Illinois Masonic Academic Bowl
2018 State Tournament

Round 5
1st Section
Toss-up Questions

Question #1: Literature

10 points

This poet wrote "Come forth, and bring with you a heart that watches and receives" in "The Tables Turned". This poet wrote about a schoolmaster visiting his daughter's grave in "The Two April Mornings", which is one of his Matthew poems. In another poem, this poet described remembering "These beauteous forms" after stating "Five years have past." This poet also said his heart "dances with the daffodils" in a poem that begins, and is often called, "I Wandered Lonely as a Cloud". Name this British poet who wrote *Lines Composed a Few Miles above Tintern Abbey.*	William **Wordsworth**

Question #2: Fine Arts

10 points

One work by this artist is based on a Bob Grant and Bob Totten illustration but omits the background characters and has everything in primary colors. That work depicting a fishing incident is titled *Look Mickey.* Several of this artist's works depict women referencing an unseen character named Brad, including *Drowning Girl.* Another work by this artist shows a plane firing a weapon in its left panel and an explosion in its right panel. Name this artist who often used Ben-Day dots to give his works a comic book appearance, and who painted *Whaam!*	Roy (Fox) **Lichtenstein**

Question #3: Science

10 points

The Deccan Traps in India are primarily formed from multiple layers of this rock. Early geologists studying continental drift used the term "sima" [SIM-uh] for crust made primarily of this rock, and theorized that a layer of it may have extended underneath continents. As this rock's lava cools, it may form columns such as those in Devils Postpile National Monument in California. A'a [ah-AH] and pahoehoe [puh-HOY-hoy] are terms for flows of lava made of this typically dark rock, which also exists at mid-ocean ridges in a form nicknamed "MORB". Name this extrusive igneous rock, the primary constituent of oceanic crust.	**basalt** [buh-"SALT"]

Question #4: Social Studies

10 points

This person and Wilma Mankiller wrote *Every Day Is a Good Day*, and this person discussed Mankiller in the memoir *My Life on the Road*. This person stated "This is no simple reform" in her "Address to the Women of America". This person now says that she regrets working as a Playboy Bunny to write an exposé. This person claims that her selection as the National Women's Political Caucus spokeswoman made Betty Friedan [frih-DAN] jealous. Name this feminist who, along with Dorothy Pitman Hughes, started the magazine *Ms.*	Gloria (Marie) **Steinem**

Question #5: Literature

10 points

A priest in this novel writes an essay titled "Is a Priest Justified in Consulting a Doctor?". Another character in this novel hides cans of meat under his bed to make money but dies before he can sell them. A magistrate in this novel says of his son "I hope Jacques did not suffer too much." Joseph Grand has trouble perfecting his sentences and Raymond Rambert [ray-mawn rahm-bair] is a journalist from Paris in this novel, which opens with Ransdoc reporting on a rat infestation. Name this novel about Dr. Bernard Rieux [ree-yoo] working through a quarantine in Oran [aw-raw], written by Albert Camus [ka-moo].	*The* ***Plague*** or *La* ***Peste***

Question #6: Science

10 points

The MKS unit of magnetomotive force is the product of the unit named for this person times the number of turns. One law named after this person is a consequence of the Lorentz force and gives the force between two wires that are carrying current. Another law named for this person can be stated as "the vacuum permeability times current density equals the curl of the magnetic field" and is one of Maxwell's equations, which Maxwell amended by incorporating the displacement current. Identify this person whose namesake unit equals a coulomb [koo-loam] per second and is used to measure current.	André-Marie **Ampère** [ahn-dray mah-ree am-peer]

Question #7: Mathematics

10 points per part

The fundamental theorem of calculus, especially the second part, addresses this type of integral.		
1	Give this term for an integral with specific bounds.	**definite** integral
2	What term refers to a definite integral with at least one infinite bound, or with an asymptote between the bounds?	**improper** integral
3	Evaluate the definite integral of x squared dx, from x equals 0 to x equals 3.	**9**

Question #8: Mathematics

10 points per part

This statistic is commonly used to summarize standardized test scores.		
1	Name this quantity equal to one hundred times the number of scores below a given score, divided by the total number of scores.	per**centile**
2	This measure of spread often represented by a Greek sigma equals the square root of variance.	**standard deviation**
3	Rounded to the nearest whole number, give the percentile of a score that is one standard deviation above the mean in a normal distribution.	**84**th percentile

