

2013 ACF Regionals: Transmitido en Quizbowlese (“This man while traveling through the woods found bathing in a stream the naked goddess Artemis”)

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Packet by Dartmouth A (Nick Jensen, Cameron Orth, Will Alston), Detroit Catholic Central (Paul Hamilton, Mark Karabajakian, Collin Parks, Brandon Roach), VCU A (Sean Smiley, George Berry).

1. One poem by this author uses “the shades of girls” and “the gunman and his moll” to describe the title entities, which are “seedless in the light.” This author proclaimed “the lips of time leech to the fountain head” in a poem whose title concept “drives [the speaker’s] green age.” In another poem by this author of “Our Eunuch Dreams”, the speaker recalls when he was “green and carefree, famous among the barns,” and “sang in [his] chains like the sea,” “young and easy under the apple boughs.” This author of “The Force that Through the Green Fuse Drives the Flower” wrote of wise men that know that their words “had forked no lightning” in a poem that urges “Rage, rage against the dying of the light”. For 10 points, name this Welsh poet of “Fern Hill” and “Do not go gentle into that good night.”

ANSWER: Dylan Marlais Thomas

2. One way to analyze this property for a molecule is to treat the entities at the center of it as though they were particles in a box the same length as the molecule. The wavelength of maximum absorption for systems with this property can be calculated using Woodward-Fieser rules. This property decreases the energy difference between the HOMO and LUMO. Those aforementioned rules are used in UV-vis spectroscopy, which can be used to analyze beta-carotene and other compounds whose pigmentation is a result of this property. This property is destroyed by an intervening sp³-hybridized carbon. Dienes with this property produce two kinds of products from electrophilic addition, instead of one, and have high stability. That stability is attributed to delocalized electrons. For 10 points, identify this property of molecules that have alternating single and double bonds.

ANSWER: extended conjugation [or conjugated (pi) systems; accept word forms of extended; prompt on electron delocalization or word forms before it is read; prompt on double bonds, pi bonds, sp² hybridization or other answers referring to individual bonds in a conjugated system; antiprompt on color or related answers; do not accept hyperconjugation]

3. Peter of Wakefield built a following by prophesying the exact date of this ruler’s death, about four years too early. He tried to use the Earldom of Richmond to bribe Pierre Bad-Clerk, and lost track of his captive Eleanor, Fair Maid of Brittany, who was shuttled in bondage through his castles for decades. His military career peaked after he wheeled his army south to rescue his mother at Mirabeau castle, the reason he was known as “Mollegladium.” This man trapped the losers at that battle to starve at Corfe Castle and personally drowned Arthur of Brittany in the Seine. English citizens were denied the sacraments after this ruler’s excommunication over the rejection of Stephen Langton for Archbishop of Canterbury. Robert Fitzwalter fought against William Marshal in the unrest triggered by the failure of this loser at Bouvines to honor an earlier agreement. For 10 points, name this Angevin Plantagenet, a brother of Richard I known as “Lackland” who signed the Magna Carta in 1215.

ANSWER: King John Lackland [or Johan sanz terre]

4. The second chapter of this man’s major work examines the title concept’s “Need and Substance,” using V.O. Key and Hans Morgenthau texts for definitions employed in discussing W.E.B. Dubois’ *Black Reconstruction*. The preface to one of this thinker’s works cites Frederick Douglass before examining the “Third World” of Fanon’s *The Wretched of the Earth* in the context of black Americans. That book, titled after his most notable concept, was co-authored by Charles Hamilton and included the first extensive treatment of a “sense of superior group position,” termed “institutional racism.” The shooting of James Meredith at the March Against Fear led this man to formulate his most notable concept after he exclaimed, “the only way we gonna stop them white men from whuppin’ us is to take over!” For 10 points, name this Pan-Africanist American civil rights leader, who led SNCC and popularized the term “black power.”

