

Tossups

1. **One work from this art movement shows several boys in briefs wrestling, bathing, and reclining around a pond in a painting titled *Summer Scene*. Another painter from this movement depicted Hampton Court and Moseley in several scenes on the Thames, while yet another member painted his family in *Idle Hours* before founding the forerunner to Parsons The New School for Design. In addition to (*) William Merritt Chase, this movement included a painting in which a child’s feet are submerged in a bowl as a mother washes them. Another artist from this movement created several works from the same perspective of the Houses of Parliament and also painted the Saint Lazare train station. For 10 points, name this art movement with members like Mary Cassatt and a painter of many haystacks, Claude Monet.**

ANSWER: **impressionism** [or **impressionists**]

2. **One character in this novel tells of a man who signed up local blacks for the “Grand League of Pincheners” as part of a fake government pension plan. That story is about the crook B. F. Mason and is told by Portia to her father just before she tells her father that he never really got to know her husband, Highboy. An alcoholic character in this novel (*) beats his head and hands against a brick wall after another man leaves a bar, which prompts that other man to offer lodging for the night. This novel switches perspectives between main characters like the old black Dr. Copeland, the cafe owning Biff Brannon, and the cafe frequenting Jake Blount. During a visit to an asylum, another character learns that his friend Spiros Antonapoulos is dead, which causes him to shoot himself. For 10 points, name this novel centering on the deaf-mute John Singer, written by Carson McCullers.**

ANSWER: **The Heart is a Lonely Hunter**

3. **One extension to this method uses the Davidson correction to account for its size-inconsistency and adds a series of terms corresponding to single, double, etc. excitations. Another extension to it uses the cluster operator. Those methods are the full configuration interaction and coupled cluster methods, which take correlation into account. One quantity important in this method has a term that is equal to the sum over the differences of the Coulomb operator and the (*) exchange operator. This non-relativistic method assumes that a many-particle wavefunction is the anti-symmetrized product of several one-particle wavefunctions, and this method requires solving the energy equation until a self-consistent field is achieved. For 10 points, name this variational mean-field method in quantum chemistry used to calculate the wavefunction of a many-electron system.**

ANSWER: **Hartree-Fock** method [accept **coupled cluster** or **configuration interaction** before mention]

4. **This object is said to be home to more serpents than any fool can imagine, including “the one ruling from the ditch” and “the winding one.” This thing is listed first among objects that are the noblest of their kind. This object is supported by three wells, including a freezing one that is the source of 26 different rivers. Four (*) stags live on this object, which shakes and groans immediately after one god converses with a severed head in one event. A squirrel runs back and forth between a dragon and an eagle living on this object in order to carry mean messages, and this object is gnawed upon by a serpent living in the wastes of Nastrond named Nidhogg. In order to obtain the runes, one god used his spear to hang himself from this object for nine days; that god is Odin. For 10 points, name this object that holds up the nine worlds in Norse Mythology, which is a gigantic ash tree.**

ANSWER: **Yggdrasil**

5. **One king of this region was called “the Iron and Golden King” because of successful battles of expansion such as the Battle of Kressenbrun; that king was Ottokar II, who belonged to its Premyslid Dynasty which died out and was succeeded in 1310 by the House of Luxembourg. The County of Kladsko is traditionally**

part of the kingdom named for this region. The (*) Utraquists emerged victorious in a long religious civil war against the Taborites in this region; that war was named for a man burned at the Council of Constance, Jan Hus. The Battle of White Mountain ended an insurrection in this region led by those who carried out the Defenestration of Prague. For 10 points, name this historical region that forms the core of the modern Czech Republic.

