

ACF Fall 2015

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Tossups

1. The title character of a play by this author dresses up as a lute-player with a nosegay in his hat to spy on a pimp. The speaker of a reply to a poem by this author says that "if all the world and love were young" then they might "live with thee, and be thy love" and was written by Walter Raleigh. The prostitute Bellamira conspires with the slave Ithamor against the title character of a play by this author. This author of "The Passionate Shepherd to His Love" wrote a play in which the title character is boiled in his own cauldron by Ferneze. For 10 points, name author who wrote about Barabas in *The Jew of Malta*.

ANSWER: Christopher Marlowe

2. This man names a phenomenon whose N-th radius can be calculated as the square root of the quantity N minus one half times wavelength times radius of the lens. This man names that interference pattern formed by the reflection of light between a flat and spherical surface. He discussed his experiments with the dispersion of light in the book *Opticks*. Henry Cavendish used a torsion balance to measure a value sometimes named for this man. This man names the law of inertia, which states that objects in motion will stay in motion, and objects at rest stay at rest. For 10 points name this English physicist who developed three laws of motion and was an inventor of calculus.

ANSWER: Isaac Newton

3. A character in this film is observed skipping work by her boss after he notices her car while crossing a crosswalk. This film ends with a character smiling and looking into the camera as an offscreen female voice declares "why, she wouldn't harm a fly." One scene in this film match cuts between shots of water swirling in a drain and a woman's eyeball. Anthony Perkins plays a character in this film who states "we all go a little mad sometimes." This film used chocolate syrup to mimic blood in a scene accompanied by Bernard Hermann's screeching string soundtrack. Marion Crane is stabbed in the shower in, for 10 points, what Alfred Hitchcock film about cross-dressing serial killer Norman Bates?

ANSWER: Psycho

4. Barrington Moore theorized that bourgeoisie were essential for the development of this concept in Europe in a book on the "social origins" of dictatorship and this concept. The "polyarchal" form of this concept was defined by Robert Dahl, who also wrote a book on this concept "and its critics". Along with capitalism and socialism, this concept titles a book by Joseph Schumpeter. An international relations theory named after this concept's "peace" states that two countries with this system of governance will not go to war with each other. For 10 points, name this system of governance in which citizens elect politicians.

ANSWER: democracy [or word forms like democratic]

5. While serving as the king of another nation, a man from this nation won the Siege of Polotsk during the Livonian War. A general from this nation waged the “Long Campaign” before losing the Battle of Varna. One king of this nation established a group of personal mercenaries known as the Black Army. Control of this home of John Hunyadi and Matthias Corvinus was split between the Ottomans and Transylvania after its ruler Louis II lost the Battle of Mohacs. This nation was unified by a king who also actively spread Christianity, Saint Stephen I. For 10 points, name this kingdom which is now a nation with a capital at Budapest.

ANSWER: Kingdom of Hungary

6. A character in this book believes that “everyone in the world is Christ and they are all crucified.” Another character in this book writes his thoughts on pieces of paper and stuffs them into his pockets. Jesse Bentley takes his grandson David into the woods to perform an animal sacrifice in its chapter “Godliness.” Characters in this book include Dr. Reefy and a schoolteacher who fled Pennsylvania after being accused of molesting a mentally disabled boy. Wing Biddlebaum, who appears in its chapter “Hands,” is friends with this book’s protagonist, an aspiring writer named George Willard. For 10 points, name this short story cycle about an Ohio town written by Sherwood Anderson.

ANSWER: Winesburg, Ohio

7. A man with this name is the only prophet who is the subject of an entire surah in the Quran. That man of this name was imprisoned after being falsely accused of sleeping with Potiphar’s wife. In the beginning of the Gospel of Matthew, another man of this name is listed as the grandson of Matthan and a descendent of David. That man with this name has a vision of an angel which tells him to take his family and flee to Egypt. A man from Arimathea with this first name offers his tomb to Jesus after the Crucifixion. For 10 points, give this name shared by a man who inherited a coat of many colors and a Nazarene carpenter who was the foster father of Jesus.