ANSWER: Stokely Carmichael [accept Kwame Ture before “Guinea-Conakry”]

5. In one opera by this composer, a character sings that the anger inside him has abated

like the storm outside in “*L’orage s’est calmé*”. A character in one of his operas sings “*Comme autrefois dans la nuit sombre*” after describing being given a necklace by a fugitive she saved. In another opera by this composer, a character sings a *seguidilla* about Lillas Pastia’s inn. Two friends sing about falling in love with a Brahman priestess at the same moment in his duet, “*Au fond du temple saint*”. In one of his operas, Leïla’s hand is sought by the title characters, Zurga and Nadir. The title character of one of his operas sings a *habanera*, and flirts with Escamillo the toreador and with Don José. For 10 points, name this French composer of *The Pearl Fishers* and *Carmen*.

ANSWER: Georges Bizet [or Alexandre César Léopold Bizet]

6. The preface to the English version of this book states that although this book is written for other members of the author’s profession, he hopes that the lay people can understand and learn from it. Chapter 12 of this work describes a theoretical beauty contest as a way to explain price fluctuations in equity markets, which utilizes the guess 2/3 of the average game. A more prominent idea of this work is the idea that the equation $c+i+g=y$ can be used to accurately represent GDP growth. This book advocates the idea that the growth of GDP is tied to aggregate demand, and as such governments should inject capital into the market. Written fifteen years after its authors *The Economic Consequences of the Peace*, for 10 points, identify this book that inspired FDR’s efforts in the New Deal and lays out the economic theories of John Maynard Keynes.

ANSWER: General Theory of Employment Interest and Money

7. This character draws a distinction between “Being” and “Becoming” people while in a room full of naked women. This character witnesses a game of throwing skulls, shortly before wagering an oil painting of himself and his wife. He confronts Atti in an underground chamber at the behest of a man whose dead father is reincarnated as a lion, the king Dahfu. The woman of Bittahness uses the word *grun-to-molani* to characterize the voice in this character’s head saying *I want I want I want*. This husband of Lily is guided on his journey by Romilayu. He blows up a cistern full of frogs and lifts an idol of Mummah, causing him to assume the role of Sungo. For 10 points, name this Saul Bellow protagonist who journeys to Africa and becomes the title Rain King.

ANSWER: Eugene Henderson [accept either; accept Sungo before mentioned; accept Henderson the Rain King before mentioned]

8. This man talked the Secretary of State and a senator into introducing Isaac Shelby to the leader of a forerunner to the Lewis and Clark expedition, a botanist named André Michaux. He lost much of his support after informing Alexander Dallas of his intentions regarding the ship *Little Sarah*, information soon transmitted to Pennsylvania Governor Thomas Mifflin. Alexander Hamilton proved this figure’s chief supporter when a warrant for his arrest arrived in 1794. Gouverneur Morris notably predicted that Washington would dislike this figure shortly after his April 1793 arrival in Charleston, where he began gathering privateers like the *Anti-George* and the *Sans-Culotte* to attack British and Spanish holdings. For 10 points, name this French ambassador to the early United States, who endangered US neutrality in a namesake affair and was known as “Citizen.”

ANSWER: Edmond-Charles “Citizen” Genêt

9. This figure’s manner of death was very similar to that of the Delian prince Thasius, son of Anius. Pausanias claimed to have been shown a rock near Vergoutiani known as this man’s “bed.” His parents left his native city and went to Erenea and Ceos after his death. In one version of this figure’s myth, he meets his fate after challenging Zeus for the affection of Semele. The most famous story of this son of Autonoe and Aristaeus, related by Callimachus, notes that his punishment only took effect after he responded to a call issued by his hunting party. This man died on Mount Cithaeron not long after unluckily encountering Artemis bathing in a spring. For 10 points, name this mythological hunter who was transformed into a stag and eventually devoured by his own dogs.

ANSWER: Actaeon [or Aktaion]

10. One method for detecting them uses the equation $\sin i \times a \text{ over } c \times M_{\text{sub p}} \text{ over } M_{\text{sub star}}$. That equation gives the maximum amplitude of the delay time and is used with pulsars. Although not an eclipsing binary, the Rossiter-McLaughlin effect is observed due to these entities. The first one of these was found by Mayor and Queloz. The HARPS instrument uses the radial velocity method to detect these objects by measuring very small shifts in the spectrum of a star due to the Doppler effect. Of those known, TrES-2b has the lowest known albedo, which was measured by *Kepler*. These objects can be detected by looking for dips in the relative brightness of a star in the transit photometry method. The Gliese 581 system is under intense scrutiny in the search for habitable ones. For 10 points, give this term for planets orbiting a star that isn't the Sun.

