

Terrapin Invitational Tournament 2013: “Make your own judgments, but we wrote this set in good faith”

Editors 1

Packet by Ike Jose, Brian McPeak, Chris Manners, Isaac Hirsch, Sohan Vartak, Arun Chonai, and perhaps Daniel Galitsky

Tossups

1. The attendant of one of these figures rides an eagle and is named Chakreshvari. Another of these figures, believed by some to be the only female one, once filled a statue of herself with rotting food in order to drive away potential suitors. The penultimate one is attended by Padmāvatī and is often depicted under the shade of a snake’s hood. The first of these figures was Rīṣabha, who was the king of Ayodhyā. They are depicted either in the kāyōtsarga posture or the lotus position, and are said to have achieved Kevala Jñāna. The last of these figures was born Prince Vardhamāna and attained nirvāṇa in Pawapuri. For 10 points, name these enlightened figures of Jainism, the last of whom was Mahāvīra.

ANSWER: Tirthaṅkaras

2. In the Boord olefin synthesis, one reaction of this type is the proposed mechanism for forming the intermediate Grignard reagent. One reaction of this type involves moving the hydride from the beta position of a ligand to the metal center. This type of reaction will usually be second order in the presence of a strong base, and will then require that the leaving group and the departing hydrogen be coplanar in order to allow rehybridization of p orbitals to form the new pi bond. When multiple products are possible, the favored product will be the one with the most substituted double bond according to Zaitsev’s rule. It’s not rearrangement, but well known ones include those named for Cope and Hoffman. For 10 points, name this type of reaction usually involving alkyl halides in which two substituents are removed from a molecule.

ANSWER: elimination reactions

3. One setting of this man’s writings to music is in a bizarre choice of F major and uses an ominous cello theme to represent the title figure’s battles before the “Symphony of Victory” final movement. Another overture that sets this man’s writings to music was inspired by the composer’s meeting with him at the age of 12 and uses a chorale to indicate the gentle movement of a ship. A different setting of this man’s work to music is a work for piano and soprano and concludes with a B-flat major fortissimo ascent that evokes a meditation on a kiss. This man’s writings are set to music in the *Egmont* overture and Mendelssohn’s *Calm Sea and Prosperous Voyage*. A setting of another of this man’s works is in *rondo* form and features the lyrics “My Peace is Gone.” For 10 points, *Gretchen at the Spinning Wheel* by Schubert sets what German writer’s *Faust* to music?

ANSWER: Johann Wolfgang Goethe

4. According to the Knaster–Tarski theorem, for an automorphism on a complete lattice L , the set of *these* will also form a complete lattice. Isometries in Euclidean space must be the identity or a reflection if they have more than one of these, and these objects are hyperbolic when the stability matrix has at least one positive and one negative eigenvalue. One theorem about them depends on the function in question having a Lipschitz constant of strictly less than one, and its proof shows that the x value is a Cauchy sequence and converges as fast as that constant to the n , making the function a contraction mapping. Another theorem states that any continuous mapping from the closed disk or ball to itself has one of these objects. Cosine has one of these at about 0.73. For 10 points, name this type of point that maps to itself for given functions, which are the subject of theorems named for Brouwer and Banach.

ANSWER: fixed points [accept equilibrium point; prompt on “critical points”]

edited

5. Edward Preble sought aid from King Francis of Sicily during this conflict. During this war, Richard Somers commanded a ship nicknamed the “floating volcano”; that ship, the USS Intrepid, later exploded. Andrew Sterett captained the USS Enterprise during this conflict. The turning point of this war was when a force led by William Eaton and Lieutenant Presley O’Bannon captured Derna. During this conflict, a ship captained by William Bainbridge was set on fire. That ship, the USS Philadelphia, was torched by forces led by Stephen Decatur. For 10 points, name this early 19th century conflict that pitted Tripoli against the United States.

