

## ACF Nationals 2016

### Packet by Editors 9 (Finals Packet 2)

#### Tossups

1. In one specific case, this type of potential gives rise to a class of solutions known as Cotes' spirals. This type of potential gives rise to the equation  $d^2u/d\theta^2 + u = \text{constant} / u^2$ ; that equation is sometimes named for Binet. The equation of motion resulting from this type of potential can be written in terms of an "effective" potential which consists of the original potential plus a "centrifugal barrier" term which is strongly repulsive at short distances. Only two power law potentials of this type have the property that all bound orbits are closed according to Bertrand's theorem. The specific angular momentum is a constant of the motion under this type of force. Two bodies interact under an inverse-square variant of this type of force in a Kepler problem. For 10 points, name this type of force which depends only on the distance between objects.

ANSWER: **central** force or potential [accept **spherically symmetric**]

2. One conflict between these two countries intensified when a group of Welsh settlers migrated into the Lower Chubut Valley to start a colony called "Y Wladfa." As a result, these two countries signed the "Pacts of May" in 1902, after their leaders had a publicized diplomatic meeting called the "Embrace of the Straits." Agents for these countries took turns destroying lighthouses owned by the other side in a squabble called the Snipe Incident, during which these two powers fought over a deserted territory between the islands of Picton and Navarino. In order to prevent expansion of the other country, one of these nations launched a campaign called the "Conquest of the Desert" under General Julio Roca, which the other side tried to thwart by providing arms to native Mapuche tribes. One of these countries planned to invade the other in Operation Soberanía, which was part of the Beagle Conflict. For 10 points, name these nations ruled by Salvador Allende and Jorge Videla, which often fought over the Patagonia.

ANSWER: **Argentina** and **Chile** [accept answers in either order]

3. A character in this play compares himself to "scorpions ringed with fire," who are left to "strike ourselves to death." In Act IV, a woman in this play gives a "bag of coin" and a "rich mantle" to a man who was "only awed by that which made [her] tremble." Its protagonist marks the "twenty-seventh of December" as a feast day, since it is the day on which his son Rocco was accidentally killed when he was crushed by a mummy, and his other son Cristofano was murdered by a jealous lover. A portrait supposedly by Guido Reni inspired this play, which is set during the pontificate of Pope Clement VIII. Before being admitted into a mental asylum, Antonin Artaud staged a surrealistic version of this English play, which depicts Beatrice conspiring to have her sadistic father Francesco murdered. For 10 points, identify this tragedy by Percy Shelley, which is named for an Italian family.

ANSWER: *The **Cenci**, A Tragedy, in Five Acts*

4. Judith Bronkhurst claimed that this painting's artist only worked on it during the month of November, by hanging a lamp on a tree. This painting inspired the second oratorio by Arthur Sullivan. In a letter to the *London Times*, John Ruskin praises the “exquisite mystery of colour” and the lack of “a single clear outline” found in the ivy on this painting's left side and also touts the inability to “make out in form” any of the small gems found on the clasp of the central figure's cloak. A bat can be seen at the top of this painting, representing the “natural symbol of ignorance” of man. The full moon serves as a halo behind the head of the central figure of this painting, who approaches an overgrown door representing the “human soul” that has no handle. The human figure in this painting knocks at that door with one hand, while a chain wrapped around the other hand's wrist holds up a glowing lantern. For 10 points, name this allegorical depiction Christ based on a passage in Revelation and painted by William Holman Hunt.

ANSWER: *The Light of the World*

5. According to Pausanias, the completion of this action was controlled by sorceresses called the Pharmacides, until they were tricked into withdrawing by a daughter of Tiresias named Historis. In a version of this story recounted to Iole in the *Metamorphoses*, a goddess named Lucina clasps her hands and crosses her legs during this event. In another story, this event is facilitated by a daughter of Proetus (pro-EE-tus) who is turned into a cat or a weasel for her role in it. In that story, Galanthis falsely announces the completion of this event to the Fates, who were trying to prevent it. Eileithyia ties knots to forestall this event since a god swore an oath that a member of the House of Perseus would be the next High King. This event occurred months after, but as a direct result of, Zeus extending one night to three and disguising himself as Amphitryon. For 10 points, name this event in which Alcmena delivered a child and his twin brother Iphicles.

