

Teterboro's Academic Packets of Intellectual Rigor
Packet 7

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Tossups

1. **This word titles Chopin's last opus 25 etude, which begins with both hands playing arpeggios ascending and descending over 3 octaves. This non-cave entity by Staffa inspired an overture in B minor that is commonly described as a tone poem. Another composition named for this entity includes sections titled (*) "Dialogue of the wind" and this thing as well as "From dawn to midway on" this thing. That collection of "3 symphonic sketches" was composed by Claude Debussy. For 10 points, name this entity described in *La Mer*, whose second section is titled "Play of the Waves."**

ANSWER: the sea [or the ocean]

2. **A structure with this property is constructed for 3 other structures in Apollonius's problem. The length of a structure with this property is squared in the power of a point theorem. An approximation of a function using a structure with this property is always an underestimate when the function is (*) concave up. For a function $f(x)$ at $x=c$, lines with this property have a slope equal to the derivative of that function at c . These types of lines are perpendicular to the radius in a circle. For 10 points, name this type of line which intersects a curve at exactly one point.**

ANSWER: tangent line

3. **This event occurred in part due to the failure of the Worcester Decision to protect its victims. Victims of this event who refused to honor the Treaty of Payne's landing began a war after carrying out the Dade Massacre. John Ross was one opponent of this event, which (*) Osceola and Micanopy both fought against. A memorial for this event in New Echota commemorates those who died after being removed from the Cherokee Nation. For 10 points, name this event in which forced migration of Native Americans following Andrew Jackson's signing of the Indian Removal Act.**

ANSWER: Trail of Tears (prompt on Indian Removal Act)

4. **One greedy, pompous character from this work with "a mouth like a fish" and "dull staring eyes" incessantly brags about having escorted the protagonist. In one scene in this novel, the protagonist tells his father figure on his deathbed that his daughter lives and is a beautiful young lady whom he is in love with. (*) Orlick attempts to attack the protagonist of this work out of envy, and disables that character's sister Mrs. Joe as well. For 10 points, name this Charles Dickens work in which the convict Abel Magwitch, gives a large donation to allow Pip to become a gentleman.**

ANSWER: Great Expectations

5. **After a brief delay, Sombra is able to gain this ability until it is interrupted in Overwatch. In League of Legends, Kha'Zix's ultimate and Teemo's passive allow them to briefly obtain this ability. One item that can bestow this ability was given by death to the youngest Peverell brother in the (*) Harry Potter series. In Ghost Recon: Future Soldier, ghosts use an optical cloak to gain this ability, which in DOTA 2 can be acquired by the Shadow Blade item, and is countered by true sight. For 10 points, name this ability to not be seen by others.**

ANSWER: invisibility (accept stealth)

6. **The dihydro type of this compound binds to SHBG with 5 times its affinity, and is converted from this compound by 5 α reductase. This hormone is converted into estradiol by aromatase. GnRH activates luteinizing hormone to stimulate production of this hormone.** (*) Sertoli cells produce a protein which binds to this hormone, whose production by Leydig cells is decreased by increased amounts of prolactin. This hormone which is involved in spermatogenesis is also responsible for muscle growth and is possibly linked with aggression. For 10 points, name this primary male sex hormone.

ANSWER: testosterone

7. **The Kebra Nagast describes the lineage of this nation's former rulers. 11 rock cut cave Christian churches were built in a "New Jerusalem" in this country named after the Zagwe king Lalibela. Control of trade routes allowed spice traders to create berbere from oriental spices during this nation's (*)** Axumite dynasty. This nation's emperor Menelik II defended it from Italian invasion by winning the Battle of Adwa. For 10 points, name this landlocked East African country whose emperor once ruled from Addis Ababa.

ANSWER: Ethiopia

8. **Two examples of these stimuli are invented by Nelson Goodman for his "new riddle of induction," and are dependent on time. A thought experiment by Frank Jackson postulates a brilliant scientist who has learned about but never experienced this stimuli, and argues whether or not she would learn anything. David Hume argued that the mind could (*)** imagine an idea without being exposed to it by the senses first in an argument on a "missing shade" of these things. For 10 points, name these visual stimuli, examples of which include purple.