ANSWER: Joseph [or Yusuf on the first clue]

8. This element is commonly stored in nickel containers as it forms a passivation layer. Because the Sandmeyer reaction does not effectively add this element to aryl compounds, the Balz-Schiemann reaction is used instead. Carboxylic acids substituted with this element are much more acidic due to this element’s strong inductive effects. The first noble gas compound discovered consisted of an atom of xenon bound to four atoms of this element. This element and hydrogen form an acid which etches glass and can diffuse through skin down to the bone. For 10 points, name this most electronegative element that has an atomic number of 9 and is the lightest halogen.

ANSWER: fluorine [prompt on F]

9. During a military expedition in this geographical region, British soldiers wielding Maxim guns massacred locals at the Battle of Chumik Shenko. This region was explored by Francis Younghusband’s expedition. Pilots who flew over this mountain range during World War II nicknamed it “the Hump.” The boundary between two countries was established through this mountain range in 1914 with the McMahon Line. The kukri knife was popularized by a group of mercenaries enlisted from this region, the Gurkhas. This region is home to the Sherpa ethnic group. For 10 points, name this mountain range where Tenzing Norgay and Edmund Hillary climbed Mount Everest.

ANSWER: the Himalayas [or Himalayan mountains; accept Tibet until “mountain”]

10. In this painting's left foreground, a bald man peers over the shoulder of a man scribbling in a book. A woman in white stares out at the viewer from this work's center and may have been modeled on La Fornarina. A figure likely modeled after Bramante is shown bending down in its bottom right. This painting is located near the artist's *Disputation of the Holy Sacrament* in the Stanza della Segnatura. One focal figure of this painting is holding a copy of Timaeus and is conversing with a younger man who is holding a book on ethics and pointing downwards. For 10 points, name this Raphael fresco that centers of Plato and Aristotle.

ANSWER: The School of Athens [or La Scuola di Atene]

11. This jazz composer wrote a song whose middle section features a thirty-two-bar clarinet solo by Johnny Dodds. This composer of "Potato Head Blues" popularized his mentor Joe "King" Oliver's song "West End Blues," and collaborated with Ella Fitzgerald on two albums, plus a third album of selections from *Porgy and Bess*. This musician organized namesake Hot Five and Hot Seven ensembles with whom he pioneered scat singing in songs such as "Heebie Jeebies." In a popular recording, this musician sang about seeing "trees of green, red roses, too." For 10 points, name this jazz trumpeter who used his characteristic gravelly voice to sing "What a Wonderful World."

ANSWER: Louis Armstrong [prompt on "Satchmo"]

12. Satellites that participated in the THEMIS project first discovered evidence of these things occurring on the Sun. These phenomena are often preceded by the appearance of a hook echo, and they can be created by systems known as supercells. Large varieties of these are known as their "wedge" form. The two nations that see the most of these phenomena now measure their power on an "enhanced" scale. Most of these things occur in a strip of land which includes the Great Plains and is known as their namesake "Alley." For 10 points, name these rotating funnel clouds that contact the ground and feature high wind speeds, whose strength is measured by the Fujita scale.

ANSWER: tornadoes [or twisters; or cyclones]

13. During a conflict over this commodity, Nate Champion defended his cabin from the WSGA. During Benjamin Harrison's presidency, large-scale and small-scale producers of this commodity faced off against each other in the Johnson County War. Men involved in the transportation of this resource were accompanied by a chef nicknamed "cookie." This commodity made wealthy men out of Charles Goodnight and Samuel Maverick and boom towns out of Abilene and Dodge City. The "Great Die-Up" occurred after people began using barbed wire to protect this commodity from rustlers. For 10 points, name these animals escorted on "drives" from Texas to stockyards in Kansas.