ANSWER: birth of Heracles and Iphicles [accept equivalents mentioning Heracles being born; prompt on partial answers; accept "birth of Iphicles and Heracles" until "Zeus" is read; accept Hercules in lieu of Heracles throughout]

6. A cover of this publication featured the quote “Oh my God--we hit a little girl,” taken from the story “M” by John Sack. Carol Holsgrove’s book *It Wasn’t Pretty, Folks, but Didn’t We Have Fun?* is a chronicle of this publication’s time under editor Harold Hayes. The first unsigned piece of fiction to appear in this publication was “For Rupert--With No Promises,” a parody of J. D. Salinger. Several scandal-sparking chapters of the unfinished novel *Answered Prayers* by Truman Capote were published in this magazine. A version of the story “Neighbors” published in this magazine that was aggressively cut down by its fiction editor Gordon Lish gave rise to Raymond Carver’s characteristic minimalism. In a story published in this magazine, the words “they were young again, it was yesterday” conclude a 95-word sentence about Old-Timer’s Day at Yankee Stadium. For 10 points, name this magazine that published “The Silent Season of a Hero” and “Frank Sinatra Has a Cold” after it hired the New Journalist Gay Talese.

ANSWER: Esquire magazine

7. This monarch's youngest daughter endorsed the right of women to divorce in her book *The Thread of Life*, written under the pseudonym Comtesse de Avila; that daughter was Eulalia. A group of rebels protesting centralization of the government under this ruler issued the Manifesto of Manzanares, during a coup called the Vicalvarada. This ruler's army won the Battle of Tetuán during a campaign called the African War, securing sovereignty over Ceuta and Melilla. The "Progressive Biennium" was a two-year period during the reign of this monarch, who was forced into exile by the September Revolution after general Juan Prim led a revolt of sergeants, and Leopoldo O'Donnell threw his support behind the Unión Liberal. This ruler was then replaced by the prince Amadeo of Savoy, who abdicated only three years later. Then, after a brief republic, this ruler's son Alfonso XII came to power. For 10 points, name this monarch of Spain whose rise was opposed by the Carlists in 1833 because she was the daughter of Ferdinand VII.

ANSWER: Doña **Isabella II** of Spain [or **Isabel II**; prompt on Isabel or Isabella]

8. This artist created six relief sculptures that use black, gold, Neapolitan, spectrum, metalflake, and black and white shades to convey the form of the Guggenheim Museum. This artist had Andy Warhol, Man Ray, Joseph Beuys, Francis Bacon, Derek Jarman and others use a Polaroid camera to take pictures of him, and later added acrylic paints over some of those pictures for a series of self-portraits. An installation by this artist consists of an orange blanket and a hygienic bed while an X-Ray machine displays a repeating video of Margaret Thatcher speaking about stability. This artist of *Treatment Room* also created a work with an arrow stating "ordinary cleaners only reach this far." That work by this artist features an advertisement for *The Jazz Singer* beyond its windows and appeared at the *This is Tomorrow* exhibition in 1956. For 10 points, name this English artist of *Just What is It That Makes Today's Homes So Different, So Appealing?*

ANSWER: Richard **Hamilton** [or Richard William **Hamilton**]

9. Metastasized cancers of this organ can be treated with a combination of irinotecan, 5-fluorouracil, and leucovorin, a combination termed FOLFIRI. ["FOAL-fear-ee"] Oxaliplatin can also be used to treat cancer in this organ, whose staging can be described using the modified Astler-Coller or the Dukes classifications. A mutation in MSH2, MYH1, or MSH6 increases the chance of cancer in this organ; that condition can be diagnosed by finding microsatellite instability and is called Lynch syndrome. Adenomas of this organ come in serrated, tubular, villous, and tubulovillous types, depending on the shape of their polyps. This is the most common organ whose walls can form inflamed pouches, a disorder called diverticulitis. Haustral churning mixes the contents of this organ, which contains 4 regions termed sigmoid, transverse, ascending, and descending. The ileocecal valve is the entrance to, for 10 points, what digestive organ whose final section is the rectum?

ANSWER: **large intestine** [accept **colon** or **rectum**, prompt on "bowel" or "intestine"]

10. Early on, this man wrote a play about a group of TB patients at a sanatorium including the Doctor, Philosopher, and Painter, who sit around and tell jokes as they wait to die, entitled *To Wriggle Under the Rainbow*. Together with the journalist David Phillips, he updated Thomas Love Peacock's satire *Melincourt* in his novel about an ape elected to the House of Commons, *The Right Honourable Chimpanzee*. He coined the term "enemy mania" in his weekly report *In Absentia*, which was broadcast on Radio Free Europe, and his memoirs were published under the title *The Truth That Killed*. Years after he emigrated to London to work for the BBC, he had a run-in with a man known by the codename "Piccadilly" at a bus stop on Waterloo Bridge. On that day in 1978, this man was killed with a pellet containing ricin that was shot into his leg with an umbrella. For 10 points, name this man assassinated by the Todor Zhivkov regime, a dissident writer from Bulgaria.