Question #9: Literature

10 points per part

Answer the following about the essay collection *Notes of a Native Son*, which is not to be confused with the novel *Native Son*:		
1	This author wrote *Notes of a Native Son*. His other works of nonfiction include *No Name in the Street* and *The Fire Next Time*.	James (Arthur) **Baldwin**
2	The first entry in the collection is "Everybody's Protest Novel", which calls this work by Harriet Beecher Stowe a "very bad novel".	***Uncle Tom's Cabin***
3	The second essay, "Many Thousands Gone", criticizes this Richard Wright character for being an unsympathetic stereotype. This protagonist of *Native Son* smothers Mary Dalton and rapes Bessie.	**Bigger Thomas** [accept either]

Question #10: Literature

10 points per part

One character in this story repeatedly asks "Why…was I allowed to come thus far and contemplate sand and trees?".		
1	Name this short story in which the oiler and the correspondent trade places as oarsmen trying to reach a life-saving station at Mosquito Inlet Light before the oiler drowns.	"The **Open Boat**"
2	This author wrote "The Open Boat" as well as several works about the Civil War, including *The Red Badge of Courage*.	Stephen **Crane**
3	In this Stephen Crane story, the Swede accuses the cowboy of cheating at cards and beats up the hotelier's son before being stabbed by a gambler.	"The **Blue Hotel**"

Question #11: Social Studies

10 points per part

After this war, Napoleon III was held as a prisoner, and after that he moved to England.		
1	Name this 1870-to-1871 war whose winning side's Minister President was Otto von Bismarck.	**Franco-Prussian** War [or **Franco-German** War]
2	France declared war after Bismarck edited and released this message.	**Ems** Dispatch or **Ems** Telegram
3	Napoleon III was captured at this battle along with Marshal Patrice de MacMahon, who was injured.	Battle of **Sedan** [seh-daw]

Question #12: Social Studies

10 points per part

This country is led by King Mohammed VI, making it the only monarchy left in Africa, though it also has a Prime Minister and Parliament.		
1	Name this northwest African country that was divided by the Treaty of Fez but is now unified.	(Kingdom of) **Morocco**
2	This ethnic group predominates in Morocco; both its language and Arabic are official in Morocco. Saint Augustine belonged to this group.	**Berber**s or **Berber** people [or **Amazigh**en]
3	The early kings of Morocco starting in the 8th century shared this name, which was also taken by a 20th-century king of Libya. These leaders preceded the Almoravids [al-MOR-uh-vidz].	**Idris**id

Question #13: Science

10 points per part

The sodium-glucose transport protein is used in this process.		
1	Give the general two-word term for this process in which molecules or ions are moved from a region of lower concentration to a region of higher concentration.	**active transport**(ing) [prompt on partial answers]
2	A common example of active transport moves three sodium ions outside a cell while two ions of this element are moved into the cell.	**potassium** [accept **K** or $\mathbf{K^+}$ or $\mathbf{K^{+1}}$ or $\mathbf{K^{1+}}$]
3	The active transport of sodium and glucose is classified as this kind of active transport because everything moves in the same direction.	**symport**

Question #14: Science

10 points per part

Part of the membrane around this organelle is shared with part of the membrane around the endoplasmic reticulum [EN-doh-PLAZ-mik reh-TIK-yoo-lum].		
1	Name this organelle that regulates the cell and contains its genetic material.	cell **nucleus** [or **nuclei**]
2	These proteins found in nuclei combine with DNA to form nucleosomes [NOOK-lee-oh-sohmz].	**histone**s ["HISS-tones"]
3	DNA methylation [meh-il-AY-shun], histone modification, and gene silencing are studied in this branch of genetics focused on heritable phenotype ["FEE-no-type"] changes that are not related to the DNA sequence.	**epigenetics**

Question #15: Miscellaneous

10 points

During the filming of a movie based on this television show, the actor Vic Morrow and two child actors were killed. Part of that movie was inspired by an episode of this show in which a gremlin rode on the wing of an airplane. In another part of the movie, old people turned young by playing kick the can. A 1962 episode of this show was the basis of Ray Bradbury's short story "I Sing the Body Electric". Several episodes of this show warned "You are about to enter another dimension." Name this television show that often featured surprise endings and that was introduced by its creator, Rod Serling.	*The* ***Twilight Zone***

Question #16: Social Studies

10 points

This person and his wife Harriet were assisted financially by the sons of Peter Blow. This person moved with Dr. John Emerson to Illinois and Wisconsin, and he later ended up with Emerson's widow in Missouri. This person was supported by Benjamin Curtis and John McLean, the latter of whom wrote that this person was a citizen in dissents to an opinion by Roger Taney [TAU-nee], who used this person's case to declare the Missouri Compromise unconstitutional. Name this person who remained a slave even though he was taken to free states and who lost his Supreme Court case against John Sanford.	Dred **Scott**