ANSWER: **First Barbary War** [accept **Tripolitan** War or **Barbary Coast** War; prompt on “Barbary War(s)”]

6. One work that discusses this human ability examines the life of mathematician Nicholas Saunderson to argue that it is one of two things that provide humanity with “reciprocal assistance.” In addition to that work by Denis Diderot, a long-running philosophical debate surrounding it was finally resolved empirically by Pawan Sinha, who set up an experiment to examine it. In *An Essay Concerning Human Understanding*, Locke reproduces a letter written by Molyneux about whether this could be used to distinguish between a cube and a sphere if it was suddenly bestowed upon a human. Although this faculty’s relation to distance was affirmed by Descartes, George Berkeley correctly believed that knowledge relating to this faculty was distinct from tactile knowledge. For 10 points, identify this human faculty, which among other things, allows humanity to discern color.

ANSWER: human **vision** [accept functional equivalents, such as **seeing** or **sight**]

7. Some lesser known figures that reside in this place include the philosopher Michael Scot and a shoemaker known as Asdente. A man that sailed past the pillars of Hercules and tried to approach a mountain unfortunately wound up at this location, but now that man is reincarnated as a flame with his companion Diomedes. To reach this location, the narrator gives his cord tied around his waist to a travelling companion, who then tosses it and summons a wyvern-like creature named Geryon. A group of demons led by Malacoda mercilessly punish those in this place, which features a population of astrologers that walk with their heads backwards. After leaving this location, the main characters encounter Ephialtes, Nimrod, and other giants at Cocytus. This location is reserved for those who have committed fraud, and is split into ten subsections for various crimes. For 10 points, name this penultimate circle of the Inferno.

ANSWER: **Malebolge** or the **Eighth Circle** of Hell [prompt on an ill-advised buzz of “Inferno” or “Hell”]

8. According to historian Ibn Khaldūn, this figure only served as a *naib* for his brother, which is why neither he nor his sons minted coins. This ruler was supposed to marry Maria Palaiologina, but his premature death meant that his son married her instead. In the aftermath of one his army’s massacres, he installed ‘Aṭā-Malik Juvainī as governor. His death caused his son to move the capital of the empire he founded to Tabriz from Marāgha. His tactics supposedly caused the river nearby one city he besieged to become saturated with ink. This man’s death occurred while fighting Berke, and he was succeeded by his son Abaqa. This man’s army proceeded west after killing Caliph al-Musta‘ṣim, but he was recalled to a *kuriltai* in Karakorum after the death of Möngke. Subsequently, his army, led by Kitbuqa, lost the Battle of Ayn Jalut. For 10 points, name this founder of the Ilkhanate, who was responsible for the sack of Baghdad in 1258.

ANSWER: **Hulagu** Khan [or **Hülegü** Khan]

9. This character’s mother paid for only one breast implant, and that mother is paid to spend time with this character 4 times a year. This character appears in the Memorial Montage of the Kids Choice Awards on accident, which she attends to promote her unlicensed Janis Joplin biopic about “Jackie Jormp-Jomp.” This character dates a male impersonator of her played by Will Forte, and she is the singer of the pop hit “Muffin Top.” This character often refuses to work when she believes she is not getting enough attention, and expresses concern after a famous actor is hired to appear with her on *The Girlie Show*. For 10 points, name this blonde co-worker of Tracy Jordan and friend of Liz Lemon, played by Jane Krakowski on *30 Rock*.

ANSWER: **Jenna Maroney** [accept either]

10. One character in this work is revealed to have always dodged the draft by a year. Originally called *The Sign of an Archer*, this work sees a busybody complain that she does not want her doctor husband to go full time into medical research. Act II of this play opens with a broken tree being sawed up before the arrival of George, who had just learned some important facts from his father. Later in this play, we meet a character who claims that November 25th is a “favorable day” for an offstage character who later commits suicide. At its climax, Ann reads a letter revealing that Larry, the man she loved, committed suicide after finding out that his father and Steve Deever caused the deaths of many soldiers. For 10 points, identify this play whose backstory involves Joe Keller’s faulty manufacture of airplane parts, a work of Arthur Miller.