ANSWER: cattle [or cows; or beef; or longhorn cattle; prompt on "meat" or "livestock"]

14. This philosopher claimed theology was "the study of nothing" and criticized "invented systems of religion" in a book outlining his deist views. This thinker argued that landowners should pay a "ground-rent" to support welfare in his tract *Agrarian Justice*. This man was put on trial *in absentia* for writing a response to Edmund Burke's *Reflections on the Revolution in France*. This author of *Rights of Man* began a pamphlet series with the line "These are the times that try men's souls", and his most popular book criticizes hereditary succession in favor of a "republican government". For 10 points, name this author of *The American Crisis* and *Common Sense*.

ANSWER: Thomas Paine

15. Part of a novel by this author is set in Solara and is illustrated with World War II propaganda from the protagonist's childhood. The protagonist of that novel by this author reads the First Folio to regain emotional memories and is named Yambo. The narrator travels to Constantinople and meets Niketas Choniates in his *Baudolino*. Another novel by this author ends with Brother Jorge burning down the central building. That book by this author of *The Mysterious Flame of Queen Loana* opens with Adso of Melk arriving to an Italian monastery to investigate a series of deaths. For 10 points, name this author who created the friar William of Baskerville in *The Name of the Rose*.

ANSWER: Umberto Eco

16. This hero is betrayed by a man who obtains some rowan berries by killing the giant Searbhan ["SHAR-vahn"]. Late in his life, this hero refuses to provide a handful of healing water for a companion who has been mortally wounded by a boar. His two hounds Bran and Sceolan ["SHOW-lahn"] recognize that a deer is in fact this hero's bewitched wife Sadb ["SAHV"]. This hero leads men such as Diarmuid, and has his tales written down by his son, the bard Oisín ["uh-SHEEN"]. This hero can recall all of the knowledge in the world by sucking on his thumb, which he burns while cooking the Salmon of Knowledge. For 10 points, name this Irish hero of the Fenian cycle.

ANSWER: Finn MacCool [or Fionn mac Cumhaill; or Deimne ["DAY-nee"]]

17. This composer had low strings quote the funeral march from the *Eroica* Symphony near the very end of one of his pieces. A series of all twelve chromatic notes begins the fugal subject of the "Of Science" section in a piece by him that ends with a "Song of the Night Wanderer." A theme played by a horn and a theme played by the D clarinet depict the title trickster in one of his tone poems. Four trumpets play the ascending half notes "C, G, C" near the start of the "Introduction, or Sunrise" section of this composer's tone poem about a Friedrich Nietzsche novel. For 10 points, name this composer of *Metamorphosen*, *Till Eulenspiegel's Merry Pranks* and *Also sprach Zarathustra*.

ANSWER: Richard Strauss [or Richard Georg Strauss]

18. The longest stage of this process contains stages such as the diplotene and pachytene stages. The synaptonemal complex forms during this process, during which the occurrence of synapsis results in the formation of chiasmata. One form of this process results in the formation of three polar bodies. In this process, a double Holliday junction forms during crossing over. Interkinesis occurs between two parts of this process. Since homologous recombination occurs during this process, it does not result in identical cells. This process produces four haploid daughter cells. For 10 points, name this cell division process that produces sex cells.

ANSWER: meiosis [accept meiosis I or meiosis II; prompt on "prophase I"; prompt on "gametogenesis"; prompt on "oogenesis"; prompt on "spermatogenesis"]

19. This country was the birthplace of an author who imagined the Great Semi sowing seeds of a utopia over the title location. In a novel by an author from this country, the orphans Esteban and Sofia come under the care of Victor Hugues. An author from this country wrote *Explosion in a Cathedral* and developed a genre he called "lo real maravilloso" ["lo ray-al mara-vi-YOSO"]. An author from this country wrote the essay "Nuestra America" and wrote the lines "Cultivo una Rosa Blanca" and "Yo soy un hombre sincero" in the collection *Versos Sencillos* ["versos sen-SEE-yose"]. For 10 points, name this home country of Alejo Carpentier and Jose Martí, whose poetry inspired the song "Guantanamera."