ANSWER: Georgi Ivanov **Markov**

11. The opening violin solo of one piece of this type consists of a *moderato assai* passage played entirely on the G string. The protest song "S'il jsem proso na souvrait" was the basis for the principal theme of the third movement of piece in this genre whose second movement uses two contrasting subsections labeled "Alternativo". The opening and closing *Lento maestoso* movements of a piece of this type both contain faster middle sections played *quasi doppio movimento*. Bedrich Smetana's only piece of this type is in G minor and was written after the death of his daughter Bedriska. Another piece of this type in E minor has six movements, each with alternating slow and fast episodes. One of the normal instruments in this ensemble is replaced with a clarinet in a piece for it named for a place where skittles is played. For 10 points, name these chamber pieces which include Mozart's *Kegelstatt* and Dvorak's *Dumky*, usually written for a violin, cello, and a keyboard instrument.

ANSWER: **piano trios** [prompt on partial answer]

12. This chemist developed an oxidation of alcohols to carbonyls using a phenyl sulfenamide. This chemist's namesake reagent for forming peptide bonds is 2-chloro-methyl-pyridinium iodide. Carreira built on the work of this chemist by designing an analogous reaction for modified ketene acetals which employs a chiral BINOL-titanium chloride catalyst. This chemist rendered his namesake reaction asymmetric using a mixture of tin(II) triflate and a chiral diamine catalyst. The B ring is synthesized from serine in this chemist's 1999 total synthesis of taxol. This chemist is most famous for a procedure in which an enolate reacts with TMS chloride while titanium tetrachloride or a similar Lewis acid activates a carbonyl, which is then nucleophilically attacked by the resulting silyl enol ether. For 10 points, name this Japanese organic chemist who names a modification to the Michael addition and the aldol condensation.

ANSWER: Teruaki **Mukaiyama**

13. The elderly man John Prather became a cult hero in this state after he refused to surrender his land to the U.S. government. A senator from this state, Holm Olaf Bursum, is remembered for trying to pass a land bill opposed by John Collier. His son, who served as a mayor in this state, was implicated by some reporters in the “Lonnie Zamora incident.” This state’s first museum and normal school was founded by Edgar Lee Hewett, whose work here led to passage of the Antiquities Act. Prior to statehood, its civilian governor Charles Bent was killed during a revolt that was quashed by its military governor, the ex-Missouri soldier Sterling Price. This state, the site of the Colfax County War, became a home for artists like Gustave Baumann and Mabel Dodge Luhan, whose house is a symbol of this state’s Taos Art Colony. A Civil War campaign in this state included battles at Glorieta Pass and Valverde. For 10 points, name this US state home to Teapot Dome senator Albert Fall, and the City Different architecture of Santa Fe.

ANSWER: **New Mexico**

14. In this work, a character states that he will cross together the “River of Three Fords” before another character states she will copy the “All Compassionate and All Merciful Chapter” of a certain text. At its conclusion, the narrator compares a fisherman's net to religious salvation. This work opens with untranslatable, nonsense syllables being recited by the narrator, before asserting “the love of a prostitute is deep beyond measure.” A character in this work is intimidated by the eyes of a warrior who uses a wicker hat to disguise himself. That character, Mongaemon, is the brother of a paper merchant who tries to kill a prostitute working in the Kinokuni House after she admits that her true love cannot ransom her. In this play, Koharu and Jihei venture to the title location before committing the title acts. For 10 points, name this play by Chikamatsu which is *not* named for, but is mostly set in, Sonezaki.

ANSWER: *The **Love Suicides at Amijima*** [or ***Shinju Ten no Amijima***]

15. Although neither the real name nor much of the life of this figure is known, it is known that this person once envied Mary Magdalene for having witnessed Christ’s sufferings and that this person once prayed for a sickness that would cause spiritual and mental pain. In this writer’s major work, an anecdote about a servant trying to serve his lord but falling into a dell is used to illustrate man’s fall from God. That work by this writer also considers the three aspects of the Trinity as fatherhood, motherhood and the property of the lordship in one God. In the most famous passage in this writer’s book, the sight of Jesus’s bleeding head inspires a vision in which the creation of the World is compared to a hazelnut. This anchoress, who is named for the location in which we know she lived, wrote *Sixteen Revelations of Divine Love* and is sometimes called the first “woman of letters in the English language” for her “showings.” For 10 points, name this 14th century mystic from Norwich.