ANSWER: All My Sons

11. One artist who participated in this movement made a satirical artwork that asks “Who is the prettiest of them all?” in his work *Every Man is His Own Football*. A different artwork in this movement depicts a city emerging from a dude’s head and is called *Cut with the Kitchen Knife through the Beer-Belly*. In addition to featuring members like John Heartfield and Hannah Hoch, this movement’s member Emmy Hennings founded an institution dedicated to reciting things like *Karawane* and other sound poetry; that institution featured performances by Hugo Ball and was the Cabaret Voltaire. Another member of this movement is known for pieces like *Hedgehog*, which is a bottle rack, and often depicted himself as Rrose Sélavy. That member of this movement sketched a goatee onto a postcard in his *L.H.O.O.Q.* For 10 points, identify this avant-garde movement whose members included Marcel Duchamp.

ANSWER: Dadaism [accept New Objectivity before “Kitchen”]

12. In response to this incident, J. W. Bengough drew a cartoon in which a man holds a sign that partially reads “The indignation of the people was all a mistake!” next to two parrots. This event caused Hector-Louis Langevin to leave politics for good and Louis-Amable Jetté to defeat a man who participated in this incident, which was first uncovered by Lucius Seth Huntington. Shortly after this event, secret ballots were introduced and Sandford Fleming was appointed by the Department of Public Works to ensure that certain parts of an enterprise were built publicly. As a result of this scandal, David MacPherson’s company lost their bid to Hugh Allan’s company after the latter made hundreds of thousands dollars in donations. For 10 points, the resignation of John MacDonald was prompted by what scandal that centered on a namesake transcontinental railway?

ANSWER: Pacific Scandal

13. In 2010, physicists at the University of Texas at Austin measured the Brownian motion of micrometer-sized beads of glass in order to give a direct confirmation of this principle. It’s not a conservation law, but by slowing down heavier particles, this principle is directly responsible for mass segregation. It can be derived by integrating with respect to velocity the velocity squared times the Maxwell–Boltzmann distribution to find the average velocity, and it can be used to derive the ideal gas law and Dulong–Petit law. This principle claims that the average kinetic energy of a particle in an ideal gas is equal one half times the degrees of freedom times Boltzmann’s constant times temperature. For 10 points, name this theorem from thermodynamics which states that every degree of freedom contributes the same kinetic energy.

ANSWER: equipartition theorem [or principle]
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14. This architect incorporated a series of wavy steel beams intended to blend into the surrounding hills into his design for the Zentrum Paul Klee in Bern. He designed a series of “cases” for a Kanak cultural center located in New Caledonia. This man designed the Nichols Bridgeway to connect another of his creations to Millenium Park. The Southwark Towers were demolished to make room for one of this man’s designs, the tallest building in the European Union. This architect of the Modern Wing of the Art Institute of Chicago incorporated a man-made island

into his design for the International Terminal at Kansai Airport in Ōsaka, and worked closely with Richard Rogers on a building noted for its use of multi-colored tubing. For 10 points, name this Italian architect behind The Shard and The Pompidou Centre.

ANSWER: Renzo **Piano**

15. One poem titled after this thing sees its speaker compare himself to a mustard seed and repeatedly imagine what would happen if he “casts his innermost being” onto a corpse or upon a fire. In a novel titled for this, the seducer Yu Yichi and a professor visit some white apes hoping to produce a superior type of this substance. The *Khamriyya* poems mostly venerate this thing, which is also used to title a translation of Hafez’s poetry by Thomas Rain Crowe. A novel titled after it sees its detective protagonist investigate claims that gastronomers of Liquorland are engaging in cannibalism in the title republic and was written by Mò Yán. This substance is juxtaposed with a loaf of bread at the beginning of ‘Omar Khayyām’s *Rubā‘iyāt*. For 10 points, identify this alcoholic beverage that appears in many poems of Li Pó and Arabic poets.