ANSWER: colors

9. **This author asked "at what precise moment had" his country "screwed itself up" in a novel based on his experiences in an activist group. This author of *Conversation in the Cathedral* also wrote an essay studying Madame Bovary as the first modern novel. This author wrote his first novel reflecting his experiences (*)** attending a military academy. This author wrote about Mario, who wishes to become a writer and falls in love with his recently divorced aunt while working at Radio Panamericana. For 10 points, name this Peruvian author of *Aunt Julia and the Scriptwriter*.

ANSWER: Mario Vargas Llosa (prompt on partial answer)

10. **In marine areas, this substance is contributed by the oxidation of dimethyl sulfide, which can create aerosols. This phenomenon commonly decreases the population of brook trout, since it hinders the ability for their eggs to hatch. The presence of (*)** sulfuric compounds and nitrogen oxides is often responsible for this phenomenon due to its solubility in water. This process is particularly destructive to rocks containing calcium carbonate, making it responsible for lots of damage towards historic buildings and statues. For 10 points, name this form of precipitation with unusually low pH.

ANSWER: acid rain

11. **One city from this place created the Gortyn code, which laid out fines for rape and gave rights to divorced women. Another large city in this place frequently adorned buildings with a double headed axe known as the labrys. Prior to the catastrophic eruption of (*)** Santorini, the Linear A script was used by a civilization on this island. A clay disk with unknown symbols was found in this island's palace of Phaistos, while another large palace can be found in its city of Knossos. For 10 points, name this Greek island where the Minoan civilization once flourished.

ANSWER: Crete [accept Kriti, prompt on Greece]

12. **A proposed Performing Arts Center originally designed by Frank Gehry in this location was endowed by Ronald Perelman and will feature a three story, box shaped design. This complex is located opposite Brookfield Place. A memorial in this complex includes two black one acre square pools with waterfalls around their perimeters marking the location (*) of its predecessor.** The tallest structure in this complex is topped with a 408 foot tall spire, bringing its height to 1776 feet. For 10 points, name this complex of financial buildings in the site of the former Twin Towers in downtown New York City.

ANSWER: the World Trade Center

13. **One style of these works is exemplified at Laas Geel, and typically feature subjects with red or white mats hanging from their necks. Many Indonesian Maros examples of these works used red ochre to stain and produce silhouettes. An Argentinian work of that type similarly features black and red negative images of (*) hands.** Some of these works depict the extinct Eurasian Bison in Spain, while lions, rhinos and hyenas are depicted in highly preserved black works of this type in Chauvet, France. For 10 points, name these artworks in Lascaux made by prehistoric men.

ANSWER: cave paintings

14. **This character is misled by his friend during a fog, in which he believes that they were separated. This character believes that King Solomon is a fool for wanting to slice a child in two, and believes that he was given a nickel by the devil after he believes to have been bewitched. This character's best friend ultimately decides to (*) "go to hell" and tears up a letter revealing the location of this man to Ms. Watson.** For 10 points, name this slave who rafts along the Mississippi River seeking freedom along with his companion Huckleberry Finn.

ANSWER: Jim

15. **Expansion of d orbitals causes complexes with this element to exhibit aurophilicity. This element may be extracted from its ore by converting it into a coordination complex with cyanide. A colloidal suspension of this element appears either red or purple depending on the size of its nanoparticles. This element is the most (*) malleable metal.** Like platinum, this transition metal does not react with nitric acid, but forms a precipitate when it is dissolved in aqua regia. For 10 points, name this precious metal whose pure form is 24 karats.

ANSWER: gold

16. **Sympathy was garnered for those affected by the construction of this structure by an image depicting a boy impeded from reaching over towards a circle of pink roses in a 1962 Times Magazine cover. Operation Rose was a secret plan marking out the location of this structure. Walter (*) Ulbricht secretly began work on this project as a response to the over 1.5 million people who had fled his country. Ronald Reagan delivered a speech urging Gorbachev to "tear down" this structure.** For 10 points, name this structure which separated the west and east sides of the German capital.

