



ACADEMIC COMPETITION FEDERATION

2015 ACF NATIONALS
PACKET BY WUSTL AND MCGILL

TOSSUPS

1. The H93G mutant of this protein can be used to model the class of proteins to which this protein belongs. This protein reduces nitrites to generate nitric oxide 36 times faster than a related protein. This protein is present in the urine of patients with malignant hyperthermia, phosphofructokinase deficiency, and McArdle's disease. This 153 amino acid protein contains 8 right handed alpha-helices, which comprise 75% of its secondary structure. The presence of this nephrotoxic protein in urine is an indicator of rhabdomyolysis. This protein's distal histidine stabilizes the non-cooperative binding of it to its major ligand. The red color of meat is caused by this protein, which allows deep diving mammals to hold their breaths for a very long time. For 10 points, name this protein that carries oxygen in muscle tissue.

ANSWER: myoglobin

2. A character in this novel wonders whether her boyfriend Ryk wants to marry her or a black girl; that character has a conversation about how stars actually throb rather than twinkle with another lover. That lover joins a group of wild horsemen on the Isle des Chevaliers at the end of this novel after being piloted there by Thérèse. In this novel's first chapter, Margaret's hopes that her son Michael will come home for Christmas are dismissed by her husband Valerian. One of the main characters of this novel is a poor sailor who washes up at the estate of the Streets, the family who sponsors the modeling career of its other main character. Son and Jadine are the protagonists of this novel, which is named for an object that is punched and kicked when it doesn't respond to a character who later tricks the object's creator into throwing him into a briar patch. For 10 points, name this Toni Morrison novel that shares its name with a sticky object used by Br'er Fox to entrap Br'er Rabbit.

ANSWER: Tar Baby

3. A social scientist born in this country argued that individuals' "in-groups" and "out-groups" are a source of self-esteem as part of social identity theory. A social scientist from this country posited a "pointillist" conception of time in *Consuming Life*. This birthplace of Henri Tajfel was the birthplace of the University of Leeds professor who claimed the title event is neither a "Jewish problem" or a "German Problem" in *Modernity and the Holocaust*. A sociologist from this country claimed that humanity was not in an era of postmodernity but liquid modernity. In a 1922 book, another social scientist from this country examined the building of the *waga* and noted that necklaces passed clockwise while bracelets moved counter-clockwise in an analysis of the *kula* ring. For 10 points, name this home country of the author of *Argonauts of the Western Pacific*, Bronislaw Malinowski.

ANSWER: Republic of Poland

4. A 2005 biography of this man by Vincent Carretta uses a baptism record and a ship's muster to question traditional accounts of his birth. This man informed Granville Sharp about an incident where slaves had been thrown into the sea to collect insurance proceeds, known as the *Zong* massacre. Late in life, he became an assistant to a scientist who experimented on the purification of saltwater, Charles Irving, and he married Susanna Cullen. He refused a business offer from Robert King after paying him forty pounds, and joined the London Corresponding Society after moving back to England. Michael Pascal, a lieutenant in the Royal Navy, renamed this man, whose life among the Igbo people and kidnapping with his sister became part of his "Interesting Narrative." For 10 points, name this figure, also known as Gustavus Vassa, who wrote a well-known slave narrative.

ANSWER: Olaudah Equiano [or Gustavus Vassa until it is read]

5. One of these figures carelessly drags a string of coins earned from castanet performances around behind them, and is often depicted as androgynous. Another of these figures received a dream as a teenager advising her to subsist entirely on powdered mica or mother of pearl. They're not loa, but these figures can "descend" and possess the bodies of men during a certain harvest festival. Many of these figures are depicted carrying fly whisks, and several of them were taken to heaven by cranes. One of these figures owned a white donkey that he could fold up and put in his pocket, while another returned from a spirit journey to find that his mortal body had been cremated, forcing him to possess a decrepit beggar and walk with an iron crutch. A member of this group leapt to his feet as a seven-day-old baby and announced that his name was "recorded in the capital of the Jade Emperor." For 10 points, name this group including Zhongli Quan, Lu Dongbin, and Li Tieguai, who are known in Daoism for their infinite lifespan.