ANSWER: **wine**

16. The G protein–coupled receptor GPR30 binds to this compound. T47D cells can lose receptors for this compound due to long-term deprivation *in vitro*. The indicator phenol red was shown to mimic this type of compound, and tamoxifen is an antagonist of its receptors. This hormone was administered as part of the controversial Ashley Treatment to induce growth attenuation. It is not progesterone, but it is produced in granulosa cells after they receive necessary precursors from thecal cells. Aromatase facilitates the conversion from androgens like testosterone to this hormone, which is why aromatase-inhibitors are sometimes an effective method for treating breast cancer. For 10 points, name this primary female sex hormone.

ANSWER: **estrogens**

17. In one of this author’s novels the heart of the toy merchant Tackleton appreciates the true power of Christmas after Edward Plummer reveals his true disguise. One of this author’s characters falls down the “Old Hell Shaft” and speaks to his true love the factory worker Rachel before he dies. This author started the magazine *Household Words* in order to spread his ideas. That magazine published one of his novels that ends with Tom escaping to a circus to flee to America, while Josiah Bounderby is revealed to have lied about his origins. This author of *The Cricket and the Hearth* contrasted the fanciful Sissy Jupe with the Utilitarian philosophy Thomas Gradgrind, who insists that everyone learn “facts.” For 10 points, name this author of *Hard Times* and *A Tale of Two Cities*.

ANSWER: Charles **Dickens**

18. Rule 10a-1 was implemented by Joseph Kennedy Sr. to regulate this action. To limit the risk of this action a buy stop order may be created. A rather unethical form of this practice occurs in conjunction with distortion and happens in bear markets. In 2005 a regulation was implemented that created Threshold Lists in an attempt to prevent abusive instances of one type of this action, which used to be subject to the uptick rule. This action can lead to an increase in a valuation of the company due to a namesake “squeeze,” and a particularly dangerous type of it is the now illegal naked type. Typically, when one performs this action, dividends received from the equity in question must go to the lender. For 10 points, identify this practice of purchasing securities in the hopes its value depreciates so that it can be resold to a broker at a lower price.

ANSWER: **shorting** [or **short selling** or going **short**]

19. This god killed a three headed human who used his first head to read the *Vedas*, his second head to feed himself, and his third head for surveying the world. After slaying the youth Trisiras, the Brahmin Tvashtri created an enemy of this god that could not be defeated during night or day, nor with a weapon that was wet or dry; that’s why this god used froth to kill that figure during twilight. The realm of this god, which is sometimes called Devaloka, is populated with figures like Urvashi, one of many “nymphs of pleasure” called Apsaras that are married to the

celestial musicians called Gandharvas. This god's realm of Swarga can be found on Mount Meru, and he uses a stack of sea foam to defeat his enemy Ahi, or Vritra. This god uses a white elephant named Airavata as a mount, and he also uses the Vajra as a weapon. For 10 points, name this Vedic god of storms.

ANSWER: **Indra**

20. These people's concept of *arimmanus*, or "free man" was the basis for their military, and the inscription on the Pernik sword is possibly written in their language. They engaged in intermittent warfare with the Gepids under their kings Audoin and Alboin. With the Herulians and the Bulgars, they were employed by Narses at the Battle of Taginae. In an attempt to settle Pannonia, they battled a force at Pavia and made it their capital city in 572. They lost their power after King Desiderius married off his daughter to a man who would conquer them. Their duchy of Spoleto capitulated upon their conquest by Charlemagne, but the duchy of Benevento remained their bastion until they died out. For 10 points, identify this group of Germanic barbarians that give their name to the region of Italy that includes Milan.