ANSWER: the Berlin Wall

17. **The love darts used by these animals may have served as an inspiration for Cupid's love arrows. Some of these animals in the genus Cerion were studied by Stephen Gould. The cone variety of these animals uses a hypodermic needle to inject venom, while copper can be used to repel the (*) garden variety of these animals, which are a common pest.** These animals may also be cooked with a green parsley and butter sauce in a French dish. For 10 points, name these gastropods served in escargot, which unlike slugs, possess a shell.

ANSWER: snails

18. **Agency of this process, which is typically associated with the return of a mahr, may be reversed in tafwid, and in general is followed by a waiting period called an iddah. The Pauline privilege allows for this process if its participants had not been baptized by an earlier ritual. In Islam, when this process is started by women it is called “intifada,” and it may be initiated by men by saying (*) “talaq” three times. In Judaism, this process involves presenting the women with a document called a ‘get’. For 10 points, name this process which, similar to annulment, undoes a marriage.**

ANSWER: divorce

19. **One type of these things, Bingham Plastic, does not cross the x axis when its shear stress is graphed as a function of their shear rate, while other examples have a nonconstant or time dependent slope. Rheopectic substances belong to this class of substances, which may also be described as anti-thixotropic and includes (*) printer ink. Agitation increases apparent viscosity in one form of these substances exemplified by oobleck, which can be made by mixing cornstarch and water. For 10 points, name these substances which may behave like solids when struck but fluids when left alone.**

ANSWER: non-Newtonian fluids [accept non-viscoelastic fluid; anti-prompt on rheopectic or anti-thixotropic before mentioned]

20. **In a novel by this author, a boy’s reading of “Essential Statement” causes him to dream about a monster about to eat him. The narrator of a novella by this man meets Liza in “The Apropos of Wet Snow” and proclaims that he is “a sick man” in this author’s (*) “Notes from the Underground.” A dark man named Rogozhin kills the love interest of Prince Myshkin in a novel by this author, while Sonya convinces the protagonist of another novel by this author to confess to killing a pawnbroker. For 10 points, name this Russian author of The Idiot and *Crime and Punishment*.**

ANSWER: Fyodor Dostoyevsky

Bonuses

1. For 10 points each, answer the following about Carribean authors.
[10] This Carribean author wrote about the title Hindu who marries into the overbearing Tulsi family and attempts to build his own house in the novel *A House for Mr Biswas*.
ANSWER: Sir Vidiadhar Surajprasad **Naipaul**
[10] One of this Cuban writer's poems was adapted into the song "Guantanamo." Many of this writer's works urged for independence from Spain.
ANSWER: Jose **Marti**
[10] Luis Pales Matos, who was a poet from this island, created the Afro-Antillano poetry genre and also wrote the collection *Azuleas*. Jack Agueros is another american writer from this island.
ANSWER: **Puerto Rico**
2. During this man's tenure, his government created universal health care, as well as the Maple Leaf flag. For 10 points each:
[10] Name this Prime Minister who preceded Pierre Trudeau and won the nobel peace prize for his role in resolving the Suez Crisis.
ANSWER: Lester **Pearson**
[10] Pearson was a prime minister from this country, where he passed a bill abolishing capital punishment and created the committee which created the Maple Leaf flag.
ANSWER: **Canada**
[10] Pearson also notably allowed his country to perform this action, although Canada still sent peacekeeping forces to enforce the Paris Peace Accords. As a result of this action, many American draft dodgers emigrated to Canada.
ANSWER: **Keeping out of the Vietnam** War (accept equivalents)
3. One of these beings composes a song lamenting her strained relationship with her father, who left her after eating her fries. For 10 points each:
[10] Name these beings exemplified by Marceline in the Adventure Time series, who consumes the color red rather than stereotypically drinking blood.
ANSWER: **vampires**
[10] This 104 year old vampire is the love interest of Bella Swan after repeatedly saving her life in the *Twilight* series. In a sequel novel, Bella marries this character over the werewolf Jacob Black.
ANSWER: **Edward** Cullen (or Edward **Cullen**)
[10] A 2012 movie produced by Tim Burton features this man as a vampire hunter. This historical figure uses a silver weapon to slay the vampire Adam, a plantation owner in New Orleans.
ANSWER: Abraham **Lincoln**
4. Due to this substance's jelly-like nature, it is often used as a vegan alternative to gelatin. For 10 points each:
[10] Name this substance obtained from red algae also sometimes used as a thickening agent.
ANSWER: **agar** (accept **agar-agar**)
[10] Since most microbes can't digest agar, bacteria is often cultured in these dishes where they can grow without affecting the agar.
ANSWER: **petri** dish
[10] A mix of agarose and polyacrylamide is used in this lab technique in which a current is run through that mixture to separate DNA fragments based on their size.
ANSWER: **gel electrophoresis**