ANSWER: the Eight Immortals [or Baxian; or the Eight Genies]

6. A May 2012 paper attributed this man's success to "Quality Versus Junk" and "Betting Against Beta" and cited the effects of 1.6 times leverage; that paper discussed this man's alpha. This man used the example of a group of coin-flipping orangutans that all come from the same zoo in "The Superinvestors of Graham-and-Doddsville," which mentions his partner Charlie Munger and advocates value investing. This man has noted the importance of insurance float as a reason for his company's ownership of GEICO; in 2008 that company made a major preferred stock and warrant investment in Goldman Sachs. This man's decision to donate his wealth to the Bill and Melinda Gates Foundation inspired the Giving Pledge, and his comments about his secretary's tax rate relative to his own inspired a namesake tax on high income individuals. For 10 points, name this billionaire investor who leads Berkshire Hathaway.

ANSWER: Warren Edward Buffett

7. Degradation and aggradation leads to a quasi-equilibrium in Stanley Schumm's model of the metamorphosis of these systems. Given all of their components, the magnitude of these networks can be calculated using Shreve's ordering system. By constructing a longitudinal profile of these systems, one can determine their "knickpoints." The bifurcation ratio of these networks characterizes their topology and can be calculated by finding their Strahler number. In geology, the process by which parts of these systems reconverge is anastomosis. The process in which parts of these systems are abandoned and added is called avulsion. Isoetids often grow at the riparian zone, the edge of these entities. The movement of these systems can lead to the creation of anti-dunes, as well as rills, gullies, and arroyos. For 10 points, the meandering of what systems can lead to the formation of an oxbow lake?

ANSWER: river systems [or fluvial systems; or stream systems; or tributary systems; or channel systems]

8. Minor works attributed to this author include a 4600-line hagiography of Aethelthryth of Ely, or St. Audrey, and a translation of the *Legend of the Purgatory of St. Patrick*. One of this author's original poems concerns a soldier who is offered infinite wealth by a lady whose meadow pavilion is invisible to everyone but him. Another poem by this author uses the metaphor of a hazel tree intertwined with wild honeysuckle to retell the story of Tristan and Isolde. A chapter of Giorgio Agamben's *Homo Sacer* examines a poem by this author in which a baron bites off his unfaithful wife's nose before he is revealed to be a werewolf. Those poems, *Lanval*, *Chevrefoil*, and *Bisclavret*, are examples of a poetic form which this author developed while working under the patronage of Eleanor of Aquitaine. For 10 points, name this female poet who authored the oldest surviving "lays" and whose epithet may refer to her birthplace in Brittany.

ANSWER: Marie de France [prompt on "Marie"]

9. The town of Eger in Hungary is home to one of these structures that marks the northernmost point of Ottoman expansion. One of these structures was hypothesized to be the last standing monument of the lost city of Turquoise Mountain, and was built to celebrate the defeat of Prithviraj Chauhan by a ruler of the Ghurid Dynasty—that one is at the site of Jam. The founder of the Ahmadiyya movement, Mirza Ahmad, built a white one at Qadian to fulfill a hadith about the descent of Jesus. The tallest one in the world was designed by French architect Michel Pinseau, at the bidding of King Hassan II. The first ruler of the Delhi Sultanate built one called the Qutb (kut-ub), named in honor of its dedicatee, a Sufi mystic. Traditionally, the adhan or call to prayer is given from the gallery of one of these structures by a muezzin. For 10 points, name these tall spires that are often attached to mosques.

ANSWER: minarets [or minars; or menare; or manara; or munnaaru]

10. During a slow to fast transition in this work, an accelerating descending chromatic scale is played before a Mannheim Roller on a rapid octave C accompaniment. A G-C-D-E flat motif begins the rondo theme of the third movement of this work, and is transposed into E flat minor and passed between the hands in the second theme of its first movement. Its first movement includes a passage where a descending scale is played on thirty-second, then sixty-fourth, then hundred-twenty-eighth notes. Edward Elgar claimed that the opening of the “Nimrod” *Enigma Variation* was based on this composition, which was dedicated to Prince Karl Lichnowsky. It begins with a first movement Grave section on a long solid C minor chord. Its A-flat major *andante cantabile* second movement bears a strong resemblance to Mozart’s C-minor 14th composition in the same genre. For 10 points, name this Beethoven composition for a solo keyboard instrument that shares its nickname with Tchaikovsky’s sixth symphony.