ANSWER: extrasolar planets [or exoplanets; or reasonable equivalents suggesting planets orbiting a star that isn't the Sun before it is read; accept gas giant planet until YGKOW G1; prompt on planet]

11. A naked baby waving a scepter triumphantly rides a goat in this man's painting of a horde of putti reveling in a bacchanal. In another work, this artist depicted a turbaned man in red clinging to the head of a mostly-submerged horse in front of a boat between two rocky outcroppings as a lightning bolt illuminates the scene. That painting is part of a series that includes depictions of two spies carrying an enormous bunch of grapes and Ruth kneeling before Boaz in front of a wheatfield. This painted of a series on *The Four Seasons* depicted them in another work as goddesses holding hands in a circle as an aged, winged figure plays a lyre. Panofsky connected this artist to the "elegiac tradition" for his painting of a woman in blue and orange next to three shepherds examining a tomb inscribed with a Latin phrase. For 10 points, name this French classicist who painted *A Dance to the Music of Time* and *Et in Arcadia ego*.

ANSWER: Nicolas Poussin

12. One character with this profession includes the Reply Churlish and the Lie Circumstantial in his explanation of how he almost quarreled on the "seventh cause". One character with this profession ends a play by singing a song with the refrain "For the rain, it raineth every day". Another of these characters says he would beat a character he calls "nuncle" for becoming old before being wise. One of these poses as Sir Thopas as part of a prank played on Malvolio. Another one of these accompanies Celia and Rosalind into Arden Forest. One of these employed by King Lear joins him in his exile, and mysteriously disappears from the play after Act 3, Scene 6. For 10 points, name this occupation of Touchstone in *As You Like It* and Feste in *Twelfth Night*, a common Shakespearean comic character.

ANSWER: Shakespearean fools [also accept clowns, court jesters, harlequins and other similar answers]

13. Christophe Pélissier wrote a letter in support of this military action that prompted a series of mass arrests by Frederick Haldimand, who would later trigger the treason trial of one of this action's most famous leaders. David Wooster so poorly administered a city during the first action of this type that he was court-martialed for incompetence. The defending force in the second of these actions was commanded by Sir George Prevost, while the first was repulsed by Thomas Carleton. In the first of these actions, Phillip Schuyler captured Fort St. John but was weighed down by smallpox during a campaign that saw the death of Richard Montgomery and led to Burgoyne's efforts to capture the Hudson. For 10 points, name this military action twice attempted unsuccessfully by the fledgling Continental Army, aimed at capturing cities like Montreal and Quebec?

ANSWER: (American) Invasions of Canada [Accept logical equivalents; accept more specific answers like "American Siege of Quebec," but prompt on just general answers like "Battle of Quebec"]

14. The splotch mutation in this organism affects Pax3, which is expressed in their cardiac neural crest cells. Genic selection in this organism promotes high frequencies of the t-allele, which affects deme extinction and is a prominent example of meiotic drive. When females of this organism possess mutated copies of fosB, they become negligent mothers. The link between leptin and obesity was found in a study of them. In the first experiment to demonstrate bacterial transformation, this organism was injected with pneumococcus by Frederick Griffiths. Capecchi, Smithies and Evans pioneered a technique in this organism in which embryonic stem cells inactivate a

gene by homologous recombination. That technique is "knock out." For 10 points, identify this laboratory rodent.
ANSWER: mice [or mouse; or Mus musculus domesticus; or Mus musculus musculus]

15. This book mentions such animals as "little foxes that ruin the vineyards" and "a mare among Pharaoh's chariots." It describes a vision of a palanquin made of the wood of Lebanon carried by sixty men and a dream about a woman being beaten by sentinels as she searches through a city for a man who had knocked on her door in the night. Verses from this book are read during Passover on Shabbat Chol HaMoed by Ashkenazi Jews. This book states that "many waters cannot quench love" and frequently beseeches the "daughters of Jerusalem" not to "stir up or awaken love until it is ready." The two central figures of this book are a young Shulamite woman and her radiant, gazelle-like beloved, and its second section begins, "I am the Rose of Sharon and the lily of the valleys". For 10 points, name this erotic Old Testament book about two lovers, attributed to the wise son of David.