ANSWER: Cuba

20. The most notable veteran of this organization used contacts developed through it to guide the Combahee Ferry raid. Members of this organization included the Coffin family and a woman who pretended to read a newspaper because an arrest warrant said she was illiterate. This organization may have used quilts and songs like "Follow the Drinking Gourd" to guide individuals between locations managed by "stationmasters." Members of this organization referred to the Ohio River as the "River Jordan." It helped guide individuals to Canada. For 10 points, name this organization run by "conductors" like Harriet Tubman that helped slaves escape.

ANSWER: the Underground Railroad

Extra

During one conflict, these people made their base at the Janiculum Hill. Supporters of these people were often opposed by the Optimates, and laws made by these people became binding to everybody after the passing of the Lex Hortensia. As a result of several secessions performed by these people, the Twelve Tables were created. After the Conflict of the Orders, the office of Tribune was created to give these people the power to potentially veto the Consuls. For 10 points, name this class of people in ancient Rome, often contrasted with the wealthy landowning patricians.

ANSWER: plebeians [or plebs]

Bonuses

1. These alkaline proteins form a structure consisting of an octameric core and a linker region. For 10 points each:
[10] Name these proteins that form nucleosomes to condense DNA. They are analogized as beads on a string.
ANSWER: **histones**
[10] Histones are central to the formation of chromatin which is found in this organelle. This “control center” is the defining feature of a eukaryotic cell.
ANSWER: **nucleus**
[10] After DNA is coiled into a beads-on-a-string arrangement, it can be coiled further into a structure referred to as a fiber of this many nanometers.
ANSWER: **30** nanometers
2. This goddess is borne of the seafoam created after the castration of Uranus. For 10 points each:
[10] Name this Greco-Roman goddess of love.
ANSWER: **Aphrodite** [or **Venus**]
[10] This woman is put through a series of difficult ordeals after she accidentally spills hot oil on her husband Cupid, the son of Venus.
ANSWER: **Psyche**
[10] In the *Metamorphoses*, the sculptor Pygmalion forges a statue with this name, which Venus proceeds to bring to life. Polyphemus ends up killing Acis over a fight for the love of a nymph with this name.
ANSWER: **Galatea**
3. Answer the following about parks around the world, for 10 points each.
[10] Andre le Notre was a master of the *Jardin Francais*, and put that skill to use to design the many *bosquets*, or tree groves, at this French palace for Louis XIV.
ANSWER: Palace of **Versailles**
[10] The Metropolitan Museum of Art abuts this Frederick Law Olmstead-designed park in New York City.
ANSWER: **Central** Park
[10] This designer of Miami’s Bayfront Park also designed many public sculptures for parks, such as the “Black Sun” for Seattle’s Volunteer Park. He designed a stage set of “Appalachian Spring” for Martha Graham.
ANSWER: Isamu **Noguchi** [or **Noguchi** Isamu]
4. This book’s title phrase is a Provencal [“pro-ven-SALL”] expression for the culture of troubadours. For 10 points each:
[10] Name this collection of philosophical writings that introduced its author’s idea of the “greatest weight” of eternal recurrence, which he later expanded on in the book *Thus Spoke Zarathustra*.
ANSWER: The **Gay Science** [or *Die fröhliche Wissenschaft*]
[10] This German philosopher wrote *The Gay Science* and *Thus Spoke Zarathustra*.
ANSWER: Friedrich **Nietzsche** [or Friedrich Wilhelm **Nietzsche**]
[10] *The Gay Science* is also the first instance of this three-word phrase, spoken by a lantern-carrying “madman” who then asks “How shall we console ourselves, the most murderous of all murderers?”
ANSWER: “**God is dead**” [or “**Gott ist tot**”; or “**God remains dead**”; or “**Gott bleibt tot**”]

5. In the aftermath of this event, one participant fled to Wartburg Castle. For 10 points each:

[10] Name this event, which saw the passing of a namesake Edict that declared the author of the Ninety-Five Theses a heretic. That author was questioned by Johann Eck at this event.