ANSWER: the **Pathétique Sonata** [or the Grande **Sonate Pathétique**; or Ludwig van **Beethoven**’s **Piano Sonata No. 8** in C Minor; or Ludwig van **Beethoven**’s **opus 13**; prompt on partial answers; “Beethoven” is not needed after it is read]

11. This period is the subject of three chronicles known as the Commentaries of *Gōngyáng*, *Gǔliáng*, and *Zuo*. One method of organizing this era divides it into the ages of regional cultures, encroachments, and reforms. A minister near the end of this period wrote two manuals - one on fish farming, and one laying out the “twelve golden rules” for business success. That minister is also said to have discovered the beautiful Xi Shi, and lived with her on a boat in Taihu Lake. The chancellor Guan Zhong stabilized this period by introducing the bá system, which installed a series of five hegemonies beginning with Duke Huan. This period, which ended with the partition of the State of Jin, also featured the Hundred Schools of Thought, and it was the first portion of the Eastern Zhou dynasty. For 10 points, name this period followed by the Warring States, which is the namesake of some annals that are a Classic of Chinese literature.

ANSWER: **Spring and Autumn** Period [or **Chūnqiū Shídài**; prompt on “Eastern **Zhou** Dynasty”]

12. One story by this author has the moral that “if your godfathers and godmothers at your baptism give you a pretty name, you will probably marry the most beautiful woman in the world and live happily ever afterwards.” In another story by this author, Millicent’s family calls her “most selfish” for burdening them with the secret of how she killed her husband with a Malay sword. In addition to “The Choice of Amyntas” and “Before the Party,” this author wrote a story in which Lawson drowns himself in “The Pool” following years of marriage to a Samoan girl, and also penned a detective story called “Footprints in the Jungle.” A set of linked stories by this author follows the title spy as he works for R. and encounters nefarious characters like the “hairless Mexican.” For 10 points, name this author who fictionalized his experience in British intelligence in the collection *Ashenden* and also wrote about Davidson’s attempt to rescue Sadie Thompson from prostitution in the story “Rain.”

ANSWER: W. Somerset **Maugham** [or William Somerset **Maugham**]

13. An album in this style features the thirty minute track “The Creator Has a Master Plan” and is titled *Karma*. A man who pioneered this style had his ten year old son Denardo play the drums on their album *The Fox Hole*. A pioneer of this style originally received his nickname “Pharaoh” when he joined Sun Ra’s Arkestra. It titles an album whose second and final track is called “First Take,” and whose first track was performed by a “double quartet” consisting of Freddie Hubbard and Eric Dolphy. The songs “Focus on Sanity” and “Lonely Woman” were composed for another album in this style, *The Shape of Jazz to Come*. This style is so named because fixed instrumental roles were ignored and improvisation was done in the namesake style. For 10 points, name this style of jazz pioneered by Ornette Coleman, which broke down the conventions of bebop and modal jazz.

ANSWER: **free** jazz

14. Elliptic regularization of the Hamilton-Jacobi equation led to the development of solutions named after this quantity for nonlinear degenerate elliptic equations. When Burgers’ equation is solved in the limit where this quantity approaches zero, the solution possesses a shock discontinuity. This quantity is the central variable to the transport equation in the Spalart-Allmaras model. The dynamic response caused by a material possessing this property is quantified by the loss modulus. One form of this quantity serves as a diffusion coefficient for linear momentum. The length scale over which this quantity is significant can be calculated with the Blasius formula. This quantity acquires time dependence in rheopectic and thixotropic materials. The effects of this quantity are significant only inside the boundary layer. This quantity is equal to the ratio of shear stress to shear rate, and it comes in dynamic and kinematic types. For 10 points, name this quantity which is constant for Newtonian fluids.

ANSWER: **viscosity** [or kinematic **viscosity**; or dynamic **viscosity**; or eddy **viscosity**]

15. This dynasty's power was weakened after a member issued a Testament creating the Seniorate Province as part of a plan to split his kingdom between his four heirs, and his widow Salomea of Berg. One branch of this house, which included rulers known as "Tanglefoot" and "the Exile," was surrendered after this dynasty's final ruler signed the Treaty of Trentschin renouncing its claim to Silesia. Earlier, when this dynasty's ruler Henry II the Pious was killed at the Battle of Legnica, its Silesian branch was left exposed. Its final ruler succeeded a king known as the "Elbow-High" for his short stature, and extended protection to Jewish citizens. This dynasty's second king lent his army to the Kievan Rus' ruler Sviatopolk to battle Yaroslav the Wise, and inherited this dynasty from Mieszko I. For 10 points, name this dynasty which included Casimir the Great and Boleslaw the Brave, the first ruling house of Poland, which should not be confused with the Premyslids.