Question #17: Science

10 points

Though sodium fluoride is more common, old or expensive toothpastes such as Crest Pro-health combine this element with fluoride. This element is taken from the mineral cassiterite [KASS-ih-tuh-"rite"]. Though this element is usually metallic, its gray allotrope does not behave like a metal. The loss of metallic properties of this element at low temperatures is known as its "pest". This is the primary element in pewter, and this element's alloy with copper is bronze. Name this element whose symbol comes from its Latin name, "stannum".	**tin** [accept **Sn** before "stannum" and prompt thereon thereafter]

Question #18: Literature

10 points

This character had to see a psychiatrist because he dreamed nightly of holding a live fish. This man was chased by a whore after relaying the message of the death of his friend Nately. This character declared "death to all modifiers" one day while working as a censor in the hospital, which he was in because of liver pain that was short of being jaundice. This character, who couldn't save his crew member Snowden, refused to fly more than 71 missions despite the ever-increasing demands of Colonel Cathcart. Name this protagonist of Joseph Heller's *Catch-22*.	(Captain **John**) **Yossarian** [accept either underlined name]

Question #19: Mathematics

10 points

This type of quadrilateral can be formed by connecting and extending adjacent side-trisection points of any quadrilateral. This shape is the most general quadrilateral with rotational symmetry of order 2, meaning that it is unchanged by a 180-degree rotation. It is also the most general quadrilateral that is divided by each diagonal into two congruent triangles. This shape's adjacent angles are supplementary, and its opposite angles are congruent. If its *sides* are congruent, this shape is a rhombus. Name this shape with congruent and parallel opposite sides.	**parallelogram**

Question #20: Social Studies

10 points

The combination of this concept and the accelerator theory of investment are the basis of the Hansen-Samuelson economic model of the business cycle. The version of this quantity applied to taxes equals the opposite of the marginal propensity to consume divided by the marginal propensity to save, and the type of this quantity applied to spending equals the reciprocal of the marginal propensity to save. Keynesian ["CANE"-zee-un] economists often apply this concept to show that government spending has an outsized impact on aggregate demand. Give this term for a type of factor that equals a ratio between output and input.	**multiplier**

Question #21: Science

10 points per part

Special relativity predicts a curvature of electric field lines that explains the existence of this force.		
1	The alignment of electron spins causes what force that compasses depend on?	(electro)**magnet**ism or (electro)**magnetic** force
2	These materials are repelled by magnetic fields and tend to have all of their electrons paired up.	**diamagnet**ic or **diamagnet**ism
3	This quantity, equal to relative permeability minus 1, is negative for diamagnetic materials.	magnetic **susceptibility**

Question #22: Science

10 points per part

All experimental evidence confirms that the inertial and gravitational forms of this quantity are equal.		
1	Name this quantity measured in kilograms.	**mass**
2	This unit, equal to about 14.6 kilograms, is used to measure mass in the British Imperial measurement system.	**slug**
3	Two-body problems can be treated as one-body problems using this effective amount of mass, which is calculated as the product of two masses divided by their sum.	**reduced** mass

Question #23: Social Studies

10 points per part

Nikki Haley accused this organization of being hostile to Israel in 2017.		
1	Name this organization to which Haley serves as the U.S. ambassador.	**U**nited **N**ations
2	Haley's comment came after President Trump announced that the U.S. would move its embassy in Israel from this city to Jerusalem.	**Tel Aviv**
3	Speakers of Arabic use this name for Jerusalem. This name for Jerusalem was used by Palestinians who protested the new policy.	Al-**Quds** (ash-Sharif)

Question #24: Social Studies

10 points per part

In destroying its own regulations upholding this principle, the Federal Communications Commission falsely claimed that this principle was instituted by the Obama administration.		
1	Name this principle that Internet service cannot discriminate among data.	**net neutrality** [prompt on **open internet**]
2	The FCC decision was made under the leadership of this person, who was appointed to the FCC by President Obama and elevated to chair by President Trump.	Ajit **Pai**
3	Ajit Pai was previously a lawyer for this communications company, an internet service provider that owns AOL and Yahoo!.	**Verizon** Communications [accept **Verizon** Wireless]