ANSWER: **Julian** of Norwich

16. Two instances of this quantity are cubed and divided by each other to yield a constant of proportionality of 3.98 in the derivation of Seeliger's density theorem. One form of this quantity is defined as the actual size of the object divided by its angular size and appears in a duality relation called Etherington's reciprocity theorem. The logarithm of ratios of this quantity is multiplied by five in the superposition of main sequences method for deriving this quantity. The tangent of the angle of the line of sight is multiplied by an object's radial velocity and divided by the proper motion in a formula for this quantity called the moving cluster method. Wilson and Bappu's observation that a Calcium 2 emission line is correlated with a star's luminosity is often used as the basis for a method of determining this quantity's namesake modulus, which is the difference between a star's apparent magnitude and absolute magnitude. Standard candles are used to calibrate scales that measure, for 10 points, what quantity, whose magnitudes are often visualized using the namesake "cosmic ladder?"

ANSWER: distance

17. One text claims that this ruler destroyed the kings of sixteen towns, so he could unite the "western and eastern seas." This ruler allegedly wrote a letter to another king, asking him for sweet wine, dried figs, and a philosopher—the king responded that he'd supply the first two, but it was illegal to sell a philosopher. The ambassador Deimachos came to live at this ruler's court for many years, likely sent by the aforementioned king, this man's close friend Antiochus I Soter. This man's eldest son, known either as Susima or Sumana, allegedly caused the people to revolt while serving as viceroy of Taxila, so this ruler had to send his younger son to quell the uprising. That younger son succeeded this man by allegedly killing 99 of his brothers, sparing only one named Tissa. This ruler was known as Amitrochates, or "slayer of foes," for his southern conquests, but his usual name refers to a drop of poison that caused a blue spot on his forehead. For 10 points, name this Mauryan ruler who conquered much of India except for Kalinga, which was invaded by his son and successor, Ashoka.

ANSWER: Bindusara Maurya [or Amitrochates or Allitrochates - but only before the word "Amitrochates" is mentioned]

18. In this man's posthumously-published notebooks, he put forth a concept called the "affective category of the supernatural" to describe what he referred to as the union of feeling and object. One of his books concludes with a chapter entitled "The Transition to the Higher Mental Types," in which he analyzes the *chiringa* of the Arunta tribe. He argued that modern representations are subjected to the "test of experience," which is in contrast to the "law of participation," where things can simultaneously be themselves and something else. Carl Jung co-opted this man's term "participation mystique" and used his theory of "collective representations" to create the idea of archetypes. He's not Marshall Sahlins, but he wrote a book entitled *How Natives Think*, which was explicitly rejected by Evans-Pritchard, specifically for its division of people into those with a "civilized mentality," and those with a pre-logical "primitive mentality." For 10 points, name this early French sociologist who wrote *Primitive Mythology*.

ANSWER: Lucien Lévy-Bruhl

19. A poem in a collection named for this figure ends with the words “Thalassio, Thalassio, Thalassio” and insults Vollmer’s lover. A philosopher named Siro is believed to have taught this person, since he appears in a pair of poems in that aforementioned collection. Another poem in that collection named for this man is set when “night had completed ten of winter’s hours” and describes an African slave named Scybale as well as his master, who grounds up coriander, garlic, parsley, colewort, onions, leeks, cheese and salt with a pestle to create a single color “out of many.” This author is believed to have written fifteen poems called “Trifles,” as well as a poem in which the title creature narrates the story of the Trojan War to the shepherd who killed it. Poems such as “The Salad” and “The Gnat” are thought to be this writer’s juvenilia and appear in an “Appendix” named for him. For 10 points, name this author, whose other poetry includes the *Georgics*, *Bucolics* and *The Aeneid*.

ANSWER: Publius **Vergilius** Maro [or **Vergil**]

20. In *From Heaven to Arcadia*, Ingrid Dowland suggests that this philosopher’s only play, a comedy called *The Candlemaker*, inspired the tone of Shakespeare’s *Hamlet* and other plays. One of this philosopher’s treatises largely consists of a series of “dramatic sonnets” between the poet Luigi Tansillo and a naval officer named Cicada on the purity of “philosophical love.” This philosopher quotes the poetry of Philip Sidney in his treatise on the “madness of love,” *The Heroic Frenzies*, which is one of a set of six dialogues this man wrote, including *The Expulsion of the Triumphant Beast* and *The Ash Wednesday Supper*. This philosopher was inspired by Hermetic doctrines to reject Aristotelian accounts of motion in his book *Cause, Principle and Unity*, which also provided a pantheist account of the universe. The thought of Nicholas of Cusa inspired this thinker to put forth a view that the world is infinite and that the Sun is at the center of the Solar System. For 10 points, name this philosopher from Nola who was burned at the stake partly for his Copernican world view.