ANSWER: Piast dynasty

16. In Book 1 of his *Confessions*, Augustine criticizes his teachers for making him read one of this author's works about a "lewd youth" imitating "Jove." Another work by this author, which ends with a gentleman from the city being convinced by a relative to marry a neighboring widow, Sostrata, was adapted by Thomas Shadwell as *The Squire of Alsatia*. The line "I'm a man, I don't regard any man's affairs as not concerning me," is spoken in the first act of one of his plays by the pompous Chremes, who is repeatedly deceived by the servant Syrus. Several of this man's prologues were written to be delivered by the actor Ambivivus Turpo. This author's play *The Self-Tormentor* may be based on a work of Menander, while plays by Apollodorus of Carystus served as the basis for this man's *The Mother-in-Law* and *Phormio*. For 10 points, identify this playwright, a Carthaginian-born slave who wrote the *The Eunuch*.

ANSWER: Terence [or Publius Terentius Afer]

17. This element is used in the indicator electrode in polarography experiments, and it is found in namesake "drop electrodes" and "film electrodes" used as working electrodes in voltammetry experiments. Potassium mixed with a tetra-iodo anion containing this element is used in a reagent for detection of ammonia named for Nessler. This element mixed with sulfuric acid catalyzes the hydration of alkynes to form ketones. A saturated solution of this element's chloride dissolved in potassium chloride comprises a common reference electrode known as the saturated calomel electrode. Sodium borohydride is used to remove an acetate of this element in a reaction where an alkene is converted to an alcohol in a classic example of a Markovnikov addition. For 10 points, name this element found in amalgams and the ore cinnabar, a metal whose low freezing point makes it suited for usage in thermometers.

ANSWER: mercury [or Hg]

18. A primary source on this artist are his letters to John Fisher, such as one describing the composition of his painting depicting the ruined Hadleigh Castle. He described the title structure of one of his paintings as a "dart up into the sky like a needle" to his wife Maria; that depicts an animal cart in the river Nadder. To explain the symbolism of a rainbow in another painting, this artist added nine lines from a poem by James Thomson to its catalogue description. The originality of this man's style led Delacroix to change the background of his *Massacre at Chios*. A series of his paintings depicts a magnificent white building "from the meadows" and "from the bishop's ground." He created another painting depicting Willy Lott's cottage on the Stour River. For 10 points, name this artist who made numerous depictions of Salisbury Cathedral and the landscape masterpiece *The Hay Wain*.

ANSWER: John Constable

19. This book's fourth appendix, "Nagel's Brain," refutes the notion that humans are identical with their brains. This book resolves the question of whether it is ideal to have a child at the age of fourteen with what its author calls "Theory X." This text uses a thought experiment in which a man enters a cubicle presses a button and is teletransported to Mars to illustrate the metaphysical implications of self. This book imagines that there exists two different Hells, and discusses why Hell two seems preferable over Hell one by the impersonal average principle. It uses the example of a 10 billion person society paradoxically being less ideal than a much larger society, even though the lives of the second society's members are barely worth living. That paradox leads to this book's formulation of the "Repugnant Conclusion." For 10 points, name this philosophical text on population ethics, authored by Derek Parfit.

ANSWER: Reasons and Persons

20. One chronicle declares that those envious of this ruler could find only one fault in him - that he was too merciful. That chronicle of this ruler's life was written by a figure known only as "the Astronomer," while a lengthy poem honoring this ruler's deeds was written by Ermoldus Nigellus, or Ermold the Black, whom he may have exiled. This ruler governed monasteries in his land according to the Codex Regularum developed by Benedict of Aniane, and a biography of his life was written by Thegan of Trier. His daughter Gisela was gifted the nunnery of San Salvatore, the former residence of his second wife Judith of Bavaria. He was briefly revolted against by his librarian Ebbo, the Archbishop of Reims, who propped up this man's son Pepin of Aquitaine. Later on, he designated his youngest son Charles the Bald to receive Aquitaine, incurring the wrath of his other son Lothair. His lands were finally divided amongst his heirs by the Treaty of Verdun. For 10 points, name this son and successor of Charlemagne.

ANSWER: Louis the Pious [or Louis I; or Louis the Fair; or Louis the Debonaire; prompt on "Louis"]

TIEBREAKER

21. In one election, this leader was harmed by Scott Reid's suggestion that an opposing party's child care subsidy might be used to buy beer and popcorn. One opponent of this leader accused him of plans to expand the St. Lawrence Seaway to benefit his holdings in Canadian Steamship Lines. After succeeding another man of the same party, this man broke with tradition by purging almost half of his predecessor's cabinet. That measure may have been caused by Sheila Fraser's revelations that hundreds of millions of dollars in federal money intended to advertise the government in Quebec were wasted during this man's tenure as finance minister. That matter, the Sponsorship scandal, or Adscam, helped lead to this man's defeat after Jack Layton of the NDP supported a no confidence motion against him. For 10 points, name this prime minister of Canada who was succeeded in 2006 by Stephen Harper.