ANSWER: Diet of **Worms**

[10] This author of the *Ninety-Five Theses* was officially condemned at the Diet of Worms. This anti-Semite and husband of Katharina von Bora also translated the Bible into German.

ANSWER: Martin **Luther**

[10] The earlier Concordat of Worms, signed by Henry V and Calixtus II, effectively ended the Investiture Controversy by restricting the Holy Roman Emperor's power to perform this action.

ANSWER: **appointing Bishops** [accept anything involving **appointing Church officials**]

6. The play "My Fatherland or My Head Scarf" is performed in a scene from this novel. For 10 points each:

[10] In this novel, the poet Ka travels to the town of Kars while posing as a journalist investigating the suicides of schoolgirls forced to remove their headscarves at school.

ANSWER: **Snow**

[10] Orhan Pamuk, the author of *Snow*, is from this country. Artists from the Ottoman Empire, which once ruled this modern-day country, appear in Pamuk's novel *My Name is Red*.

ANSWER: **Turkey** [or **Turkiye**]

[10] This Arab author wrote about Al Mustapha, who is about to sail back home after 12 years in the city of Orphalese, in his prose work *The Prophet*.

ANSWER: Khalil **Gibran**

7. This man's namesake "eta" function is also known as the "alternating zeta" function. For 10 points each:

[10] Name this German mathematician who was one of the founders of analytic number theory. He also names a generalization of the alternating series test and a principle that is the discrete analogue of the probabilistic method.

ANSWER: Gustav Lejeune **Dirichlet** [or Johann Peter Gustav Lejeune **Dirichlet**]

[10] Fortune's algorithm uses these conic sections to generate Dirichlet tessellations. They are the set of points that are equidistant from a point and a line and include the curve "y equals x-squared".

ANSWER: **parabolas**

[10] Dirichlet also formalized this principle which states that if you're putting items in boxes and you have more items than boxes, there is at least one box with more than one item in it.

ANSWER: **Pigeonhole** principle

8. The protagonist of this play was a promising baseball player but couldn't play in the big leagues due to his race. For 10 points each:

[10] Name this play in which a garbage collector, Troy Maxson, struggles with raising his son Cory.

ANSWER: **Fences**

[10] This African-American playwright included *Fences*, *Ma Rainey's Black Bottom* and *The Piano Lesson* in his *Pittsburgh Cycle*.

ANSWER: August **Wilson**

[10] In *Fences*, Troy's mentally disabled brother Gabriel always carries around one of these instruments. Gabriel tries to play it during Troy's funeral but no sound comes out.