5. This figure asked for all the animals in the world to visit him, but only 12 ended up doing so. For 10 points each:
- [10] Name this figure, the highest god in many Chinese folk tales. Those 12 animals who visited him are now part of the Chinese zodiac in the order in which they arrived.
- ANSWER: The **Jade Emperor** (or **Yu Di**)
- [10] In folk tales from this peninsula, the Jade Emperor is often referred to as Haneulnim or Sanje. Today, many traditional shamans in this region are less important spiritually than the main religions of Buddhism or the Christian denominations such as Presbyterianism.
- ANSWER: **Korea** (accept either North or South **Korea** honestly)
- [10] In one myth, Hwanin, the son of Haneulnim, made one of these animals human for staying in a cave for 100 days, unlike the tiger. This animal was then transformed into a beautiful woman who gave birth to Dangun, who founded the first kingdom of Korea.
- ANSWER: **bear**
6. Towards the end of this play, its characters begin yelling "It's not that way. It's over here!" at each other. For 10 points each:
- [10] Name this play in which Mrs. Smith and Mr. Smith discuss the death of Bobby Watson and eventually switch places with the Martins after the light fades and the fire chief enters.
- ANSWER: ***The Bald Soprano***
- [10] *The Bald Soprano* was written by this Romanian French playwright who also wrote a play in which people turn into rhinos.
- ANSWER: Eugene **Ionesco**
- [10] Ionesco wrote plays in this genre, which largely focused on ridiculous plots and a lack of logical speech.
- ANSWER: Theater of the **Absurd**
7. When Matlab crashes, it's up to you to become Matlab and solve systems of linear equations yourself. For 10 points each:
- [10] When you perform this operation with a matrix on the left and column vector on the right, the result is a column vector that is a linear combination of the columns of the matrix.
- ANSWER: matrix **multiplication**
- [10] When multiplying a matrix by one of these real numbers is easy enough, all you need to do is multiply each term in the matrix by the same quantity. Unlike vectors, these quantities do not have direction.
- ANSWER: **scalar**
- [10] To actually solve a linear system, you must perform this process to transform any matrix into an upper triangular one. This series of row operations is named for Carl Friedrich Gauss.
- ANSWER: Gaussian **elimination** (accept **row reduction**)