ANSWER: Paul Martin

BONUSES

1. This building is currently the tallest steel-supported brick building in the world. For the stated number of points:

[10] For 10 points, name this New York art deco skyscraper which was the world's tallest building, until the construction of the Empire State Building.

ANSWER: Chrysler Building

[5] For 5 points, the original Art Deco style associated with handicraft transitioned into this variant which emphasized curvy lines to make it suitable for mass production. Examples of it include the Coca-Cola Bottling Plant in LA.

ANSWER: Streamline Moderne [or Art moderne]

[5] For 5 more points, Streamline Moderne influenced this science-fiction inspired style that uses starburst ornaments. The "Welcome to Fabulous Las Vegas" sign is an example of this style named after a West Hollywood Coffee Shop.

ANSWER: Googie Architecture

[10] For those final 10 points, the "Theme Building" of this Los Angeles building complex resembles a giant UFO and is in the Googie style. That Theme Building is supported by three, massive, curved white supports.

ANSWER: Los Angeles International Airport [or LAX]

2. The process of bunrei divides one of these entities into two equal copies, one of which gets transferred to a new shrine as part of kanjo. For 10 points each:

[10] Name these spirits worshipped in Shinto, such as the dogami, which live in your oven.

ANSWER: kami

[10] The kami of rice Inari is associated with, and possibly married to, this goddess of food who spit out a fish and coughed up a bowl of rice in the presence of Tsukuyomi, who then killed her with an arrow of silver light.

ANSWER: Uke Mochi [or Ogetsuhime-no-kami; or Ugonomitama; or Uga-no-kami; or Ukeomochi]

[10] Another kami of food is this figure who, according to the *Kojiki*, was sent by Emperor Suinin to a magical land across the sea to bring back the fruit of the fragrant tree, but the emperor was dead by the time he returned, so he cried himself to death. He's now worshipped as the kami of wagashi, or sweet confections.

ANSWER: Tajimamori [or Tajima Mori]

3. Answer the following about the history of birds, for 10 points each.

[10] In 1906, an incident named for this Egyptian town broke out when peasants objected to British officers hunting pigeons for sport. The consul general Lord Cromer retired just after this incident, which Mustafa Kamil used to rally Egyptian nationalists.

ANSWER: Dinshaway Incident [or Denshawai; or Dinshwai]

[10] Eight soapstone bird sculptures were excavated in the ruins of this ancient city, which was first sighted by Adam Render and explored by his companion Karl Mauch.

ANSWER: Great Zimbabwe [do NOT accept or prompt on "Zimbabwe"]

[10] A golden falcon was said to perch eternally on the silk umbrella of this filthy rich ruler of the Mali Empire, who built Sankore University and made a noted pilgrimage to Mecca in 1324.

ANSWER: Mansa Musa [or Musa Keita I of Mali]

4. The most naïve way to find these entities fails when there are overlapping polygons. For 10 points each:

[10] Name these objects, which are identified in both the painter's algorithm and Warnock's area division algorithm. After they are identified, they are not rendered.

ANSWER: hidden surfaces [or occluded surfaces]

[10] Hidden surface removal is part of this process of converting a 3D scene to a 2D image. This parallelized process is mostly fixed-function and begins with the modeling of primitives, and usually ends with texturing or pixel modification.

ANSWER: graphics pipeline [or the rendering pipeline; prompt on "rendering"]

[10] The programmable portions of the graphics pipeline are controlled using these programs, which were originally designed to alter the lighting model of a scene. "Vertex" and "Geometry" types of these programs currently exist.

ANSWER: shaders

5. In one poem, this man claims to have “two loves” of “comfort and despair”, who he refers to as a “better angel” and a “worse spirit”. For 10 points each:

[10] Name this poet who wrote in another sonnet that if he tried to write down the true beauty of his beloved, “the age to come would say ‘This poet lies;/ Such heavenly touches ne’er touched earthly faces.’”

ANSWER: William Shakespeare

[10] The aforementioned Sonnet 17 also refers to “the beauty of” this body part. Sonnet 130 opens with the declaration that the ones belonging to the speaker’s mistress “are nothing like the sun.”

ANSWER: eyes

[10] The first 126 of Shakespeare’s sonnets are addressed to this figure, a prominent subject in debates about Shakespeare’s sexuality. Sonnet 20 explicitly laments that he isn’t a woman, calling him “the master mistress of my passion.”