ANSWER: a **trumpet**

9. This composer billed his Symphony No. 5 in D minor as a “response to just criticism” after the Soviet government formally denounced his opera *Lady Macbeth of the Mtsensk District*. For 10 points each:
[10] Name this composer of the *Leningrad* Symphony.
ANSWER: Dmitri Shostakovich [or Dmitri Dmitriyevich Shostakovich]
[10] The later 1948 Zhdanov decree denounced both Shostakovich and this composer, whose ballet *Gayane* includes the “Sabre Dance.”
ANSWER: Aram Khachaturian [or Aram Ilyich Khachaturian]
[10] Khachaturian’s *Masquerade* Suite begins with, and is most famous for, one of these pieces.
Shostakovich’s Jazz Suite No. 2 is best-known for one of these pieces in C minor.
ANSWER: waltz
10. Answer the following about the Islamic State of Iraq and the Levant, for 10 points each.
[10] ISIL’s expansion has complicated the ongoing civil war in this Middle Eastern country, where Bashar al-Assad still holds power from its capital of Damascus.
ANSWER: Syria [or Syrian Arab Republic]
[10] This leader of ISIL was incorrectly reported to have died in an American airstrike in October 2015. He reportedly married himself to captive American aid worker Kayla Mueller and sexually abused before her death.
ANSWER: Abu Bakr al-Baghdadi
[10] In the fall of 2015, ISIL captured this historically significant city in Syria. ISIL destroyed many of this city’s ancient landmark, including its Temple of Bel.
ANSWER: Palmyra [or Tadmur]
11. In the only surviving play by this man, Sostratos attempts to wed the daughter of Knemon. For 10 points each:
[10] Name this proponent of New Comedy who wrote *Dyskolos*, or *The Grouch*. He was the rival of Philemon.
ANSWER: Menander
[10] Although Menander wrote in the comedic form, he greatly admired Euripides, who wrote in this form. The *Oresteia* trilogy by Aeschylus is also in this form.
ANSWER: tragedy [or tragodia]
[10] Euripides’ *Cyclops* is the only entirely surviving example of this form of play. These lewd plays, which get their name from some attendants of Dionysus, were often performed following tragic trilogies.
ANSWER: satyr plays
12. A protein which displays this phenomenon as green was isolated from the jellyfish *Aequorea victoria*. For 10 points each:
[10] Name this phenomenon in which a substance absorbs light and then emits light with a longer wavelength. It should not be confused with phosphorescence.
ANSWER: fluorescence
[10] Since fluorescence absorbs and emits light at different wavelengths, it exhibits a Stokes shift, much like this phenomenon involving the inelastic scattering of light named for an Indian physicist.
ANSWER: Raman scattering [or Raman effect; or Raman spectroscopy]
[10] Raman scattering is similar to this elastic scattering of light which causes the blue color of the sky.
ANSWER: Rayleigh scattering

13. When this novel's protagonist is recovering from smallpox, Lady Dedlock reveals that she is the protagonist's mother. For 10 points each:
- [10] Name this novel whose heroine is Esther Summerson. The plot of this novel revolves around a will written by "Nemo," who turns out to be Esther's estranged father Captain Hawdon.
- ANSWER: Bleak House
- [10] This other novel documents Pip's attempts to rise to high society so that he can marry Estella, who is the illegitimate daughter of Abel Magwitch.
- ANSWER: Great Expectations
- [10] This author wrote *Bleak House* and *Great Expectations*. He also wrote about an orphan who is tricked into picking pockets with the Artful Dodger in *Oliver Twist*.
- ANSWER: Charles Dickens
14. Answer the following about the Bristol Channel, for 10 points each.
- [10] The north coast of the Bristol Channel belongs to this constituent country of the United Kingdom with capital at Cardiff.
- ANSWER: Wales [or Cymru ["kem-ry"]]
- [10] Another city on the Bristol Channel is this second largest Welsh city by population. During the 19th century, it garnered the nickname "Copperopolis" due to its high copper production.
- ANSWER: Swansea
- [10] This river, the longest in the United Kingdom, rises near the River Wye in the Cambrian Mountains and flows into the Bristol Channel. This river's bore is a large surge wave that can rise to as much as 50 feet in height.
- ANSWER: River Severn
15. The speaker of a poem by this author mourns a woman who lived in a "kingdom by the sea." For 10 points each:
- [10] Name this poet of "Annabel Lee." He used the word "tintinnabulation" to describe the "jingling and tinkling" of the title objects in his poem "The Bells."
- ANSWER: Edgar Allan Poe
- [10] In this Edgar Allan Poe poem, the title bird perches upon a bust of Pallas and taunts the speaker by repeatedly uttering "nevermore."
- ANSWER: "The Raven"
- [10] At the end of "Annabel Lee," the narrator claims that he spends "all the night-tide" lying down either inside or next to this location.
- ANSWER: Annabel Lee's tomb [or "in her tomb by the sounding sea"; or "in her sepulchre by the sea"; accept near-equivalents to tomb such as mausoleum or coffin]