ANSWER: **Lombards** [or **Langobards**; accept the Kingdom of **Lombardy**]

Extras

21. Notable landmarks in this city include the Perseverance Theater, the Red Dog Saloon, and St. Nicholas Russian Orthodox church. Originally known as Rockwell, this town lies just west of the Taku River and north of Admiralty Bay National Monument. Located on the Gastineau Channel and first explored by Joseph Whidbey, this city is larger than Delaware in land area. It is located downhill from the Tongass National Forest and Mendenhall Glacier, and sits below its namesake mountain. This city lies 75 miles north of Sitka, and has no road access to Anchorage. For 10 points, name this town, home to a Governor's Mansion where Sean Parnell currently resides after replacing Sarah Palin, the capital of Alaska.

ANSWER: **Juneau**, Alaska

Bonuses

1. Answer some questions about early Japan-Western relations. For 10 points each:

[10] This US Navy Commodore supposedly opened up Japan to Western trade by sailing his "Black Ships" to Japan in 1852.

ANSWER: **Matthew Perry**

[10] One direct result of Perry's visits to Japan was the signing of this treaty. It opened two ports up to the United States and guaranteed amnesty to US sailors who ended up in Japan.

ANSWER: Treaty [or Convention] of **Kanagawa** [accept Japan-US **Friendship** Treaty]

[10] Four British traders living in Japan were attacked by samurai during this incident, despite the supposed extraterritorial immunity the British enjoyed. It led to tensions between Britain and the daimyo of Satsuma.

ANSWER: **Namamugi** Incident [or **Richardson** Incident]

2. At the end of this play, one character is presented with an armband and told that he has nothing to fear for what he has done. For 10 points each:

[10] Name this Ionesco play, in which the Professor gives a rambling lecture to the inattentive Pupil, before drawing a knife from his desk and stabbing her to death.

ANSWER: **The Lesson**

[10] *The Lesson* is an example of a work from this movement, a name coined by Hungarian-born critic Martin Esslin.

ANSWER: Theatre of the **Absurd**

[10] A section of Esslin's *The Theatre of the Absurd* subtitled "The curable and the incurable" focuses on the works of this man. He wrote *The Parody* and *Ping Pong*.

ANSWER: Arthur **Adamov**

3. This man's first wife, Blanche of Lancaster, was the dedicatee of Chaucer's *The Book of the Duchess*. For 10 points each:

[10] Identify this English statesman that used his second wife Constance in an attempt to claim the throne of Castile. After that failed, he married Katherine Swynford.

ANSWER: **John of Gaunt**

[10] When this king was still young, John of Gaunt controlled much of the domestic and foreign policies of England. This king, the successor to Edward III, was forced to deal with the Peasants Revolt.

ANSWER: **Richard II**

[10] Thomas of Woodstock and Richard FitzAlan were members of this group that sought to stifle the power of some of Richard II's favorites. Up until 1389, they held most of the power in England, and in 1397 Richard sought revenge by having several of them executed.

ANSWER: **Lords Appellant**

4. Confusingly, this instrument is sometimes called a glockenspiel and its total weight of over 100 tons makes it the heaviest of extant musical instruments. For 10 points each:

[10] Name this percussion instrument that consists of 23 bronze bells played with a keyboard.

ANSWER: **carillon**

[10] This composer wrote his *Parable V* for carillon. His other works include *Flower Songs* and *Symphony for Band*.

ANSWER: Vincent **Persichetti**

[10] Persichetti taught this minimalist composer of *Satyagraha* and *Einstein on the Beach*.

ANSWER: Philip **Glass**

5. One form of this equation states that E equals E nought minus RT over $z F \ln Q$. For 10 points each:

[10] Name this equation that can be used to determine the reduction potential in a half-cell or a voltage of the full cell.

ANSWER: **Nernst** equation

[10] Some variations of the Nernst equation, like the Butler–Volmer and Tafel equations, contain this term, symbolized η . It is the difference between the derived half cell reduction potential and the observed reduction potential. This term arises because energy lost as heat makes reactions less efficient than calculations predict.

ANSWER: **overpotential**

[10] The derivation of the Goldman equation contains a term for ion flux which comes from this law. This law states that the flux of a species is equal to negative concentration gradient times a constant.