ANSWER: Giordano **Bruno** [or Filippo **Bruno**]

Tiebreaker: Cyclic examples of these compounds are formed using nitrous acid in a ring-expanding reaction known as the Tiffeneau-Demjanov rearrangement. A phenol bound to one of these functional groups can be formed from an O-phenyl-ester via either photochemical excitation or with a Lewis acid like aluminum trichloride. The Hajos-Parrish reaction can be used to synthesize a bicyclic one of these compounds which is commonly used as a precursor in the organic synthesis of many steroids. An alpha, beta unsaturated one of these compounds found in a 6-membered ring is formed in a reaction which consists of a Michael addition followed by an aldol condensation and is called the Robinson annulation. Oxidizing a secondary alcohol will yield one of these compounds. For 10 points, name these compounds in which two R groups flank a carbonyl, which are contrasted with aldehydes.

ANSWER: **ketones** [prompt on “carbonyl,” accept “Wieland-Miescher **ketone**” Note: the reaction in the second clue is the Fries rearrangement]

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**Packet by Editors 9 (Finals Packet 2)**  
**Bonuses**

1. At the opening of the second act, this play's main character is upset that he betrayed the title character, Thorowgood, by violating his curfew. For 10 points each:

[10] Name this George Lillo play in which Sarah Millwood dupes George Barnwell into murdering his uncle. At its end, George comes to peace with his actions as he awaits execution.

ANSWER: *The London Merchant*

[10] George Lillo's other plays include *The Christian Hero*, which shares its title with a tract on morality by this author, who started *The Spectator* with his friend Joseph Addison.

ANSWER: Sir Richard Steele [or, if you're good friends with him, "Hard" Dick Steele]

[10] George Lillo also adapted this anonymous Elizabethan play, in which the title character is murdered by Black Will and Shakebag, who are hired by his wife Alice and her lover Mosby. Some scholars attribute it to Shakespeare.

ANSWER: *Arden of Faversham* [or *Arden of Feversham*]

2. Answer the following about the Black Hills, for 10 points each.

[10] In the north, you'll find this sleepy South Dakota town named for a general who remarked before Bull Run: "I don't care for John Pope one pinch of owl dung!." This town is no doubt best known for its annual motorcycle rally on the first week of August.

ANSWER: Sturgis, South Dakota

[10] The first non-Native American to ascend this highest peak in the Black Hills was Doctor Valentine McGillycuddy. John Neihardt wrote about the great vision that an actual Native American, Black Elk, had after he ascended this peak.

ANSWER: Harney Peak [or Hinhan Kaga]

[10] This site near Hulett, Wyoming is a laccolith in the Bear Lodge Mountains that rises above the Belle Fourche River. Teddy Roosevelt made this the first place to be declared a national monument in 1906.

ANSWER: Devils Tower [or Matho Thípila or Ptehé Gí for our Native American friends like Black Elk, prompt on "Bear Lodge"]

3. This compound condenses with alpha-ketoglutarate to form saccharopine in its primary route of degradation in humans. For 10 points each:

[10] Name this amino acid which binds to ubiquitin to tag proteins for destruction in the proteasome.

ANSWER: lysine [or Lys or K]

[10] This protein contains large amounts of hydroxylysine and hydroxyproline. Its high percentage of the sterically small amino acid glycine allows it to form a compact triple helix structure.

ANSWER: collagen

[10] Synthetic lysine derivatives such as tranexamic acid and aminocaproic acid are used to control bleeding during and after surgical procedures by binding to the lysine receptors of this protein.

ANSWER: plasmin [or plasminogen]





4. The study about this family starts with “The Case of Deborah,” a woman encountered by its author at Vineland Training School. For 10 points each:

[10] Name this family who all allegedly descended from a single Revolutionary War soldier, the subject of a 1912 work by Henry H. Goddard subtitled as “A Study in the Heredity of Feeble-Mindedness.”

ANSWER: the **Kallikaks**

[10] About thirty years earlier, this sociologist studied residents of several jails in upstate New York, and found that a particular family tree in Ulster County produced nothing but criminals. He released that info in an 1877 work entitled *The Jukes: A Study in Crime, Pauperism, Disease and Heredity*.

ANSWER: Richard Louis **Dugdale**

[10] A follow-up to the Jukes study, under the direction of the Eugenics Record Office, applied this empirical law discovered in 1908 and named for two psychologists. It states that performance increases with arousal, but only up to a certain point, particularly if the task is difficult or requires careful concentration.

ANSWER: **Yerkes-Dodson** Law [prompt on partial answer of just Yerkes or Dodson]

5. In one text, this figure dwells in a huluppu tree, whose other occupants include a nameless serpent that is immune to all incantations and a “phantom maid” who laughs with a joyful heart. For 10 points each:

[10] Name this creature that, in another story, gives Lugalbanda superhuman agility and strength after Lugalbanda takes care of its offspring.

ANSWER: **Anzu** bird [or **Zu**]

[10] In another story, Anzu is killed by this Sumerian god of war and hunting, who gives his name to two Assyrian kings, named for their trust, or *Tukulti*, in this god.