ANSWER: Song of Solomon [or Song of Songs of Solomon; or Canticle of Canticles; or Sir HaSirim; or Aisma Aismaton]

16. This man sent Henry Shelton Sanford to lobby Congress and his father invested in a failed settlement at Santo Tomas de Castilla. This brother of Empress Carlota was made Duke of Brabant at the age of nine. After the death of his wife, this man married his mistress Caroline Lacroix and survived an assassination attempt by the Italian anarchist Gennaro Rubino. One of this ruler's lieutenants led the Emin Pasha Expedition, and in 1889 this ruler outlined a plan to defeat Arab slavers through development. Mark Twain and Sir Arthur Conan Doyle notably criticized this man's resulting project, which relied on the brutal Force Publique. The Casement Report detailed the horrors inflicted on workers who failed to meet rubber quotas for this ruler, who sent Henry Morton Stanley to Africa. For 10 points, name this King of Belgium from 1865 to 1909 and ruler of the Congo Free State.

ANSWER: Leopold II [or Léopold Louis Philippe Marie Victor; or Leopold Lodewijk Filips Maria Victor; prompt on Leopold]

17. This author wrote a short story about a radio editor who splices together tape cuttings of breaths and pauses. In one novel by him, arms dealing is defended as an honorable profession in a trial in which Erhard Schweigert is sentenced to death. This author of "Murke's Collected Silences" wrote a work in which the young bellhop Hugo is adopted by the protagonist's family. Russian prisoner-of-war Boris Lvovich has an affair with Leni Pfeiffer in his *Group Portrait with Lady*. A failed assassination attempt on Ben Wackes takes place in a novel by him that features a conflict between "lambs" and "buffaloes", and which chronicles the lives of a family of architects named the Faehmels. For 10 points, name this German author of *Billiards at Half-Past Nine*.

ANSWER: Heinrich Theodor Böll

18. The second movement of this composer's third symphony, marked *Vivace non troppo*, features a clarinet melody in F major that ends each phrase with "snap rhythms". His fourth symphony opens with the winds playing pulsing eighth notes in 6/8, before the violins play the melodic figure "A - C-sharp - A" twice. A chromatically busy accompanying figure has caused the nickname "Bee's Wedding" to be appended to his "Spinning Song". That piece joins a group of piano pieces by him that includes two "Venetian Gondola Song"s and a "Spring Song". His fourth symphony ends with a *saltarello* and was composed on the same European tour that produced his *Hebrides Overture*. For 10 points, name this German Romantic composer of the *Songs Without Words* and the "Scottish" and "Italian" Symphonies.

ANSWER: Felix Mendelssohn-Bartholdy

19. A rolloff of minus 20 dB per decade is typical of the internally compensated type of this device. An important measure used to characterize this device is how fast its output can change, which is the slew rate. One of these devices is used in the circuit for a weighted summer, as well as for an R-2R ladder DAC. The most commonly used one of these is the 741. 20 times the log of the quotient of the differential and common-mode gains of this device

gives its CMRR or common-mode rejection ratio. Their plus terminal is connected to ground and V sub in to form an inverting and noninverting one, respectively. The ideal version of this device has infinite input impedance and open-loop gain. For 10 points, identify these circuit elements whose output voltage is a multiplied version of the difference in its two inputs.

ANSWER: op amp [or operational amplifier; prompt on amplifier]

20. According to legend, this city was founded when a man saw a chevrotain defeat his hunting dogs after fleeing the kingdom of Singapura following its invasion by an empire led by Hayam Wuruk. The establishment of a palace complex on Bukit Cina in this city on the Bertam River followed Princess Hang Li Po's arrival to marry its ruler Mansur Shah. This city was visited at least five times by Zheng He, whose Seven Wells lie at the foot of the "Chinese Hill" in this city, which also contains a fort called A Famosa. The *Suma Oriental* notes that "whoever is lord of [this city] has his hand on the throat of Venice" and was written by Tome Pires, one of many Portuguese to live here after it was taken from Mahmud Shah by Afonso de Albuquerque in 1511. For 10 points, name this city founded by Parameswara and namesake of a sultanate on the Malay peninsula, more famously the namesake of the strait separating that peninsula from Sumatra.