ANSWER: **Fick**'s first law of diffusion

edited

6. Answer some questions about the toughest rapper alive, Drake, for 10 points each:

[10] Drake's big hit "The Motto" introduced this acronym to the general public. It basically means "Carpe Diem."

ANSWER: **You Only Live Once**

[10] "The Motto" comes from this 2011 album by Drake. Its title track features Rihanna, and other tracks on the album include "Headlines" and "Make Me Proud."

ANSWER: **Take Care**

[10] This lead single from Drake's 2010 album *Thank Me Later* is one of Drake's many tracks complaining about being famous. In it, Drake claims he knows so many people he didn't know last year.

ANSWER: **"Over"**

7. The speaker of one of his poems describes how “there was wine before my sighs did dry it” in a poem that compares our “petty thoughts” to “ropes of sand.” For 10 points each:

[10] Identify this author of poems such as “Church Monuments” and “The Collar,” which are found in *The Temple*.

ANSWER: George Herbert

[10] George Herbert was one of these poets, who were characterized by their ability to use conceits to compare two unlikely situations. John Donne was another example.

ANSWER: Metaphysical Poets

[10] This other metaphysical poet wrote about a “first born of Chaos” and a “Tide of Glory which no rest dost know” in “Hymn: To Light.” He also wrote the pastoral drama *Naufragium Jocularis*.

ANSWER: Abraham Cowley

8. In honor of the recently-passed Dave Brubeck, answer some questions about his life and work. For 10 points each:

[10] Brubeck played this instrument. Other jazz musicians who primarily played this instrument include Jelly Roll Morton and Duke Ellington.

ANSWER: piano

[10] Brubeck’s most famous album is undoubtedly *Time Out*, made with his quartet. This track from *Time Out*, which isn’t “Take Five,” got its rhythm from street musicians in the title country. It is in an unusual 9/8 time signature.

ANSWER: “Blue Rondo a la Turk”

[10] Brubeck first reached national prominence by touring various colleges as a way to introduce youth to jazz. One live album that sprang out from those efforts was this 1953 effort, which included a cover of Hoagy Carmichael’s “Stardust.” It was recorded at an Ohio school.

ANSWER: Jazz at Oberlin

9. Since no element has a stable isotope with atomic mass of 5 or 8, this process can only occur at temperatures above 100 million kelvins, so that beryllium-8 forms elements faster than it decays. For 10 points each:

[10] Name this process that involves three helium-4 nuclei combining to form a carbon-12 nucleus.

ANSWER: triple-alpha process

[10] A helium flash, which is essentially a runaway triple alpha process within a star, typically occurs in stars that have a value of 2.25 or less for this unit of a star’s mass, equal to 2×10^{30} kg. The Sun has a value of one for it.

ANSWER: solar mass

[10] The triple-alpha process doesn’t make elements heavier than iron, but this process does. In this process, stable nuclei capture neutrons, which then immediately form atoms of elements in the valley of beta stability, unlike a more rapid process.

ANSWER: s-process

10. One unusual study of this phenomenon was conducted by Nisbett and Wilson and involved a university professor with a thick accent being told to act “coldly” or “warmly.” For 10 points each:

[10] Name this phenomenon in psychology that states that a person’s general impression of someone else changes how they view their specific traits.

ANSWER: halo effect

[10] The halo effect is often most related to this particular quality of an individual. Karen Dion conducted a classic study of the halo effect and this quality by asking 60 college students to rate the personalities of the people presented to them in three photos.

ANSWER: attractiveness [accept similar stuff like being aesthetically pleasing, hotness, etc.]

[10] One of the first psychologists to hint at the idea of the halo effect was this German, who wrote crazy philosophical treatises about the souls of plants, such as *Nanna*. He was a founder of psychophysics with Weber.
ANSWER: Gustav **Fechner**

11. His first convert was his cousin, and his ideas were not widely accepted until he entered the country of King Vishtaspa. For 10 points each:

[10] Name this man to whom Ahura Mazda revealed the truth. He is the founder of a namesake dualistic Persian religion.