8. Carrie Chapman Catt was a major leader in campaigning for this act, which involved coordinated campaigns in multiple states under her Winning Plan. For 10 points each:
- [10] Name this right granted by the 19th Amendment.
ANSWER: **Women's Suffrage** (accept equivalents)
- [10] The movement to pass the 19th amendment was greatly spurred by this organization headed by Catt. This organization was succeeded by the League of Women Voters following the passing of the 19th amendment.
ANSWER: **National American Woman Suffrage Association (NAWSA)**
- [10] This woman was the first president of the NAWSA. This suffragist also wrote the Woman's Bible and the Declaration of Sentiments to promote women's rights.
ANSWER: Elizabeth Cady **Stanton**
9. A lake is formed. For 10 points each, answer some of the following that could happen next.
- [10] The first organisms into the lake are these animals, such as algae and water lilies. These organisms often need to colonize ecosystems first in order for other species to live.
ANSWER: **pioneer** species
- [10] After many years, the accumulated buildup of plankton corpses settling on the bottom will decay into humus, which can mix with the sediments on the bottom to form layers of this substance for plants to later grow on.
ANSWER: **soil**
- [10] This is the process in which a community like a lake transforms into a climax community like a forest. The secondary type of this process recovers an already established ecosystem damaged by some disturbance.
ANSWER: **succession** (accept primary **succession** or secondary **succession**)
10. The last work in a collection depicting this creature shows it in captivity and no longer dead. For 10 points each:
- [10] Name this creature featured in a medieval seven work series depicting it being "hunted" and brought to the castle.
ANSWER: **unicorn** (accept **The Hunt of the Unicorn**)
- [10] *The Hunt of the Unicorn* is housed in The Cloisters, a museum housing medieval European art in this city. Other museums in this city include the Metropolitan Museum of Art, which governs the Cloisters.
ANSWER: **New York** City
- [10] *The Hunt of the Unicorn* is a collection of 7 of these works, which are made from woven textiles. Other works in this format include one the Bayeux one depicting the Norman conquest of England.
ANSWER: **tapestry**
11. This event inspired a poem describing a "great star early droop'd in the western sky." For 10 points each:
- [10] Name this 19th century event which inspired the elegy "When Lilacs Last in the Dooryard Bloom'd."
ANSWER: **Lincoln's Assassination** (accept equivalents like "**Lincoln's death**")
- [10] This poet used the morning star to symbolize Lincoln in "When Lilacs Last in the Dooryard Bloom'd." He also wrote the poem "O Captain my Captain" eulogizing Lincoln's assassination.
ANSWER: Walt **Whitman**
- [10] This natural occurrence gives a certain "shy and hidden" creature a "bleeding throat" in a secluded swamp in the poem. This occurrence symbolizes Whitman's lament for Lincoln's death in "When Lilacs Last in the Dooryard Bloom'd."
ANSWER: **bird song** (accept any description of **birds singing**)

12. For 10 points each answer some of the following about female thinkers.
- [10] This German-American thinker gained the scorn of many other Jews since she depicted Adolf Eichmann as someone who just followed orders rather than malicious.
ANSWER: Hannah **Arendt**
- [10] Diotima appears in this work by Plato, where she argues that love can be expressed as either reproducing kids or sharing ideas for a form of "immortality."
ANSWER: **Symposium**
- [10] One thinker who worked in this country, Iris Murdoch, wrote about Jake leaving Madge's house with several books in her work *Under the Net*. Other thinkers from this country include John Stuart Mill and Thomas Hobbes.
ANSWER: **Great Britain**
13. Build one of these cheap devices to take a picture of your first place trophy! For 10 points each:
- [10] Name these devices which, similar to the camera obscura, projects an inverted image on the side opposite to their namesake opening, which is not covered by a lense.
ANSWER: **pinhole camera**
- [10] During one of these events, the pinholes created from the gaps between tree leaves will create tons of small visible crescents on the ground thanks to the decreased amount of light.
ANSWER: **solar eclipse**
- [10] In order to calculate the f number of a pinhole camera, you must divide this quantity by the diameter of the pinhole. This quantity is the distance from the aperture to the image, and in a circular mirror is equal to half the radius.
ANSWER: **focal length**
14. This structure lies in front of the Cerro Gordo mountain, and the temple built on its top has been destroyed, making it impossible to determine the original intention of this building. For 10 points each:
- [10] Name this structure found along the Avenue of the Dead, one of the largest pyramids in Mesoamerica.
ANSWER: the **Pyramid of the Sun**
- [10] The Pyramid of the Sun is found in this ancient mesoamerican city, once the largest in the Americas. After conquering Tikal in the 400s CE, this city may have collapsed due to droughts destroying its agriculture.
ANSWER: **Teotihuacan**
- [10] Teotihuacan is in this modern day nation. Other ancient cities in this country include Chichen Itza and Tenochtitlan.
ANSWER: **Mexico**
15. What good is getting into Stanford or any other college if you can't pay for it! For 10 points each:
- [10] Most colleges like Harvard or Community Colleges offer this form of financial aid based on expected family contribution, and do not take merit into account.
ANSWER: **need based**
- [10] Applying for financial aid is often done through this online application maintained by College Board. Similar to FAFSA, it is required by many schools for financial aid but also requires an application fee.
ANSWER: **CSS (College Scholarship Service Profile)**
- [10] These need based government grants do not have to be paid, and are typically awarded only to undergraduates. Applying for these grants requires filling out a FAFSA form.
ANSWER: **Pell Grant**