ANSWER: Malacca [or Melaka]

Tiebreaker. As a result of this legislation, the pincenum were granted full citizenship. This legislation was passed in part due to the incompetence of Quintus Metellus, who was defeated at the battle of Noreia. This legislation ushered in the end of the era of Hatsaii, and it ended the exclusion that the Capite Censi faced when trying to enter a certain profession. As a result of this legislation, a certain military division was changed to include ten cohorts, and it saw the standardization of auxiliary troops, who were recruited from the peregrini. The strength of the armies this legislation made was part of the reason it's champion was able to maintain the position of consul for seven years. Allowing everyone to enter the army, these were, for 10 points, what reforms of the Roman republic that were passed in response to massive Roman losses at Aqua Sextae?

ANSWER: Marian Reforms (Accept Equivalents)

1. This novel includes Inspector Godfrey's investigation of the burning of Wanja's brothel. For 10 points each:

[10] Name this novel centering on Munira, a schoolmaster arrested in Ilmorog in connection with the fire.

ANSWER: *Petals of Blood*

[10] *Petals of Blood* was written by this Kenyan author who wrote about the ramifications of the death of the freedom fighter Kihika in *A Grain of Wheat*.

ANSWER: Ngugi wa Thiong'o [or James Ngugi]

[10] In 2006, Ngugi wrote this novel about the tyranny of The Ruler in the Free Republic Aburiria. It is his first novel in his native Gikuyu.

ANSWER: *Wizard of the Crow* [or *Murogi wa Kogogo*]

2. Identify these exciting Baltic dynasties, for 10 points each:

[10] Sigismund III and John II Casimir of Poland were of this house, whose most famous son was Gustavus Adolphus.

ANSWER: The House of Vasa [or Vasaätten; or Wazowie]

[10] This house preceded the Vasa in rule of Sweden. Its union with the Romanov gave it power in Russia, and it was deposed in Greece in 1973. The kings of Denmark rule as a branch of this dynasty.

ANSWER: The House of Oldenburg

[10] This House ruled Norway until the dissolution of the Swedish-Norwegian union, and still rules as monarchs of Sweden.

ANSWER: The House of Bernadotte

3. This inventor of the mattock advised his son Ninurta on how to defeat the demon Asag by speaking through Ninurta's talking mace Sharur. For 10 points each:

[10] Name this Sumerian god of wind and air, who formed part of a triad with his brother Enki and his father Anu. In one story, he helped create humans, but then tried to destroy them with a flood after growing sick of their noise.
ANSWER: Enlil

[10] Ea helped this man survive Enlil's flood, which impressed Enlil enough that he granted this man immortality. After Enkidu's death, Gilgamesh later sought this man out to learn from him the secrets of eternal life.

ANSWER: Utnapishtim [or Uta-napishti]

[10] Enlil disguised himself as a gatekeeper in order to impregnate his wife Niniḫ with this son. Later Babylonian myths describe this god as the consort of Ereshkigal and co-ruler of the underworld Irkalla.

ANSWER: Nergal [or Nirgali]

4. This author described "the tricky hero Herakles" in "The Garden of Proserpina" and the most notable critical study of him is Mortimer Cropper's *The Great Ventriloquist*. For 10 points each:

[10] Name this Victorian poet, the lover of Christabel LaMotte. He was inspired by Norse myth to write the epic "Ragnarök" and the erotic "Ask to Embla."

ANSWER: Randolph Henry Ash

[10] Ash is the focus of Roland Mitchell's studies in this A. S. Byatt novel, in which Mitchell and Maud Bailey search for correspondences between Ash and LaMotte.

ANSWER: Possession

[10] Byatt modeled Ash on this real Victorian poet of *Pippa Passes*, "Childe Roland to the Dark Tower Came", and "My Last Duchess."