ANSWER: the Fair Youth

6. The artist of this painting claims that he was attempting to make a bird alighting on the field, but he created something different; leading him to call this painting a “continuous accident.” For 10 points each:

[10] Name this canvas, which shows a man with a bloody mustache standing on an Oriental carpet. The head of that man in this canvas is bisected by an umbrella, and behind him is a giant beef carcass.

ANSWER: Painting, 1946

[10] *Painting, 1946* was made by this Irish artist, who made a series of paintings after Diego Velazquez’s *Portrait of Pope Innocent X*.

ANSWER: Francis Bacon

[10] Francis Bacon also made a triptych featuring three studies of this fellow countryman and artist, who depicted the obese Sue Tilley on a sofa in *Benefits Supervisor Sleeping*.

ANSWER: Lucian Freud

7. Under his leadership, the Irish Repeal Party signed the 1835 Lichfield House Compact with the Whigs and the Radicals to oppose Robert Peel’s Conservatives. For 10 points each:

[10] Name this Irish politician nicknamed The Liberator for his successful campaign for the passage of the Catholic Emancipation Act.

ANSWER: Daniel O’Connell

[10] This English Prime Minister helped push Catholic Emancipation through Parliament in part so that it would allow O’Connell to take his seat. He also commanded the allied army that defeated Napoleon at Waterloo.

ANSWER: 1st Duke of Wellington [or Arthur Wellesley, 1st Duke of Wellington]

[10] This Irish lawyer founded the Home Government Association in 1870, which transformed into the Home Rule League later led by Parnell. He opposed O’Connell early on, and supported a feudal system for Ireland.

ANSWER: Isaac Butt

8. An SKL C terminal domain or a less conserved N terminal domain can target proteins to this organelle through interactions with PEX 5 or PEX 7 proteins. For 10 points each:

[10] Name this organelle that serves as the site of beta-oxidation of long chain fatty acids and breakdown of D amino acids. It contains the enzyme catalase.

ANSWER: peroxisome

[10] Peroxisomes are the also sites of synthesis for these membrane phospholipids with a vinyl ether-linked alkyl group in the first carbon position. These phospholipids are abundant in the membranes of nervous tissue and erythrocytes, and are synthesized with enzymes such as DHAP acyltransferase and acyl DHAP reductase.

ANSWER: plasmalogen

[10] The peroxisome is also the site of this metabolic pathway, a modified form of the citric acid cycle in which the enzymes isocitrate lyase and malate synthase convert isocitrate to malate via a namesake 2-carbon intermediate.

ANSWER: glyoxylate cycle

9. This character's parents appear in the story "The Doctor and The Doctor's Wife," while Bill tells him he was smart not to marry Marge in "The Three-Day Blow." For 10 points each:

[10] Name this character who catches a bunch of grasshoppers before fishing in "Big Two-Hearted River" and helps his father perform a C-section in "Indian Camp". He bears many similarities to his creator, Ernest Hemingway.

ANSWER: Nick Adams [accept either underlined portion]

[10] All four of those stories appear in this Hemingway collection, his first. It also includes "The End of Something" and "The Cat in the Rain."

ANSWER: In Our Time

[10] In this story from *In Our Time*, Nick Adams goes on a ski trip with his friend George, during which they discuss Adams' pregnant wife.

ANSWER: "Cross Country Snow"

10. For 10 points each, answer the following about the philosophical texts that examine the hypothetical practice of genetically enhancing human beings.

[10] This book by Francis Fukuyama examines consequences of the biotechnology revolution and speculates on the cataclysmic shifts in the political order that might occur if the practice of altering genes is implemented.

ANSWER: Our Posthuman Future

[10] This Harvard philosopher opposed genetic engineering on the basis of its effects on "humility", "responsibility" and "solidarity" in his book *The Case Against Perfection*. He teaches a class called *Justice* that is available for free.

ANSWER: Michael J. Sandel

[10] In an essay collection, this philosopher decried the genetic engineering of humans as "alien determination." He argued that cultural knowledge is transferred through mutual understanding in *The Theory of Communicative Action*.

ANSWER: Jürgen Habermas

11. The jurist Henry of Bracton was perhaps influenced by Thomas Aquinas's view that life begins with movement in emphasizing the importance of this moment. For 10 points each:

[10] Name this moment when a woman first feels the movements of her unborn child, which was once used to determine whether an abortion was a homicide.