16. In this work, the title character kills a monster and emerges from a cave at the ninth hour. For 10 points each:
- [10] Name this work in which the title hero slays the mother of the most feared monster in all of Heorot.
ANSWER: **Beowulf**
- [10] Beowulf slays a dragon with the help of Wiglaf 50 years after killing both this monster and his mother. Joe Gardner wrote a novel retelling the events of Beowulf of this monster's point of view.
ANSWER: **Grendel**
- [10] This manuscript contains the full story of Beowulf. It was written in the 11th century and was badly damaged during a fire in 1731.
ANSWER: **Nowell Codex** (prompt on the Beowulf manuscript)
17. The Century of Humiliation made the Chinese really fed up with their country. For 10 points each:
- [10] This rebellion took place between the Qing Dynasty and a Heavenly Kingdom founded by Hong Xiuquan, who believed himself to be the brother of Jesus. This bloody conflict eventually resulted in the failure of the capture of the Qing capital.
ANSWER: the **Taiping** Rebellion
- [10] This 1911 revolution established the Chinese republic after ousting the Qing dynasty and its last emperor, Puyi.
ANSWER: the **Xinhai** Revolution (accept the **Wuchang** Revolution)
- [10] Both the Xinhai Revolution and the Taiping Rebellion took place in this capital city of China.
ANSWER: **Beijing**
18. A common example of these substances is citric acid between a pH of around 2 to 8. For 10 points each:
- [10] Name these substances which resist changes in pH.
ANSWER: **buffer** solutions
- [10] The pH of a buffer may be calculated using this equation, which states that it is equal to pKa plus the logarithm of the concentration of the conjugate base over the concentration of the weak acid.
ANSWER: **Henderson-Hasselbach** equation
- [10] In blood, a buffer system is formed with this anion acting as the conjugate base.
ANSWER: **bicarbonate**
19. This form of music is thought to have arisen to mimic the sounds of nature and to travel through great distances. For 10 points each:
- [10] Name this guttural form of singing in which changing resonance chambers such as the mouth and voice box can be used to produce several pitches at once.
ANSWER: **throat singing**
- [10] One notable variant of throat singing is practiced by these central asian people, where the open steppe allowed for the music to be heard from afar. Other traditional music by these peoples involve instruments like the morin khuur.
ANSWER: **Mongolians** (accept **Tuvans**)
- [10] Another form of throat singing is practiced by women from this culture. In this culture's variant of throat singing, the singers often stand face to face and use rhythmic breaths to produce sounds, sometimes using the other's mouth as a resonator.
ANSWER: **Inuit**

20. For 10 points each answer some of the following about some densely populated regions.

[10] This autonomous territory of China is considered the most densely populated region in the country. This region's gambling industry is the largest in the world.

ANSWER: **Macau**

[10] This densely populated city is the most populous in Africa. The Nollywood film industry is centered in this city.

ANSWER: **Lagos**

[10] This nation's island of Santa Cruz del Isolate is among the most densely populated in the world. That island is part of the San Bernardo archipelago, which is southwest of this country's port city of Cartagena.

ANSWER: **Colombia**