ANSWER: Kingdom of Bohemia [or Ceske kralovstvi; or Cechy; or *Konigreich Bohmen*; or *Regnum Bohemiae*; prompt on “Czech Republic” or “Czech state”]

6. After this character leaves the stage in one scene, some productions have another character sing, “my theater never closes.” In one song, he sings, “every man is born in sin,” in counterpoint to a louder character. This character, who has been played in anniversary concerts by Philip Quast and Norm Lewis, sings, “mine is the way of the Lord,” and, “if they fall as Lucifer fell, the flame, the sword,” in a song called (*) “Stars”. This former employee of the Bagn de Toulon sings, “I will know the things they know” and “we’ll be ready for these schoolboys” in “One Day More.” He commits suicide by falling into the Seine after being freed by a man he likes to call Prisoner 24601. For 10 points, name this police inspector from *Les Misérables* who chases Jean Valjean.

ANSWER: Inspector Javert

7. One figure described in this speech is said to be “Sighing like a furnace, with a woeful ballad Made to his mistress’ eyebrow.” That lover had earlier been “creeping like a snail Unwillingly to school” with “his satchel And shining morning face.” This speech is given after a man interrupts a meal with his sword drawn and demands food; that character, (*) Orlando, is welcomed to the table by Duke Senior who says, “we are not all alone unhappy,” before this speech is given. This speech begins by describing “the infant, Mewling and puking in the nurse’s arms” and ends by describing a “second childishness and mere oblivion” without teeth, eyes, taste, and finally, “sans everything.” For 10 points, name this speech given by the Melancholy Jaques in Shakespeare’s *As You Like It*, which begins with a metaphor about life as a certain place “And all the men and women merely players.”

ANSWER: the Seven Ages of Man speech [or the “All the world’s a stage” speech; accept Jacques’s speech before “Jaques” is mentioned]

8. This family’s growing strength was addressed in one school of diplomatic thought via vertical and horizontal alliances. Before coming to power, it was promised all the land that it could recover from the Dog Rong tribes in the West. One member of this family, Duke Mu, was one of the Five Hegemons. After adhering to a philosophy taught by Shang Yang, its namesake (*) dynasty carried out the “burning of books and the burying of scholars” to end the Hundred Schools of Thought period. It started the Great Wall and defeated six other major states to put an end to the Warring States period. This 15-year dynasty was toppled by the Han and its first emperor was buried in Xi’an with a terracotta army. For 10 points, name this dynasty that unified China under its first emperor, who took the title Shihuangdi.

ANSWER: Qin dynasty [or Ch’in Dynasty; Kin Dynasty]

9. An intergenic, long non-coding RNA that directs PRC2-catalyzed condensation of chromatin, called HOTAIR, is expressed from the same cluster as these genes. One set of these is activated by TET2-induced hydroxylation of methylcytosines, and they are also activated by the retinoic acid receptor. In the brain, these genes are responsible for the specification of rhombomere identity. In humans there are 4 clusters of 13 of each of these arranged collinearly, and they are expressed in the order they are arranged in the cluster. They bind to a TAAT consensus sequence via a conserved 60-amino acid helix-turn-helix domain. In (*) *Drosophila*, they are activated by gap and pair-rule genes. Mutations in them cause body segments to appear in the wrong place or antennae to appear on the head. For 10 points, name these genes that control body organization during development.

ANSWER: Hox genes or Homeobox genes

10. In “The Work of Art in the Age of Mechanical Reproduction,” Benjamin states that fascists have apotheosized this concept. One work about this practice stated that its precepts would apply *etsi deus non daretur*, or even “if God did not exist.” Another work about *this* begins with a chapter against moral realism and uses the “Domestic analogy” to delineate between immoral and moral forms of it; that work is by (*) Michael Walzer. The repute gained from this activity is the most inglorious type in Thomas More’s *Utopia*. This is the first of two title concepts for which laws were written about in three books by Hugo Grotius, and was said to be carried out by “all against all” in Hobbes’s *Leviathan*. For 10 points, name this activity described by Clausewitz as “a continuation of politics by other means” and whose “art” was written about by Sun Tzu.
ANSWER: human warfare [or making war; prompt on answers like “combat,” “fighting,” etc.]