ANSWER: Robert Browning

5. A battle cry during the Daze Village Uprising proclaimed that this state would rise again. For 10 points each:

[10] Name this home to Chen She and the general Xiang Yu during the Warring States period. Its king Dao made Wu Qi its chancellor, and its capital of Ying was captured by Bai Qi when it finally fell to Qin 223 BCE.

ANSWER: Chu [do not accept Shu]

[10] Chu's Pei County was the birthplace of this man, who struggled with Xiang Yu after Xiang inflicted several defeats on Qin forces. This man, who supposedly bore resemblance to a dragon, defeated Xiang Yu at the battle of Gaixia and founded a new line of rulers.

ANSWER: Liu Bang [or Emperor Gaozu of Han; prompt on Gaozu]

[10] Liu Bang was the first emperor of this Chinese dynasty. The expansionist emperor Wudi reigned during this dynasty, which was interrupted by the reign of Wang Mang and lends its name to the dominant Chinese ethnicity.

ANSWER: Han Dynasty

6. Numerous fossils of this species are found in the Atapuerca Mountains of Spain, including a bone pit that suggests they may have buried their dead. For 10 points each:

[10] Name this transitional species, which possessed a larger cranial capacity than *Homo erectus* and pioneered the Levallois technique. This probable ancestor of *H. neanderthalensis* and *H. sapiens* was the first hominin to colonize Europe.

ANSWER: *Homo* heidelbergensis

[10] Evidence that *H. heidelbergensis* engaged in systematic hunting comes from the analysis of rhinoceros bones at the Boxgrove site and the discovery of these objects at Schöningen. These weapons were found in conjunction with butchered horse bones.

ANSWER: spearheads [accept javelins]

[10] *H. heidelbergensis* probably employed this technology, as evidenced by the discovery of hearths at sites such as Terra Amata. This technology allowed archaic hominids enjoy deliciously-seared animal carcasses.

ANSWER: fire [accept equivalents]

7. These notoriously difficult-to-solve equations is the subject of one of the Clay Mathematics Institute's Millennium Prize Problems. For 10 points each:

[10] Name these double eponymous equations from fluid dynamics that model fluid motion under the assumptions of constant density, constant viscosity and incompressible flow.

ANSWER: Navier-Stokes equations

[10] Due to their complicated nature, the Navier-Stokes equations are often ditched for equations based on empirical data, such as this one with a namesake friction factor that is used to calculate the head loss due to friction.

ANSWER: Darcy's equation [or Darcy-Weisbach equation; do not accept "Darcy's law"]

[10] The friction factor in the Darcy-Weisbach equation can be determined using this diagram. It has four regimes, including the laminar, critical and transition zones.

ANSWER: Moody diagrams [or Moody charts]

8. An eagle in this painting grasps some manner of crustacean beneath a woman who pitches forward in a flowing red robe. For 10 points each:

[10] Identify this painting whose nude central figure extends an arm outward and can be identified by the two peacocks at right.

ANSWER: *The Origin of the Milky Way*

[10] This teacher of Marten de Vos and painter of *The Deliverance of Arsinoe* painted *The Origin of the Milky Way*. He's best known for a Mannerist *Last Supper* featuring ethereal angels flitting overhead.

ANSWER: Tintoretto [or Jacopo Comin]

[10] This Tintoretto painting shows the patron saint of Venice descending to protect the naked title figure, who is about to be rather aggressively martyred by angry pagans.

ANSWER: *The Miracle of the Slave*

9. One character in this play reports the collision of Mars and Saturn, and a guard in this play discovers he is no longer able to follow orders. For 10 points each:

[10] Name this play in which the title figure is told that he wrote the works of Shakespeare and discovered atomic fission as well as that he's "going to die at the end of the show."

ANSWER: *Exit the King*

[10] This Romanian absurdist playwright of *The Bald Soprano* wrote *Exit the King*.

ANSWER: Eugene Ionesco

[10] The title ruler of *Exit the King* has this name, also shared by the protagonist of Ionesco's *The Rhinoceros*, who refuses to transform into the title beast.

ANSWER: Berenger

10. This name was appended to five cases resulting in the Supreme Court decision that the 1875 Act of this name exceeded Congress' ability to prosecute. For 10 points each:

[10] Those 1883 cases, four of which dealt with refusing admission to people of color, concerned a law of this name. Martin Luther King's Birmingham Campaign supported a 1964 act of this name.