ANSWER: **Ninurta**

[10] After Ninurta kills the Anzu, he retrieves this object, which may be singular or plural and in either case gives the bearer supreme authority over the world, from it. In the *Enuma Elish*, Tiamat gives it to Kingu.

ANSWER: **Tablet of Destinies** [or **Tablets of Destiny**; or **Dup Shimati**; accept any combination of plurals]

6. This man commanded the fleet that defeated Admiral de la Jonqui re at the First Battle of Cape Finisterre, and his ship, the *Centurion*, was the first British warship to enter Chinese waters. For 10 points each:

[10] Name this British admiral who led a four-year voyage around the world that tried to capture the Peruvian port of Callao and seized a galleon at Acapulco. This man's reforms to the British navy, including revising the articles of war, are credited with winning the Seven Years War.

ANSWER: George **Anson**, 1<sup>st</sup> Baron Anson

[10] Anson undertook his circumnavigation during this war with the Spanish starting in 1739, named by Thomas Carlyle for an incident involving the eponymous commander of the brig *Rebecca*.

ANSWER: War of **Jenkin's Ear**

[10] Another naval attempt to best the Spanish was led by this officer, known as Old Grog, who avenged Francis Hosier by capturing Porto Bello in 1739, but was defeated two years later at Cartagena de Indias.

ANSWER: Admiral Edward **Vernon**

7. These quantities are located on the edges of a square whose layout can be remembered using the mnemonic "good physicists have studied under very fine teachers." For 10 points each:

[10] Name these quantities, whose mixed second partial derivatives are used to derive the Maxwell relations.

ANSWER: **thermodynamic potentials** [give points to a player who gives ALL FOUR of the following answers—partial answers are not promptable here: "**Gibbs free energy**, **internal energy**, **enthalpy**, and **Helmholtz free energy**]

[10] Simple expressions for the thermodynamic potentials in terms of their natural variables can be obtained using this theorem, which states if a function obeys the equation  $f$  of  $\lambda$   $x$  equals  $\lambda$  raised to the  $n$  times  $f$  of  $x$ , then  $n$  times  $f$  of  $x$  equals the sum over all values of  $i$  of the expression  $x$ -sub- $i$  times  $d f$  over  $d$ - $x$ -sub- $i$ .

ANSWER: **Euler's** homogeneous function theorem

[10] This quantity is a natural variable for both the Gibbs and Helmholtz free energy. The third law of thermodynamics describes the properties of systems where this quantity goes to zero.

ANSWER: **temperature**

8. Leontine Lipman was the model for this woman, who rebukes the suggestion to play "Ride of the Valkyries" or the "Prelude to Tristan" since it "made too violent an impression on her." For 10 points each:

[10] Name this woman from *In Search of a Lost Time* who hosts a "little nucleus" in her house on the Rue de Fauborg-Saint-Honore. One member of her "clan," Doctor Cottard, prescribes croissants to her for her migraines.

ANSWER: Madame **Verdurin**

[10] Madame Verdurin is introduced in the first section of Proust's *In Search of Lost Time*, a novel named for this character's "Way."

ANSWER: **Charles Swann** [accept either underlined answer]

[10] This friend of Albertine is also a member of Madame Verdurin's "little clan." This painter, an amalgamation of real-life painters like Monet and Whistler, is able to get the narrator to change his views about Balbec's church.

ANSWER: **Elstir**

9. Gioachino Rossini's *The Barber of Seville* is often held to be a representative example of this style of opera. For 10 points each:

[10] Name this style of opera dominant in the 19th century. Harmonious melodies, as well as one-dimensional plots and characters are hallmarks of this style. Its name is from the Italian for "beautiful singing."

ANSWER: **bel canto** [or **bellezze del canto** or **bell'arte del canto** ]

[10] This Australian soprano is one of many singers considered to have revived the bel canto style, performing arias from such works as Gaetano Donizetti's *Lucrezia Borgia*.

ANSWER: Dame Joan [Alston] **Sutherland**

[10] The premiere of Rossini's *The Barber of Seville* was booed, not least because the audience consisted largely of fans of this composer's own version of *The Barber of Seville*. Rossini's version remains more popular in part since this man's version de-emphasized some *bel canto* aspects, such as its comic style.

ANSWER: Giovanni **Paisiello** [or Giovanni **Paesiello**]

10. This party, whose youth wing was called the Blue Shirts, put forth the motto "Obedience and Struggle," and was founded by Saad Zaghloul. For 10 points each:

[10] Name this political party which supported a constitutional monarchy and was dominant in Egypt in the 1930s, but dissolved with the rise of the Free Officers Movement in 1952.