ANSWER: **Zoroaster** [accept **Zarathustra**]

[10] Zoroaster is believed to have composed these 17 hymns, contained in the Yasna. They are recited during a ceremony that culminates in the Ab-Zohr, a symbolic offering to the waters.

ANSWER: **Gathas**

[10] The 72 chapters of the Yasna are represented by the 72 threads of this sacred girdle worn around the waist by Zoroastrians. It is worn alongside an undergarment called the Sedreh.

ANSWER: **Kushti** [accept **Kusti** or **Koshti**]

12. Identify the following about the historiography of Nazism and the Third Reich. For 10 points each:

[10] Ernst Nolte and Jurgen Habermas participated in this heated debate of the 1980s that discussed the nature of the crimes committed by the Nazi Party.

ANSWER: **Historikerstreit** [or **Historian's Quarrel**]

[10] This personal memoir of a Nazi was written while its author was in Spandau. In it, the author recounts that he was unwillingly made Minister of Armaments after Fritz Todt died in a plane crash.

ANSWER: **Inside the Third Reich** [accept **Erinnerungen**]

[10] Another primary document in the historiography of Nazism is this autobiography of Adolf Hitler, which states that his teacher Leonard Poetsch was responsible for firing up his imagination.

ANSWER: **Mein Kampf** [or **My Battle** or **My Struggle**]

13. One character in this work leads the Brotherhood of British Freeman. For 10 points each:

[10] Name this long work about a morass of married upper-class folks contemplating and having affairs. Characters include Walter and John Bidlake and Philip Quarles.

ANSWER: **Point Counter Point**

[10] *Point Counter Point* is a novel by this British author, who often wrote of the foibles of the upper class. He's also famous for the dystopian novel *Brave New World*.

ANSWER: Aldous **Huxley**

[10] This experimental novel by Huxley features chapters that are chronologically out of order with no transitions in between them. It centers on the life of Anthony Beavis and takes its title from Milton.

ANSWER: **Eyeless in Gaza**

14. This empire would conquer nearby tribes to gain sacrifice victims during its Flower Wars. For 10 points each:

[10] Identify this empire that would invade nearby neighbors at the behest of leaders like Montezuma.

ANSWER: **Aztecs** or **Aztec** Empire

[10] One of the Aztec army's greatest weapons was the *atlatl*, a weapon that would basically throw these things. Their heads would be made out of obsidian.

ANSWER: **spears** [prompt on "poles"]

[10] Most Aztec art that depicts soldiers show them using this preferred weapon of choice, which had a thick obsidian blade. It was either considered a sword or a bludgeoning club that was useful in decapitating horses.

ANSWER: **macuahuitl**

15. It depends on a large population, random mating, and no gene flow, mutations, or natural selection. For 10 points each:

[10] Name this principle stating that as long as only Mendelian inheritance is at work, genotype and allele frequencies will both remain constant.

ANSWER: **Hardy–Weinberg** principle or equilibrium

[10] This convenient triangular graph helps to illustrate Hardy–Weinberg equilibrium by representing the proportion of zygosity by distance to each side. Hardy–Weinberg equilibrium is represented by a curve from both homozygous sides.

ANSWER: **de Finetti** diagram [accept **ternary** plot]

[10] This is the process by which mutations that delete genetic material accrue in asexual reproduction. They are irreversible in asexual reproduction, and can eventually cause extinction.

ANSWER: **Muller’s ratchet**

16. Identify the following about ants in Greek mythology. For 10 points each:

[10] While a baby, a procession of ants carried grain into the mouth of this future king. He received one of his most notable gifts after he assisted Silenus, but he later washed that gift off at the Pactolus River.

ANSWER: **Midas**

[10] When this man came to the court of King Cocalus, he realized that Daedalus was inhabiting Cocalus’s realm because Daedalus was able to thread a string through a seashell using an ant. Shortly afterwards, the daughters of Cocalus put this man to death.