ANSWER: quickening [or word forms, such as quicken]

[10] This Catholic pope issued the 1588 bull *Effraenatam*, removing the distinction between a quickened and unquickened fetus. He also designed a new street plan for Rome and excommunicated Henry of Navarre, as part of his alliance with Philip II of Spain.

ANSWER: Pope Sixtus V [or Felice Peretti di Montalto; prompt on "Sixtus"]

[10] The perception of movement in the womb improved slightly when this Frenchman invented the stethoscope in 1816, while working at the Hopital Necker.

ANSWER: René Laennec [or René Théophile-Hyacinth Laennec]

12. Noether's theorem applies when there are continuous symmetries in a system described by this term, which applies to configurations which satisfy the equations of motion. For 10 points each:

[10] Name this term used in quantum field theories to describe particles whose momentum vectors lie on a hyperboloid defined by the energy-momentum relation, and are thus real particles.

ANSWER: on-shell [or on the mass shell]

[10] In classical mechanics, configurations which are on-shell must satisfy these equations. These equations are stated as $dL/dt - d(q \cdot \dot{q})/dt = 0$.

ANSWER: Euler-Lagrange equations [prompt on "Lagrange equations of the second kind"; do NOT accept or prompt on "Euler equations"]

[10] Application of Noether's theorem to a system whose Lagrangian has rotational symmetry yields the result that this quantity is conserved for the system. This quantity's time derivative is torque.

ANSWER: angular momentum [prompt on "L"; do NOT accept or prompt on "momentum"]

13. Answer the following about the history of child labor in the United States, for 10 points each.

[10] This philanthropist founded The Children's Aid Society in New York City in 1853, and is called the father of the foster care system in the U.S. for leading a movement known as the Orphan Train which relocated homeless children, especially to Western pioneer families thirsty for some sweet child labor.

ANSWER: Charles Loring **Brace**

[10] One of the first places to provide "after school programs" for children was this settlement in Chicago co-founded by Ellen Gates Starr and Jane Addams.

ANSWER: **Hull House**

[10] This Vermont-based muckraker wrote such delightful books as *Underfed School Children*, *The Common Sense of the Milk Question*, and his masterpiece *The Bitter Cry of the Children* published in 1906. Originally born in Britain as a granite cutter, he also wrote a biography of Karl Marx in 1908.

ANSWER: John **Spargo**

14. After this play flopped at its premiere, where it was roundly mocked, its author only ever revived it as a puppet play. For 10 points each:

[10] Identify this symbolist play in which Dona's efforts to marry her poet son to Sylvia are delayed when that son falls in love with the title character, who is temporarily stranded among those beetles due to a broken wing.

ANSWER: The **Butterfly's Evil Spell** [or El **maleficio de la mariposa**]

[10] This other play by Federico Garcia Lorca has only one named character, Leonardo Felix, who fights a duel to the death with the Groom after running into the woods with the Bride.

ANSWER: **Blood Wedding** [or **Bodas de sangre**]

[10] The title character of this Garcia Lorca play drives her much older husband away under the pressure of stress from the small-town scandal of their marriage. She opens a tavern during his absence, and he returns as a puppetmaster at this play's end.

ANSWER: The **Shoemaker's Prodigious Wife** [or La **zapatera prodigiosa**; or "wonderful" or "prosperous" in place of "prodigious"]

15. Identify the following about twins involved in the voyage of the *Argo*, for 10 points each.

[10] Also known as the Dioscuri, this pair of twin Argonauts from Sparta are technically quadruplets, as they were born from eggs alongside their sisters Helen and Clytemnestra. Name both.

ANSWER: **Castor** and **Pollux** [or the **Gemini**; or **Polydeuces** in place of "Pollux"]

[10] This winged pair of Argonauts were the sons of the north wind. They saved the Thracian king Phineus from the Harpies, who had been eating or befouling all of his food. Name both.

ANSWER: **Zetes** and **Calais** [or the **Boreads**; or **Zethes** for "Zetes"]

[10] Thessalus, one of the twin sons of Jason and Medea, succeeded this man as King of Iolcus. This man had previously driven the returned Jason and Medea out of Iolcus after the latter convinced his sisters to murder their father Pelias.

ANSWER: **Acastus**

16. In the sedimentation form of this technique, particles are passed through a flow channel which is coiled up inside a centrifuge which drives particles towards the accumulation wall. For 10 points each:

[10] Name this family of techniques elucidated by Giddings. These separation techniques are alternatives to normal chromatography in which an electric, thermal, or centrifugal field is applied perpendicular to the direction of the flow.