ANSWER: Civil Rights

[10] This Chief Justice, Grant's second choice after Roscoe Conkling to replace Salmon P. Chase, heard the cases. His tenure saw a drastic increase in caseload, including the Granger cases and *Pace v. Alabama*.

ANSWER: Morrison Remick Waite

[10] The first of the Granger cases was this 1877 decision, which saw the namesake operator of a Chicago grain elevator use Field's ruling from the Slaughterhouse Cases to appeal a state-level fine. Waite delivered a majority opinion supporting a state's right to police individuals.

ANSWER: Munn v. *State of Illinois* [or *Illinois v Munn*; prompt on *Illinois*]

11. This complex consists of a 20S barrel-shaped core particle capped by an 11S or 19S regulatory particle. For 10 points each:

[10] Identify this protein complex that destroys cyclins and other endogenous proteins..

ANSWER: proteasomes

[10] This protein is activated by E1, transferred to E2 and then covalently attached to a protein substrate by E3 when tagging proteins for degradation via the proteasome.

ANSWER: ubiquitin [or ubiquitous immunopoietic polypeptide; or ATP-dependent proteolysis factor 1; or APF-1]

[10] The APC is responsible for ubiquitination of cell regulators at the metaphase-anaphase and mitosis-G1

transitions. These two degradation motifs have been identified in targets of APC; name either.

ANSWER: destruction box or KEN box

12. This kingdom is the birthplace of Vishnu's final avatar, Kalki, and is ruled by twenty-five kings named for him. For 10 points each:

[10] Name this mythical kingdom described in the Kalachakra Tantra. It was once ruled by King Suchandra, who composed the Mula after requesting teaching from the Buddha.

ANSWER: Shambhala [prompt on "Pure Land"]

[10] Suchandra built a three-dimensional one of these symbols in the center of Shambhala. These circular patterns often feature four gates with a central point, and ones made of colored sand are ritually destroyed in Tibetan Buddhism.

ANSWER: mandalas [accept specific types]

[10] Shambhala is one of the "pure lands" which lend their name to an Amitabha-focused sect of this major branch of Buddhism. Its name means "Greater Vehicle".

ANSWER: Mahayana Buddhism [prompt on "Buddhism"]

13. The transmission coefficient, kappa, used in this equation is usually assumed to be one. For 10 points each:

[10] Identify this equation that describes the temperature dependence of reaction rates, like the similar Arrhenius equation.

ANSWER: Eyring-Polanyi equation

[10] The Eyring equation is based in this theory, which Eyring co-developed with Polanyi and Evans. Its namesake double-daggered entities are often described as potential energy "saddle points."

ANSWER: conventional transition state theory [or TST; activated complex theory; or theory of absolute reaction rates]

[10] This postulate states that transition states resembles either the reactants or the products, depending on which structure is closest to it in free energy.

ANSWER: Hammond's postulation [or Hammon-Leffler postulate]

14. This model was described as a primarily educational tool by its formulator, since it does not account for numerous real-world factors the impact an economy. For 10 points each:

[10] Name this economic model in which Gross Domestic Product is plotted against the interest rate, with a "general equilibrium" at the intersection of the two namesake curves.

ANSWER: Investment—Saving / Liquidity preference—Money supply model

[10] This model expands the IS/LM model to operate in a non-autarkic economy. Under its pretenses, it holds that a nation cannot maintain a fixed exchange rate, free capital movement, and an independent monetary policy, creating an "Impossible trinity."

ANSWER: Mundell-Fleming model (or IS-LM-BoP)

[10] The IS/LM was formulated by this author of *Value and Capital* who worked with Nicholas Kaldor to develop a model of economic efficiency.

ANSWER: John Hicks

15. This symphony opens with a horn call in E-flat major emerging from a background of shimmering strings. For 10 points each:

[10] Name this symphony by Bruckner, which features a third movement "Hunting Scherzo".

ANSWER: Symphony No. 4 in E-flat major, WAB 104 "Romantic" [accept any underlined portion; also accept obvious equivalents like "Bruckner's Fourth Symphony"]

[10] Bruckner's Third Symphony is nicknamed for this German composer, to whom it was dedicated. The original version contains quotations from this composer's *Tristan und Isolde* and *Die Walküre*.