11. The expected value for the k th order statistic for this distribution is equal to k divided by quantity n plus one. The problem of estimating an extremum of this distribution using sampling is called the German Tank problem. This distribution is the maximal entropy one among all that are supported within a particular interval. The Pareto distribution is the conjugate prior of this distribution. If the null hypothesis is true for a continuous test statistic, the (*) p value follows this distribution. The variance of this distribution is equal to one-twelfth times the square of the quantity b minus a , and its probability density function is equal to one over the length of the interval within the interval and zero outside of it. For 10 points, name this distribution followed by a single dice roll or coin flip, in which every value within the range is equally likely.
ANSWER: uniform distribution

12. One figure with this name chased away the armies of Amalickah after raising the “Title of Liberty.” The eighth chapter of this figure’s namesake book speaks out against the baptism of children. Statues of this figure are based on one created by Cyrus Edwin Dallin. This figure appeared to Oliver Cowdery, David Whitmer, and Martin Harris, who were known as the (*) Three Witnesses. This man’s people were slaughtered by the Lamanites. This figure hid the Sword of Laban on Cumorah Hill and was the last prophet of the Nephites. This supernatural figure directed a human to use the seer stones Urim and Thummim to translate, from “reformed Egyptian,” a pair of golden plates. For 10 points, name this supernatural figure who appeared to Joseph Smith, an angel in Mormon doctrine.
ANSWER: Moroni

13. This procedure will generate a cycle when the Nakamura number is exceeded. Schulze developed a cloneproof method of doing this based on the Schwartz method. A maximum likelihood method of doing this is named for Kemeny and Young. Michael Dummett added a quota element to another procedure for doing this called the (*) Borda count. Duncan Black showed that in a one-dimensional system, this procedure will select the median. The spoiler effect can potentially foil some systems for this practice. This practice cannot satisfy the criteria of independence of irrelevant alternatives, universality, Pareto efficiency, and non-dictatorship according to Arrow’s Impossibility Theorem. For 10 points, name this procedure used in democracies to select leaders.
ANSWER: voting

14. The chance to hold this title is lost by the protagonist of the last installment of the *Condor Trilogy* when he leaves a cult he led so he can marry. A character with this title is visiting a prostitute when he is interrupted by an albino seeking pardons, while another person with this title is unable to sleep without two men guarding the door and gets 20 more years to live after visiting hell. A character with this title has an associate whose visit is commemorated with the construction of the (*) Prospect Garden. Three of the aforementioned holders of this title are characters such as the husband of Tangchun, the man who pardons Song Jiang’s outlaws, and Tang Taizong. For 10 points, name this title that was undermined after the Yellow Turban Revolt when power was split between three kingdoms after the overthrow of the Han Dynasty.

ANSWER: Emperor of China [or Chinese Emperor; or Ming Emperor; or Qing Emperor; or Song Emperor; or Tang Emperor; or huangdi; or Leader of the Ming Cult before “cult”; prompt on emperor; prompt on ruler of China; do not prompt on answers containing “king”]

15. One participant in this event quoted H. L. Mencken as saying every problem has a simple answer that is “neat and plausible and wrong.” David Stockman and George Will were accused of using a stolen briefing manual from one participant in this event. During this event, one participant helpfully stated that a billion was a thousand millions and a trillion was a thousand billions. One participant in this event was ridiculed for asking his (*) 12-year-old daughter about nuclear weapons, while repeated attacks on another person’s record on Medicare were greeted by the line “there you go again.” This event ended by one participant asking whether the listener was better off than four years ago. For 10 points, name this rhetorical clash that occurred between an incumbent president and a former governor of California before a certain election.

ANSWER: debates between James Earl “Jimmy” Carter and Ronald Wilson Regan [all three underlined portions required; accept answers like 1980 Presidential Debates; prompt on “presidential debates”]

16. One work by this composer introduces two harp parts in the 3/8 second movement, in which they enter after some string tremolos by playing rising triplet sixteenths on the F major triad. The chorus alternates between A and B flat for much of the “Offertorium” section of this composer’s *Requiem*, which requires northern, eastern, southern, and western (*) offstage brass bands. Paganini rejected one of this composer’s works because it had too many rests in the solo viola part. The third movement of another work begins with a Ranz des Vaches with an English horn and an offstage oboe doing a call-and-response; that work’s first movement, “Reveries – Passions” introduces the idee fixe. For 10 points, name this composer of *Harold in Italy* and *Symphony Fantastique*.