16. This leader allowed himself to be criticized during the short-lived Hundred Flowers Campaign. For 10 points each:
- [10] Name this leader who instituted the Cultural Revolution as the first chairman of the communist People's Republic of China.
- ANSWER: Chairman **Mao** Zedong [or **Mao** Tse-tung]
- [10] During the Cultural Revolution, Chairman Mao's sayings were collected and printed in this widely-distributed book.
- ANSWER: ***Little Red Book*** [or ***Quotations from Chairman Mao Tse-Tung***]
- [10] This Chinese politician helped compile the *Little Red Book*. Suspected of plotting against Mao, he died along with his family in a suspicious 1971 plane crash.
- ANSWER: **Lin** Biao
17. This artistic style took its name from a French word that referred to the broken shell motifs that it often employed, for 10 points each:
- [10] Identify this florid art movement popular in the 18th century as a response to the grandeur of the Baroque style.
- ANSWER: **rococo**
- [10] This Rococo artist's painter's painting *Gilles* is now usually known as *Pierrot*, the *commedia dell'arte* character. He also painted the variously interpreted *Embarkation for Cythera*.
- ANSWER: Jean-Antoine **Watteau**
- [10] Watteau also pioneered a genre named by this two-word French phrase. Paintings in this light-hearted genre generally depict aristocrats engaged in amorous activities in gardens.
- ANSWER: **fête galante**
18. Answer the following about setbacks the Europeans faced during their colonization of the New World, for 10 points each.
- [10] Recent evidence suggests that this disease was first introduced to Europe after the return of Columbus's voyage to the New World. It was historically known as the "great pox."
- ANSWER: **syphilis**
- [10] Lots of colonization efforts made trade companies enormously rich, but the Darien Company's attempt to colonize Panama was a massive failure, resulting in the near-bankruptcy of this nation.
- ANSWER: **Scotland**
- [10] After the Spanish conquered the Inca, they brought this crop back to Europe. Later, the lack of diversity in this crop's cultivation in Ireland led to its infection with a blight in the mid-19th century.
- ANSWER: **potatoes** [accept Irish **potato famine**]
19. These structures can be characterized by a repeating unit cell. For 10 points each:
- [10] Name these solids which display long range order. Examples include diamonds or table salt.
- ANSWER: **crystals**
- [10] The orientation of a crystal can be denoted using this notation, which is used to define a plane with respect to the Bravais lattice.
- ANSWER: **Miller index**
- [10] In crystals with this sort of unit cell, the (111) ["one one one"] Miller index forms a hexagonal grid. Crystals with this geometry can be primitive, face-centered, or body-centered.
- ANSWER: **cubic**

20. Answer the following about Islamic law, as interpreted by the House of Saud, for 10 points each.

[10] In Saudi Arabia, religious police called *mutaween* can arrest people for engaging in acts described by this word, Arabic for “forbidden.” Food that is not *halal* is also described by this word.

ANSWER: **haram**

[10] The Saudi elections of 2015 were the first where these people could vote and run for office. These people, who often wear a hijab, are still prohibited from driving in Saudi Arabia.

ANSWER: **women** [or obvious equivalents]

[10] This act, a “conscious abandonment” of Islam, can be punished by the death penalty in Saudi Arabia. Abu Bakr fought several wars named after this concept after the death of Muhammad.

ANSWER: **riddah** [or **apostasy**; or word forms like **apostate**; or **irtidad**; do not accept “heresy”]

Extra

Answer the following about technological changes in the American military leading up to World War Two, for 10 points each.

[10] This eccentric general and tank enthusiast supported advancements in armored technology during the 1920s. Nicknamed “Old Blood and Guts,” this commander of the Third Army during the Battle of the Bulge infamously slapped a shell-shocked soldier.

ANSWER: George S. **Patton** [or George Smith **Patton**, Jr.]

[10] The Navy experimented with building these types of vessels, examples of which included the *Saratoga* and the *Lexington*. During World War II, the most decorated one of these vessels was the USS *Enterprise*.

ANSWER: aircraft **carriers**

[10] This air warfare-obsessed general spent the 1920s trying to demonstrate how advances in airplane technology could be used by the military. In 1925, he was successfully court-martialed for his “treasonous” beliefs.

ANSWER: Billy **Mitchell** [or William **Mitchell**]