Question #25: Mathematics

10 points per part

In two dimensions, a triangle is this kind of figure; in three dimensions, a tetrahedron is this kind of figure.		
1	Give this term for the simplest polygon, or higher-dimensional version of a polygon, that can exist in their number of dimensions.	(n-)**simplex**(es) [or ($n-$)**simplices**]
2	How many vertices does a four-dimensional simplex have?	**five** vertices
3	How many edges are on a three-dimensional simplex, which, again, is also called a tetrahedron?	**six** edges

Question #26: Mathematics

10 points per part

This point in two-dimensional Cartesian coordinates is equivalent to the pole in polar coordinates.		
1	Name this point whose coordinates are $(0, 0)$ ["0 comma 0"].	the **origin**
2	Find the shortest distance between the origin and the line y equals x plus 2. Simplify your answer fully.	the square **root** of **2** [or **radical 2**]
3	Find the shortest distance between the origin and the line $3x$ plus $4y$ plus 1 equals 0. Simplify your answer fully.	**1/5** or 0**.2**

Question #27: Fine Arts

10 points per part

The composer of *A Waltz Dream* and *The Chocolate Soldier* dropped the last letter from his last name to make it clear that he did not belong to this family.		
1	Name this 19th-century Austrian family whose members wrote the Radetzky March and a lot of waltzes.	**Strauss** family or **Strauss**es or Johann **Strauss**
2	In this Johann Strauss the Younger operetta one of the characters embarrasses himself while wearing a bat costume.	*Die* ***Fledermaus*** [dee FLAY-dur-"mouse"]
3	Johann Strauss the Elder started out working for this composer of "Die Romantiker" who popularized the waltz, but they eventually became rivals.	Joseph **Lanner**

Question #28: Fine Arts

10 points per part

During the first performance of this composer's "Farewell" Symphony, each musician had a lit candle that was put out when their part was done.		
1	Name this Austrian composer of 106 symphonies. He is known as the "Father of the Symphony" and "Father of the String Quartet"	(Franz) Joseph **Haydn** ["HI-din"]
2	Haydn based this oratorio on the book of Genesis.	*The* ***Creation*** [or *Die* ***Schöpfung***]
3	Based on a request from Anton Weidinger [ahn-tohn "VIE-ding"-ur], Haydn wrote a concerto for this instrument. Weidinger designed a keyed version of this instrument that allowed performers to hit more notes.	**trumpet**

Question #29: Literature

10 points

This character says "I talk of dreams, which are the children of an idle brain" after his friend says "Thou talk'st of nothing," which is prompted by this character's speech about the fairies' midwife Queen Mab. The next day, before saying "They have made worms' meat of me", this character says "A plague on both your houses!". Those words are spoken after this character is fatally injured by Tybalt [TIB-ult]. Name this character whose death is quickly avenged by his close friend in William Shakespeare's *Romeo and Juliet*.	**Mercutio** [mur-KYOO-shee-oh]

Question #30: Mathematics

10 points

The version of this concept named for Jacques Hadamard [zhahk ah-dah-mar] or Issai Schur is an unusual way to combine matrices. Another form of this concept makes a set of ordered pairs whose first coordinate is from one input set and whose second coordinate is from the other input set, and is called the "Cartesian" version of this concept. The derivative rule involving the expression "f-prime times g, plus f times g-prime" is used when f and g are combined using this concept, and is therefore called this kind of "rule". An operation on vectors whose result is perpendicular to both inputs is called the "cross" form of this kind of operation. Give this term for the result of multiplication.	**product** [prompt on **multiplication** or **multiply**ing before the end]

Question #31: Social Studies

10 points

A mutiny against this explorer was described by Abacuk Pricket, and this explorer was never seen again after being left in a small boat with his close followers. Earlier, this explorer commanded the *Hopewell* while exploring Greenland and Russia. He then commanded the *Half Moon* on a voyage to America. This explorer took the *Discovery* through the Labrador Sea to a strait that is now named for him. This person tried to go to China via the Northwest Passage. Name this person who explored the river in New York and the large bay in Canada now named for him.	Henry **Hudson**

Question #32: Science

10 points

These chemicals were described by Peter Karlson and Martin Lüscher, but applying their ideas about these chemicals to mammals was criticized by Richard Doty. One of these chemicals is multistriatin ["multi"-STRY-uh-tin], which has been blamed for the spread of Dutch elm disease. These chemicals are sensed by the Jacobson's organ, which is also called the vomeronasal [VOH-mur-oh-"nasal"] organ. Queen bees use these chemicals to attract mates. Name these chemicals that animals release to cause a response by other animals of the same species, which is why these chemicals are sometimes described as "external hormones".	**pheromone**s ["FAIR-oh-moans"]