ANSWER: Hector Berlioz

17. This organization was allegedly responsible for the construction and operation of the Metro-2 system. Doubt that this organization actually published US Army Field Manual 30-31B resurfaced after the discovery of Operation Gladio. This organization created a unit called the Vympel and carried out Operation Seat 12 against the Vatican and Operation INFEKTION, two (*) disinformation campaigns. Members of this organization used equipment such as the Kiss of Death, a lipstick pistol, and the Thing, a bug. Successors to this organization include the SVR and the FSB, while predecessors to it include the NKVD, which similarly operated gulags. For 10 points, name this organization once chaired by Yuri Andropov, the primary security agency of the old Soviet Union.

ANSWER: the KGB [or Komitet gosudarstvennoy bezopasnosti; or Committee for State Security; prompt on Soviet secret police, Soviet intelligence, and logical equivalents; prompt on Russian secret police, Russian intelligence, and logical equivalents]

18. A standing electromagnetic wave can induce this phenomenon in the Kapitsa-Dirac effect. One principle used in analyzing this phenomenon is used to show that the product of the metal and slot impedances of an antenna is equal to eta squared divided by 4. In one instance, this phenomenon shows a series of intensity peaks at the maxima of the square of the sinc [sink] function. The integral from zero to x of sin squared or cosine squared are important in describing one version of it. The first zero of a first order (*) Bessel function of the first kind appears in a formula explaining how this effect limits the angular resolution of a system; that is the Rayleigh criterion. Fraunhofer names its far-field variant. The Huygens principle is used to explain this phenomenon for a single slit. For 10 points, name this effect in which waves bend around an object or aperture.

ANSWER: diffraction [accept more specific answers]

19. **One nationalist movement based on this island used the Morning Star Flag. This island has a namesake singing dog breed. Its northwestern and southeastern points are known as the Bird's Head Peninsula and the Bird's Tail Peninsula because of its resemblance to a species of bird predominantly found here, the bird-of-paradise. The Owen Stanley Range on this island can be traversed via the (*) Kokoda Track. One region on this island was historically called Irian Jaya. The highest point on this island is Puncak Jaya. This island lies west of the Bismarck and Solomon archipelagos. The Torres Strait separates this island from Australia. For 10 points, name this second largest island in the world, which is split between Indonesia and a nation whose name prefixes the name of this island with Papua.**

ANSWER: New Guinea [or Papua Island before mention; or Irian Island before mention; accept Papua New Guinea *only* after "Indonesia" is read and do not accept earlier; do not accept "Irian Jaya"]

20. **The eighth section of this work begins with the narrator telling how his Muse first appeared to him when "The old Derjavine" noticed him. A poem about this work describes "a poet's patience And scholastic passion blent: Dove-droppings on your monument." One character in this work reads the main character's notes in several books and compares him to Childe Harold. One translation included the (*) *Notes on Prosody*, and this work's alternating feminine and masculine rhymes are part of the 14-line stanzas named for it. Guillot's appointment to a certain position insults Zaretsky in this work, whose title character attends a name day ball where he dances and flirts with Olga, which serves to instigate a duel between Lensky and the title character. For 10 points, name this novel in verse, which ends with the title character being rejected by Tatyana, by Alexander Pushkin.**

ANSWER: Eugene Onegin [or Evgeny Onegin]

TB. **Plotting this value against the logarithm of its derivative creates a plot with a useful "death line" and "graveyard" regions. A very small value of this quantity is possessed by PSR J1748-2446ad. This quantity varies for certain objects via the as-yet-unexplained Blazhko effect. This value can be found by finding the horizontal separation between (*) peaks on a light curve, and a fixed relationship between this value and luminosity posited by Henrietta Leavitt makes Cepheid variables useful for calibrating distance scales. If two bodies have a fixed ratio of this quantity, they are said to be in resonance. The sidereal version of this quantity is the one that's usually reported. For 10 points, name this value for a pulsar or variable star that gives the time it takes to undergo one rotation or oscillation.**

ANSWER: period

Bonuses

1. This photographer's *The Pond – Moonlight*, which had to be manually colorized with gums, once held the title of most expensive photograph ever. For 10 points each:

[10] Name this American photographer who created the MoMA exhibit *The Family of Man* and helped create the gallery 291 with Alfred Stieglitz.