ANSWER: **field-flow fractionation** [or **FFF**]

[10] This phenomenon is the motion of particles in a fluid subjected to an electric field. Its "capillary" form is used to separate DNA fragments in Sanger sequencing, while other forms of it use polyacrylamide or agarose as a matrix.

ANSWER: **electrophoresis** [or gel **electrophoresis**]

[10] In a variation on capillary or gel electrophoresis, proteins can be separated based on their value for this quantity. That technique is this quantity's namesake "focusing," and it involves putting proteins in a region with an electric field and a pH gradient.

ANSWER: **isoelectric** point [or **pI**]

17. This body first condemned magnates like Count Hoorne who had petitioned Margaret, the Duchess of Parma, for a relaxation on religious persecution in 1566. For 10 points each:

[10] Name this legal body set up to enforce adherence to Roman Catholicism in the Netherlands. In 1569, it initiated an onerous 10 percent sales tax, the “Tenth Penny,” that eventually became its undoing.

ANSWER: Council of Troubles [or Council of Blood; or Raad Van Beroerten; or Bloedraad; or Tribunal De Los Revoltosos; or Tribunal De Sangre]

[10] This Spanish nobleman, also known as “The Iron Duke,” organized the Council of Blood on behalf of Philip II.

ANSWER: Duke of Alba [or Duke of Alva; or Fernando Alvarez de Toledo; or Ferdinandus Toletanus Dux Albanus]

[10] Philip II had sent the Duke of Alba into the Low Countries partly as a response to the outbreak of iconoclasm in 1566 which was referred to by this Dutch term. Partly driven by a famine, the merchant Dirck Cater led this iconoclastic wave in Utrecht, while other people broke stuff in Antwerp.

ANSWER: the Beeldenstorm [or Stille Beeldenstorm]

18. A discussion of snowfall ends this work, whose narrator discusses flirting with the courtier Yukinari, among other aspects of life in the court of Emperor Teishi and his wife For 10 points each:

[10] Name this collection of thoughts that also includes lists of “embarrassing things” and “hateful things”. It was written by a member of the Kiyohara family known only as Sei Shonagon.

ANSWER: The Pillow Book [or Makura no soshi]

[10] This short work by Kamo no Chōmei considers the Buddhist concept of *mujo*, or impermanence, as it chronicles the natural disasters striking Kyoto its author observes from his mountain dwelling.

ANSWER: Hōjōki [or An Account of My Hut; or The Ten Foot Square Hut]

[10] *The Pillow Book* and *Hojoki*, like Yoshida Kenko’s *Essays in Idleness*, are exemplars of this Japanese literary genre, which essentially consists of the casually recorded thoughts of an author.

ANSWER: zuihitsu

19. This piece’s first movement opens with a clash between the orchestra, which opens the piece playing a fortissimo theme, and the pianist, who responds with the same statement played pianissimo. For 10 points each:

[10] Identify this C major work whose last three movements are all based on a theme taken from a namesake lied by the composer. It is so technically demanding that, according to one story, the composer shouted “The Devil may play it, for I cannot!” after finding himself unable to play the finale.

ANSWER: the Wanderer Fantasy [prompt on “Fantasia in C major”; accept but DO NOT OTHERWISE MENTION D. 760 or Franz Schubert’s opus 15]

[10] In this song cycle by the same composer, the soloist relates his conflicted opinions about green, the color worn by a hunter who has captured the title character’s affections, in the 16th and 17th songs, then sings a song to withered flowers before drowning himself in a brook.

ANSWER: Die schöne Müllerin [or The Beautiful Miller’s Daughter]

[10] The *Wanderer Fantasy* and *Die schöne Müllerin* were both composed by this Austrian, who completed his *Trout Quintet* but left his eighth symphony unfinished at his death.

ANSWER: Franz Schubert [or Franz Peter Schubert]

20. This man sought to shed the “last vestiges of utility analysis” with his new approach of constructing an individual’s indifference curves, called revealed preference theory. For 10 points each:

[10] Name this author of *Foundations of Economic Analysis*, who applied the mathematical structure of classical thermodynamics to numerous branches of economics.

ANSWER: Paul Anthony Samuelson

[10] This Hungarian economist co-names an effect with Paul Samuelson stating that an increase in workers’ wages of the non-service sector of the economy will lead to higher wages in the services sector of the economy.

ANSWER: Béla Alexander Balassa

[10] The Balassa-Samuelson effect can be derived by applying this framework to the two components of an internal economy. It explains international differences in comparative advantage through differences in factor endowments.

ANSWER: Heckscher-Ohlin model