ANSWER: Richard Wagner

[10] One of Bruckner's students at the Vienna Conservatory was this theorist who names a method of analysis that involves reducing pieces along their fundamental levels of structure to find the "Ursatz".

ANSWER: Heinrich Schenker

16. Both Gödel and Cohen worked on this hypothesis and whether or not the standard axiomatization of set theory disproved or proved it, respectively. For 10 points each:

[10] Identify this hypothesis which states that there is no countable cardinal number between aleph-naught and two to the aleph-naught, or equivalently, two to the aleph-naught is equal to aleph-one.

ANSWER: Cantor's continuum hypothesis or [CH]

[10] This is the standard axiomatization of set theory, which includes the axiom of replacement and an axiom that allows for the Banach-Tarski paradox.

ANSWER: ZFC [or Zermelo-Fraenkel set theory together with the axiom of choice; prompt on ZF set theory; prompt on Zermelo-Fraenkel set theory; do not accept or prompt on "Zermelo set theory"]

[10] Both Cantor and Liouville provided proofs of the existence of these numbers, which are produced when raising a number to an irrational power according to the Gelfond-Schneider theorem. They include pi and e.

ANSWER: transcendental numbers

17. Answer some questions about early American poetry, for 10 points each.

[10] This Puritan wrote "I prize thy love more than whole Mines of gold" in "To my Dear and Loving Husband," which was later collected in "The Tenth Muse Lately Sprung Up in America."

ANSWER: Anne Bradstreet (or Anne Dudley)

[10] This "Poet of the American Revolution" laid the groundwork for American Romanticism with poems like "The Indian Burying Ground" and "The Wild Honeysuckle."

ANSWER: Phillip Morin Freneau

[10] This member of the "Hartford Wits" wrote *Vision of Columbus*, an early attempt to craft an American epic, as well as the mock epic *The Hasty Pudding*.

ANSWER: Joel Barlow

18. Some dialects of Upper German spoken in Northern Italy are named for this tribe. For 10 points each:

[10] Name these people who, together with the Ambrones and Teutones, led a massive migration of Germanic and Celtic tribes in the late second century BCE. Under their king, Boiorix, they invaded the lands of the Taurisci.

ANSWER: Cimbri [or Kimbern; or Kimbrer]

[10] The Cimbri and Teutones crushed Quintus Servilius Caepio and Gnaeus Mallius Maximus at this 105 BCE battle. The resulting butchery at the Rhone River was greatest massacre of Roman soldiers since Cannae.

ANSWER: Battle of Arausio

[10] The disaster at Arausio opened the way for the military reforms of Gaius Marius from this highest office in the Roman republic. This position was repeatedly occupied by Marius, his ally Cinna, and his rival Sulla.

ANSWER: consul

19. Its author aimed to establish a "pure language" of logic in the vein of Leibniz. For 10 points each:

[10] Name this work published in 1879 whose title concept is described as "a formula language, modeled on that of arithmetic, of pure thought."

ANSWER: Begriffsschrift

[10] *Begriffsschrift* was written by this German philosopher best known as a founder of analytic philosophy.

ANSWER: Friedrich Ludwig Gottlob Frege

[10] This thinker paid tribute to Frege by using the term *Begriffsschrift* as a synonym for logical formalism in his *Tractatus Logico Philosophicus*.

ANSWER: Ludwig Josef Johann Wittgenstein

20. It was described as "the solidest and least ornate" of the orders of columns by Sebastian Serlio. For 10 points each:

[10] Name this order of column which had both a base and a capital in the style of a Doric capital. Palladio championed the idea of this column style as representing core Italian tradition.

ANSWER: Tuscan or Etruscan

[10] While Greeks and Romans preferred to use marble and bronze in their sculptures, Etruscans more commonly used this material which was used to create an "army" for the tomb of a Chinese emperor.

ANSWER: **Terra cotta**

[10] This other type of supportive structure, which was notably visible on the ancient Acropolis, replaces a traditional column with a female figure.

ANSWER: **Caryatid**