ANSWER: Edward Jean **Steichen**

[10] Steichen's *The Family of Man* exhibit featured this photograph by Dorothea Lange of Florence Owens Thompson during the Great Depression.

ANSWER: **Migrant Mother**

[10] Edward Steichen was the most oft-featured artist in this quarterly journal of fine art photography that was founded and published by Alfred Stieglitz.

ANSWER: **Camera Work**

2. This thinker was the subject of an important monograph by Frances Yates, who argued that his books, such as *The Expulsion of the Triumphant Beast*, were influenced by Hermetic Tradition. For 10 points each:

[10] Name this philosopher who was executed for espousing a belief in the infinitude of the universe.

ANSWER: Giordano **Bruno** [prompt on "the Nolan"]

[10] Bruno's views on the infinitude of the universe were inspired by the work of this scientist, who wrote *On the Revolution of the Heavenly Spheres* and advocated heliocentrism.

ANSWER: Nicolaus **Copernicus**

[10] Less controversially, Bruno championed this movement, which was initially popularized by Plotinus in his book *The Enneads*.

ANSWER: **Neoplatonism**

3. This artist drew a can of sardines in the background of his *Mona Lisa with the Keys*, and his cylindrical style was derided as "tubism." For 10 points each:

[10] Name this painter of *The City* and *Three Women*, which were created in this artist's mechanical style.

ANSWER: Joseph Fernand Henri **Leger**

[10] Leger's style was considered to be a precursor to the style of this work, which includes the text, "I pressed the fire control... and ahead of me rockets blazed through the sky."

ANSWER: **Whaam!**

[10] *Whaam!* was created by Roy Lichtenstein, one of the foremost members of this artistic movement that also included Andy Warhol.

ANSWER: **Pop** art

4. This process occurs when a common ion is added to an already saturated solution. For 10 points each:

[10] Name this process by which a solid falls out of a solution.

ANSWER: **precipitation** [accept word forms]

[10] This is the name of the equilibrium constant of a dissolution reaction. For example, for the dissolution of AgCl, it is equal to the concentration of Ag times the concentration of Cl.

ANSWER: **solubility product** [or **K_{sp}** or **K_{sub-sp}**]

[10] A cold solution of this substance and sodium acetate is used to precipitate DNA and RNA by adding 2.5 volumes of it to the nucleic acid/acetate mix.

ANSWER: **ethanol**

5. The main character of this play causes his tour bus to get delayed when he stops to talk to Maxine Faulk, whose husband Fred has recently died. For 10 points each:

[10] Name this play in which Hannah Jelkes befriends the protagonist who gets caught by Pedro and Pancho before he can “swim to China” from Mexico.

ANSWER: The **Night of the Iguana**

[10] Tennessee Williams, the author of *The Night of the Iguana*, also created this character who goes to the apartment of Stanley and Stella Kowalski in *A Streetcar Named Desire*.

ANSWER: **Blanche DuBois** [accept either underlined portion]

[10] This other play by Tennessee Williams is about Chance Wayne who gets involved with the actress Alexandra, but realizes he is still in love with Heavenly Finley, the daughter of his former employer, when he returns to Florida.

ANSWER: **Sweet Bird of Youth**

6. This ruler made tactical military reforms such as the development of the bull horn formation. For 10 points each:

[10] Name this first King of the Zulu.

