units that generally raided Christian lands. Osman I established his capital at Bursa after conducting a siege with these warriors, whose name became an honorific for Ottoman leaders.
ANSWER: **Ghazi** warriors
[10] Many janissaries were enlisted through the use of this practice, which entailed the selection of young men from Eastern European Christian families into the force.
ANSWER: **Devşirme** [or **Devshirme**]

18. The narrator dreams of being invited to commit suicide by a linden tree in this song cycle, whose final song represents the drone of a hurdy-gurdy player with a B-F sharp perfect fifth in the piano. For 10 points each:
[10] Name this 24-song cycle that begins with one in which the narrator writes "Gute Nacht" on the gate of a lover whose heart has strayed.
ANSWER: *Winterreise* [or *Winter Journey*]
[10] *Winterreise* is by this composer of the *Unfinished Symphony* and the *Trout Quintet*.
ANSWER: Franz Peter **Schubert**
[10] Schubert also wrote this string quartet that draws its subject matter from a poem by Matthias Claudius. Its second movement consists of variations on an earlier work about the title figures.
ANSWER: *Death and the Maiden* [accept *String Quartet No. **14*** or *Der **Tod und das Mädchen***]

19. This author adapted the Czech opera *Brundibar* into a children's book with a series of illustrations by Maurice Sendak and collaborated with Eric Bogosian on *Love's Fires*, a series of dramatic sketches based on Shakespeare's sonnets. For 10 points each:
[10] Identify this American playwright, who also wrote the screenplay to *Lincoln*.
ANSWER: Tony **Kushner**
[10] Tony Kushner wrote this "gay fantasia on national themes" which opens with Louis Ironson learning that his homosexual lover Prior Walter has AIDS.
ANSWER: *Angels in America*: *A Gay Fantasia on National Themes*
[10] Tony Kushner also wrote the afterword to *Gross Indecency*, a play about the three trials of Oscar Wilde, which was written by this director of the Tectonic Theatre Project.
ANSWER: Moises **Kaufman**

20. This hero called upon Poseidon to flood the Xanthan plain shortly after killing the pirate Cheirmarrhus. For 10 points each:
[10] Identify this husband of Philonoe. He was the slayer of the chimera.
ANSWER: **Bellerophon**tes
[10] This wife of King Proitos made advances upon Bellerophon, which set off a chain of events leading Iobates to send Bellerophon on a series of impossible tasks.
ANSWER: **Sthenoboea**
[10] Bellerophon was the son of this king. who foolishly fed his female horses some human flesh in order to make them more fierce, which ended up backfiring. It is also the name of a grandson of Bellerophon who fought Diomedes.
ANSWER: **Glaucus**

Extras

21. A script by this man was used in the creation of the 2010 Sylvain Chomet film *The Illusionist*. For 10 points each:
[10] Name this French filmmaker, who starred as his own creation Monsieur Hulot in the films *Mon Oncle* and *Play Time*.
ANSWER: Jacques **Tati**
[10] This film by Tati features a carefully choreographed automobile accident that lasts longer than two minutes. In it, Monsieur Hulot is an automobile designer who is attempting to bring a new car design from Paris to Amsterdam.
ANSWER: *Trafic* [or *Traffic*]
[10] This British comic actor and director created the film *City Lights* and satirized Hitler in *The Great Dictator*.
ANSWER: Charlie **Chaplin**