ANSWER: **Wafd** Party [or Hizb al-**Wafd**, prompt on "Delegation" Party]

[10] The Free Officers brought this man to power. He became the second president of Egypt after succeeding Muhammad Naguib, and nationalized the Suez Canal.

ANSWER: Gamal Abdel **Nasser** Hussein

[10] The Wafd party traced its ideology back to the 1879 uprising of this colonel, who tried to depose the Khedive Tewfik Pasha and rule Egypt independently. The British invaded and crushed him at Tel el-Kebir in 1882, then exiled him to Ceylon.

ANSWER: Ahmed **Orabi** [or **Urabi** or **Arabi**; or the "Urabi Revolt"]

11. The ramified form of this technique starts with the axiom of constructability on a model, and then constructs a larger model that satisfies ZFC. For 10 points each:

[10] Name this technique which has been used to show the independence of the axiom of choice.

ANSWER: **forcing**

[10] Paul Cohen used forcing to show the unprovability of this hypothesis, which states that there is no set whose cardinality is in between that of the reals and the integers.

ANSWER: **continuum** hypothesis

[10] A result of Shoenfield's theorem named for this property states that forcing cannot be used to change the truth values of certain statements. The "upward" form of this property holds for a formula in N if it holds for all extensions of N.

ANSWER: **absoluteness**

12. This novel is narrated by Grant Wiggins, a man who falls in love with a divorced Creole woman named Vivian Baptiste. For 10 points each:

[10] Name this novel in which Jefferson is executed after he is wrongly convicted for the murder of Mr. Grope in the fictional town of Bayonne, Louisiana.

ANSWER: A **Lesson Before Dying**

[10] *A Lesson Before Dying* was written by this author, whose other books include *A Gathering of Old Men*, in which a group of black men claim responsibility for murdering Beau Boutan.

ANSWER: Ernest **Gaines**

[10] *Like Trees, Walking* author Ravi Howard stated that Ernest Gaines and this man are his two biggest influences. This author wrote the "graphic mystery" *Incognegro* during the process of completing a novel in which Chris and Booker Jaynes lead an all-black crew to Antarctica, a sequel to an Edgar Allan Poe novel titled *Pym*.

ANSWER: Mat **Johnson**

13. This artist painted a portrait of Hart Crane after discussing modernism with him and Sergei Eisenstein. For 10 points each:

[10] Name this artist, who depicted a crowd cheering on as a giant monster is obliterated in *The Future Triumph of Medical Science over Cancer*, found at the Institute of Social Security Oncology Hospital.

ANSWER: David Alfaro **Siqueiros** [or José de Jesús Alfaro **Siqueiros**]

[10] The Polyforum Complex by David Siqueiros hosts this gigantic mural, which is divided into sections such as "Science and Technology" and "to the Revolution of the Future." The space race and many revolutions are depicted in this mural, whose theme is a search for a "better society."

ANSWER: *The* **March of Humanity**

[10] In the early 1920s, Siqueiros toured Italy with this fellow Mexican muralist. This painter of *Man, Controller of the Universe* had a tempestuous marriage with Frida Kahlo.

ANSWER: Diego **Rivera** [or Diego María de la Concepción Juan Nepomuceno Estanislao de la **Rivera** y Barrientos Acosta y Rodríguez]

14. A woman plays the trouser role of Federico Garcia Lorca in this composer's opera *Aindamar*. For 10 points each:

[10] Name this contemporary composer, who used Latin American and African rhythms in his setting of the passion of St. Mark. He wrote the song cycle *Ayre* for Dawn Upshaw.

ANSWER: Osvaldo [Noe] **Golijov**

[10] Golijov is from this South American country, whose other classical composers include Alberto Ginastera. Astor Piazzolla revolutionized this country's traditional tango music.

ANSWER: **Argentina**

[10] This Argentine-born Israeli pianist and conductor is currently the music director of the Berlin State Opera, and was the music director of the Chicago Symphony Orchestra until 2006. The onetime husband of Jacqueline du Pre, he founded the West-Eastern Divan Orchestra along with Edward Said.

ANSWER: Daniel **Barenboim**

15. This man's sermon "A Discourse on the Transient and Permanent in Christianity" signaled his break with Unitarian orthodoxy. For 10 points each:

[10] Name this transcendentalist minister who preached at West Roxbury starting in 1837, and had a congregation society in Boston with supporters like Julia Ward Howe and William Lloyd Garrison. His abolitionist writing like the essay "To a Southern Slaveholder" inspired the phrase "of the people, by the people, for the people."

ANSWER: Theodore **Parker**

[10] Parker was close friends with these sisters from South Carolina. The older one, Angelina, married Theodore Dwight Weld, while the younger one wrote an "Epistle to the Clergy of the Southern States."