ANSWER: **Shaka** Zulu [or **Shaka** kaSenzangakhona; prompt on **kaSenzangakhona**]

[10] Shaka’s establishment of the Zulu as a regional power began the *mfecane*, which led to King Mzilikazi of this kingdom dominating the Transvaal after leaving Shaka’s empire.

ANSWER: **Matabele**land [or **Matabele** Kingdom]

[10] Ultimately, Shaka’s reforms weren’t up to snuff against the force multiplier of European firepower, perhaps best shown in this 1879 defense of a mission station in which 11 Victoria Crosses were awarded.

ANSWER: Battle of **Rorke’s Drift**

7. Data from the COBE satellite showed that this feature had a near-perfect blackbody spectrum, which agreed with the predictions of the Big Bang. For 10 points each:

[10] Name this feature of the universe, which has a temperature of around 2.7 Kelvin and was originally discovered by Bell Labs scientists Arno Penzias and Robert Wilson.

ANSWER: **Cosmic microwave background** radiation [or **CMBR**]

[10] This other satellite, which released its nine-year data in 2012, measured anisotropies in the cosmic microwave background. It measured the age of the universe at 13.74 plus or minus 0.11 billion years.

ANSWER: **WMAP** [or **Wilkinson Microwave Anisotropy Probe**]

[10] Modern CMB anisotropy experiments are searching for this mode of polarization in the CMB, which has zero divergence and is believed to have been created by gravitational waves in the early universe.

ANSWER: **B**-mode

8. The GDP deflator is considered to be one of these quantities that are usually defined by a sum over a basket. For 10 points each:

[10] Name these economic indicators that try to measure inflation by looking at a fixed basket of goods in different time periods.

ANSWER: **price index** [or **price indices**; do not accept or prompt on “prices”]

[10] This economic idea states that an increase in nominal money supply will cause a proportional increase in price levels but will have no impact on real variables like total output.

ANSWER: **neutrality of money** [or **monetary neutrality**; or **money neutrality**; prompt on “neutrality”]

[10] In the IS-LM model, the effectiveness of monetary policy at increasing short-run output increases when the magnitude of this quantity in the model increases.

ANSWER: the **slope of the IS curve** [accept answers that mention both **slope** and either **investment-savings** line or **goods market** line; prompt on “slope”]

9. This man died of a stroke in Russia, to where he fled after being sentenced to 20 years in prison via the Espionage Act. For 10 points each:

[10] Name this labor leader and Secretary-Treasurer of the Western Federation of Miners, who was defended by Clarence Darrow when he was accused of murdering Frank Steunenberg.

ANSWER: William Dudley “Big Bill” **Haywood**

[10] Big Bill Haywood was a leader of this labor union, whose motto was “an injury to one is an injury to all.” Its members also included Eugene Debs and Mother Jones.

ANSWER: **IWW** [or **Industrial Workers of the World** or the **Wobblies**]

[10] Haywood helped organize a textile strike in this Massachusetts city. Another city by this name had a Free State Hotel that was attacked by a group of Border Ruffians in 1856.

ANSWER: **Lawrence** [**Lawrence**, Massachusetts and **Lawrence**, Kansas]

10. The protagonist of this work is saved when her mother is excused from her execution at Newgate because she is pregnant; that mother is transported to America after the protagonist’s birth. For 10 points each:

[10] Name this novel about a woman who becomes a criminal and marries several times, though she ends the novel married to her Lancashire husband.

ANSWER: *The Fortunes and Misfortunes of the Famous **Moll Flanders** [or *The Fortunes and Misfortunes of the Famous **Moll Flanders**, &c. Who was Born in Newgate, and during a Life of continu'd Variety for Threescore Years, besides her Childhood, was Twelve Year a Whore, five times a Wife (whereof once to her own Brother), Twelve Year a Thief, Eight Year a Transported Felon in Virginia, at last grew Rich, liv'd Honest, and died a Penitent. Written from her own Memorandums]**

[10] This author of *Moll Flanders* wrote about the former prisoner Friday and his adventures with the title character of *Robinson Crusoe*.