ANSWER: **Minos**

[10] Ants were also transformed into these Phthian antmen that were the personal troop of Achilles.

ANSWER: **myrmidons**

17. In one action involving this city from February 13 to 15, 1945, over 3,000 tons of bombs were dropped in four raids. For 10 points each:

[10] Name this city whose bombing caused a massive firestorm that partially inspired Kurt Vonnegut’s *Slaughterhouse-Five*.

ANSWER: **Dresden**

[10] This Air Force Commander-in-Chief, nicknamed “bomber” by the press for his ardent support of area bombing, clashed with Churchill over the bombing of Dresden.

ANSWER: Arthur **Harris**

[10] One of the largest firestorms of the war was created by the bombing of this city during Operation Gomorrah, which was discussed in *On the Natural History of Destruction* by W. G. Sebald.

ANSWER: **Hamburg**

18. The namesake frequency due to this phenomenon is given by negative B field times the gyromagnetic ratio, and it allows one to calculate the spin of a particle. For 10 points each:

[10] Name this precession of particles due to torque caused by an external magnetic field.

ANSWER: **Larmor** precession

[10] The mentioned gyromagnetic ratio for a particle is the ratio between this quantity and its angular momentum. It has units of joules per tesla, and determines the force an external field will exert on the particle.

ANSWER: magnetic **dipole** moment [prompt on “moment” or “magnetic moment”]

[10] A particle’s magnetic dipole moment is proportional to one version of this factor. In general, this quantity is used to relate magnetic moments to spin, and the electron variety of this factor is one of the most precisely measured constants in physics.

ANSWER: Landé **g**-factor [accept electron **g**-factor]

19. It ends with a judge forcing the main character to enlist in the army, and that protagonist, Bob Jones, perpetually lives in fear and paranoia while serving as alderman of an all-black crew. For 10 points each:

[10] Name this novel that also features the character Madge Perkins.

ANSWER: *If He Hollers, Let Him Go*

[10] *If He Hollers, Let Him Go* is by this African American author who is also famous for a series of detective novels about Coffin Ed and Gravedigger Jones, which includes *The Real Cool Killers* and *Cotton Comes to Harlem*.

ANSWER: Chester Himes

[10] Himes was close friends with this fellow expatriate African American author, who wrote *Black Boy* and about Bigger Thomas in *Native Son*.

ANSWER: Richard Wright

20. It rejects the principle of fairness and argues that distributive justice will always be at a non-ideal value through the use of a thought experiment in which a million people paid Wilt Chamberlain a quarter. For 10 points each:

[10] Identify this work of libertarian philosophy that champions a minimal state through “state of nature” arguments and a thought experiment dubbed *demoktesis*, “ownership of the people, by the people, for the people.”

ANSWER: *Anarchy, State and Utopia*

[10] *Anarchy, State and Utopia* was written by this American philosopher.

ANSWER: Robert Nozick

[10] In *Philosophical Explanations*, Nozick responded to these eponymous, philosophical conundrums by positing two counterfactual conditions that came to be known as adherence and variation conditions.

ANSWER: the Gettier problems [accept anything that mentions Gettier and some sort of conundrum]

Extras

21. His works include *The Defeat of the Floating Batteries at Gibraltar* and *The Red Cross Knight*. For 10 points each:

[10] Name this artist who kind of botched it by putting in big lips in his *Watson and the Shark*.

ANSWER: John Singleton Copley

[10] Most of us can get behind the fact that *Watson and the Shark* is art, with or without lips, but it sure does take a lot more to get to the position to accept that this man’s *The Physical Impossibility of Death in the Mind of Someone Living* is also art as well.

ANSWER: Damien Hirst

[10] Damien Hirst’s best work of art is probably this sculpture, which consists of 8,601 diamonds embedded into a skull of platinum.

ANSWER: *For the Love of God*