ANSWER: **Grimké** sisters

[10] This liberal historian based at Columbia and Amherst wrote an oft-read 1936 biography entitled *Theodore Parker: Yankee Crusader*. He also wrote the 1977 intellectual history *The Empire of Reason: How Europe Imagined and America Realized the Enlightenment*.

ANSWER: Henry Steele **Commager**

16. This book argues that "objective" forms of the title type of knowledge, such as the metaphysics of Aristotle, are in danger of "lagging behind industrial and scientific developments," paving way for the rise of the "subjective" forms. For 10 points each:

[10] Name this 1947 book by Max Horkheimer, which argues against scientism in its chapter "Conflicting Panaceas." Its aim was to explain how the Nazi Party could rise to power.

ANSWER: **Eclipse of Reason**

[10] *Eclipse of Reason* discusses the role that this period of thought had on the rise of Nazism. Theodor Adorno and Horkheimer began that discussion in a book about its "Dialectic."

ANSWER: **Enlightenment** [accept **Dialectic of Enlightenment**]

[10] The Nazi State's leaders are compared to "thaumaturgic kings" in *Behemoth*, a study of "the structure and practice of National Socialism" that was written by this other member of the Frankfurt School.

ANSWER: Franz Leopold **Neumann**

17. The scholar Varro states that the name of these priests is derived from the word *filum*, a band of wool which would be worn around their heads. For 10 points each:

[10] Name these priests who served a specific deity, such as the Volcanalis one, who served Vulcan. The "dialis" one of these priests served Jupiter.

ANSWER: **flamen** [or **flamines**]

[10] A special type of *flamen* also served these kinds of gods who were called *divi* [DEE-wee] instead of *dei* ["day"-ee].

ANSWER: gods who were Roman **emperors** [accept gods who were formerly **human** and now divine; or gods who had **undergone apotheosis**]

[10] This religious scholar argued that the words "flamen" and "brahman" were cognate in his book *Flamen-Brahman*, which introduced his "trifunctional hypothesis."

ANSWER: Georges **Dumezil**

18. In one of this author's stories, Satan tempts a rose into thinking that it is not useful, which leads God to transform it into the first piece of cabbage. For 10 points each:

[10] Name this author of numerous fairy tales. His poem "Sonatina" describes a prince on a flying horse rescuing a princess guarded by "a hound, a sleepless dragon" and a "hundred negroes with a hundred lances."

ANSWER: Ruben **Dario** [or Félix Rubén García **Sarmiento**]

[10] In *The Misfits*, Dario praises the work of this author of "I Cultivate a White Rose," whom he believed "lived in communion with God." He wrote "I want before I die / My soul's verses to bestow" in the first poem of one of his collections.

ANSWER: José [Julián] **Martí** [Pérez]

[10] Jose Marti was born in this country, whose song "Guantanamera" was inspired by lyrics in Marti's *Versos Sencillos*. In 1910, Ruben Dario tried to commit suicide in this country.

ANSWER: Republic of **Cuba**

19. In a semiconductor, the Auger form of this process involves three charge carriers, while its "trap-assisted" form involves the electron passing through an intermediate energy state in the band gap. For 10 points each:

[10] Name this phenomenon, which leads to current losses in solar cells and other electronic devices due to elimination of charge carriers.

ANSWER: **recombination**

[10] The efficiency of a solar cell can be measured via this quantity, which is the ratio of the maximum power outputted by the solar cell to the theoretical maximum power obtained by multiplying the open-circuit voltage by the short-circuit current.

ANSWER: **fill factor** [or **FF**, do not accept or prompt on "filling factor"]

[10] In a semiconductor, electrons recombine with these positive charge carriers, which are positions in the lattice that are devoid of an electron.

ANSWER: electron **holes** [do not accept or prompt on "electrons"]

20. This term was coined as a pejorative title by the Scottish absolutist William Barclay, who used it to describe George Buchanan. For 10 points each:

[10] Name this term used to describe thinkers like Francois Hotman and the pseudonymous Stephanus Junius Brutus, who wrote tracts in the wake of the St. Bartholomew's Day Massacre arguing that the French king was bound to a contract with the people.

ANSWER: **Monarchomachs** [or **Monarchomaques** or Monarcho-machy]

[10] For a time, William Barclay resided at the court of this English king who wrote a work on "Daemonologie." In an event praised by the monarchomachs, this king was nearly assassinated in the Gunpowder Plot of 1605.

ANSWER: **James I** of England and Ireland [or **James VI** of Scotland]

[10] This jurist based in Toulouse was the primary opposition to the monarchomachs. He also wrote about witchcraft in a work entitled *Of the Demon-mania and the Sorcerers*, but he's best remembered for his book translated into English in 1606 as *Six Books of a Commonweale*.

ANSWER: Jean **Bodin**