ANSWER: Daniel **Defoe** [accept Daniel **Foe**]

[10] Defoe also wrote this novel about a bastard boy who grows up being cared for by a nurse alongside similarly named boys who go by “Captain” and “Major.” Like Moll, the title character of this work makes a living from stealing and other fraudulent activities.

ANSWER: **Colonel Jack** [or *The History and Remarkable Life of the truly Honourable Col. Jacque, commonly call'd **Col. Jack**, who was Born a Gentleman, put 'Prentice to a Pick-Pocket, was Six and Twenty Years a Thief, and then Kidnapp'd to Virginia, Came back a Merchant; was Five times married to Four Whores; went into the Wars, behav'd bravely, got Preferment, was made Colonel of a Regiment, came over, and fled with the Chevalier, is still abroad completing a Life of Wonders, and resolves to dye a General]*

11. John Brennan was grilled during his nomination for CIA chief over his policy of using a “double-tap” method using these weapons systems. For 10 points each:

[10] Name this type of weapons system exemplified by the General Atomics developed MQ-9 Reaper and MQ-1 Predator, both of which are remote-controlled, flying weapons systems that can fire Hellfire missiles.

ANSWER: aerial combat **drones** [or **unmanned** combat **aerial vehicles**; or **UCAVs**]

[10] Hellfire missiles are developed by this company that operates the Skunk Works. Its production of the single engine F-35, the so-called Joint Strike Fighter, is overbudget.

ANSWER: **Lockheed Martin**

[10] This former Legal Advisor for the United States State Department returned to his teaching position at Yale in January 2013. In 2010, he had given a speech defending the legality of American “targeted killing” drone attacks.

ANSWER: Harold Hongju **Koh**

12. One work in this language was named after a poet’s teacher, Shams-i-Tabrizi, and that poet who used this language interspersed quotations from the Quran into the six books of another work. For 10 points each:

[10] Name this language used for the prose *Seven Sessions* and *Fihī ma fihī* as well as the huge *Masnavi*, or *Spiritual Couplets*, by Rumi.

ANSWER: **Persian** [or **Farsi**; or **Parsi**]

[10] This poet's *Khamṣa*, or *Five Jewels*, begins with "The Treasure of Mysteries" and ends with "The Seven Beauties."

ANSWER: **Nezami** Ganjavi

[10] This other Persian poet collected many ghazals in his *Divan*. His tomb in Shiraz is a popular destination for Sufis.

ANSWER: Khwaja Shamsu d-Din Muhammad **Hafez**-e Shirazi

13. This short allegro segment of a larger work alternates between 5/4 and 6/4 time while maintaining the key of B flat. For 10 points each:

[10] Name this first section of a suite. Its theme, which depicts the composer walking around, appears in several subsequent interludes.

ANSWER: the **Promenade** from *Pictures at an Exhibition*

[10] This composer memorialized Viktor Hartmann's paintings in *Pictures at an Exhibition*.

ANSWER: Modest Petrovich **Mussorgsky**

[10] In the Ravel orchestration of *Pictures at an Exhibition*, this section includes a saxophone solo to represent a singing minstrel at the title location. This is the second non-promenade section of the suite.

ANSWER: "The **Old Castle**" [or "Il **vecchio castello**"]

14. These proteins often have an induced-fit when their substrate binds to the active site. For 10 points each:

[10] Name these proteins that catalyze biological reactions. Catalase is thought to be the fastest one, and the Michaelis-Menten theory is used to describe their kinetics.

ANSWER: **enzymes**

[10] This parameter in the Michaelis-Menten theory gives the concentration of substrate at which a particular enzyme is at one-half of its maximum velocity.

ANSWER: **K_{sub m}** [or **K_m**]

[10] This other equation is used to describe ligand binding or enzyme-substrate interactions in cooperative, multi-subunit proteins. It gives a sigmoidal curve and has a coefficient, n, that gives the degree of cooperativity.

ANSWER: **Hill** equation

15. Children bring their textbooks and ask for blessings on one of these holidays named for Saraswati. For 10 points each:

[10] Name these celebrations honoring and giving offerings to particular deities in Hinduism. The ones honoring Durga and Lakshmi are particularly important, and the latter occurs during Diwali.

ANSWER: **Puja**

[10] The puja honoring this deity coincides with the Lakshmi puja. During that holiday, this deity is depicted in black with her tongue sticking out while holding a bunch of weapons.

ANSWER: **Kali**

[10] During this part of a puja, ghee and fire are offered to the deity being honored. An attendant brings a fire around and people wave their hands over it and touch their heads during this ritual.

ANSWER: **aarti**

16. Rear Admiral Troubridge was court martialed for failing to engage this "ship that changed the world." For 10 points each:

[10] Name this ship that Winston Churchill said had “for the peoples of the Middle East, carried more slaughter, more misery, and more ruin than has ever before been borne within the compass of one ship.” It operated alongside the *Breslau*.

ANSWER: SMS **Goeben**

[10] Troubridge was acquitted because of orders not to fight a “superior force” such as the *Goeben*, which was designed like this revolutionary all-big-gun design first used by a 1906 Royal Navy namesake.

ANSWER: HMS **Dreadnought**

[10] The *Goeben* and the *Breslau* reached the port of this capital city of a country that would join the Central Powers in 1915 during the Great War. Threats to take over this city caused the Chanak Crisis.

ANSWER: **Constantinople** [or **Istanbul**]

17. In one drama by this author, Heinrich’s magnum opus is lost in a lake before he falls in love with Rautendelein. For 10 points each:

[10] Name this author of another work in which Mother Wolff steals from Mr. Kruger after receiving a generous offer from Wulkow.

ANSWER: Gerhart **Hauptmann**

[10] The former play by Hauptmann is about a “sunken” one of these objects. John Donne suggested that we should not ask “for whom” these objects “toll” in a line that provided the title to a Hemingway novel.

ANSWER: **bells**

[10] The latter play by Hauptmann about Mother Wolff’s theft is titled for one of these objects. In a short story by another author, Petrovich makes one of these items that later gets stolen by two gangsters.

ANSWER: **coats** [or beaver **coats**; or over**coats**]

18. The invasion of these people is the historical explanation for the myth of the Return of the Heracleidae. For 10 points each:

[10] Name this major Greek *ethne* who were not Ionians, Aetolians or Achaeans.

ANSWER: **Dorians** [or **Dorieis**]

[10] This Greek *polis* of Dorian stock had a strong military because of its *agoge* training program. Lysander, one of its admirals, smashed the Athenian fleet at Aegospotami to end the Peloponnesian War.

ANSWER: **Sparta**

[10] Spartan power was finally defeated at the Battle of Leuctra by the oblique order tactics of Epaminondas, a ruler of this Boeotian Greek *polis*.

ANSWER: **Thebes**

19. This relation can be found by taking the commutator of two variables, then finding the standard deviation of those two variables. For 10 points each:

[10] Name this result, which states that certain pairs of variables can only be measured to a certain precision. This relation applies to momentum and position, as well as energy and time.

ANSWER: **Heisenberg** uncertainty principle

[10] The Heisenberg uncertainty principle applies to variables that have this relationship, in which the two variables are Fourier transform duals. The variables in the Maxwell relations also have this relationship.

ANSWER: **conjugate** pairs

[10] The commutator of the position and momentum operators is equal to this value, according to the canonical commutation relation.

ANSWER: **i times h-bar** [or **i times h over two pi**; or **i h-bar**]

20. Identify some creatures from Jewish mythology, for 10 points each:

[10] Rabbi Judah Loew supposedly created one of these clay giants to guard the Prague Ghetto. They are brought to life by putting a scroll in their mouths.

ANSWER: **Golem**

[10] Originally a female demon from Babylon, this figure supposedly had several children with Samael and will invade people's houses to steal men's sexual energy.

ANSWER: **Lilith**

[10] These are spirits of dead people who are displaced, and they sometimes possess the living. They were brought into prominence after one was the subject of a play by S. Ansky.

ANSWER: **Dybbuk**