Extra Question #1: Mathematics

10 points

Events that have this property appear not to have this property in Berkson's paradox. The von Neumann [vawn NOY-mun]-Morgenstern axiom named for this concept states that a preference between two lotteries is not affected by the existence of another lottery. If two events have this property, then their co*variance is 0 and the probability of both of them happening equals the product of the probabilities of them happening separately. Give this adjective for two events that have no impact on each other.	**indepencence** or **independent** events [do not accept or prompt on "dependent" or "dependence"]

Extra Question #2: Social Studies

10 points

This object was the subject of a letter written by Pierre d'Arcis [dar-see], Bishop of Troyes [trwah], to Pope Clement VII [7], which was written in the 14th century when this object was in Lirey, France. Recent tests on this object found ferritin iron bound to creatinine [kree-AT-ih-nin], which demonstrate that it was used on somebody who experienced trauma. The House of Savoy moved this object to its current location in northern Italy. Much of the speculation over this object is related to the two brownish images on it. Name this piece of linen that some people believe was used to cover Jesus Christ when he died.	**Shroud of Turin** [or **Turin Shroud** or **Sindone di Torino**; prompt on partial answers]

Extra Question #3: Literature

10 points

The protagonist of this work learns of the Nefastis machine, which runs on Maxwell's Demon. Two characters in this work are interrupted during a game of Strip Botticelli [boh-tih-CHEL-ee] by a flying hairspray can and the band The Paranoids. The protagonist of this novel meets Stanley Koteks at a Yoyodyne ["yoyo-dine"] shareholders meeting. A muted horn is the symbol of this novel's Trystero [triss-TAIR-oh] organization. Metzger is the co-executor of the estate of Pierce Inverarity in this novel. Name this novel about the investigations of Oedipa Maas, written by Thomas Pynchon.	*The* ***Crying of Lot 49***

Extra Question #4: Fine Arts

10 points

One piece by this composer has five rising staccato notes, a falling sixth note, and then a seventh note that matches the fifth note. This composer used folk music originally composed for the Hardanger fiddle to compose *Slatter* Peasant Dances. Another piece by this composer used 18th-century dances—such as its final Rigaudon [ree-gaw-daw]—even though it was written in 1884, because it celebrated the 200th anniversary of the birth of the playwright Ludvig Holberg. Name this Norwegian composer who wrote "In the Hall of the Mountain King" for the play *Peer Gynt*.	Edvard (Hagerup) **Grieg**

Extra Question #5: Science

10 points

A variation on this technique, commonly used to study small molecules in Rydberg states, is called resonance-enhanced multi*photon ionization ["EYE-on"-ih-ZAY-shun]. Another variation on this technique takes advantage of re*coil*less nuclear resonance fluorescence in the emission and absorption of gamma radiation by atomic nuclei, which is called the Mössbauer effect. Astronomers can use diffraction gratings in this technique to determine chemical compositions of stars. Name this technique that historically focused on visible light using prisms.	**spectroscopy**

Extra Question #6: Science

10 points per part

Many of these elements are semiconductors.		
1	Give the common name for antimony [AN-tih-moh-nee], arsenic, boron, germanium [jur-MAY-nee-um], and tellurium [teh-LUR-ee-um]. These elements tend to be both lustrous and brittle.	**metalloid**s ["METAL"-oydz] [do not accept or prompt on "metal(s)"]
2	Metalloids have many properties intermediate between those of metals and nonmetals. This example of such a property is the amount of energy required to remove an electron from a neutral atom.	first **ionization** energy
3	This heaviest halogen is so rare and radioactive, scientists can't get enough of it to determine whether it's a metalloid.	**astatine** [ASS-tuh-teen] [prompt on **At**]

Extra Question #7: Science

10 points per part

This adjective describes alkanes [aal-"canes"] and alkyl [aal-kill] groups.		
1	Give this term for hydrocarbons that have as many hydrogen atoms as possible given their number of carbon atoms.	**saturate**d hydrocarbons [accept **saturation**]
2	This group is the simplest alkyl group. Its chemical formula is CH_3.	**methyl** group
3	Find the number of hydrogen atoms in a molecule of hexane, a saturated hydrocarbon with six carbon atoms.	**14**

Extra Question #8: Literature

10 points per part

Name these mythological beings who do bad things:		
1	This devil from Abrahamic religions is sometimes considered a fallen angel. The Lord challenges Job after a conversation with this creature.	**Satan** [may be pronounced sah-TAHN]
2	In some Jewish myths, this woman was created before Eve. She left Adam and now steals babies.	**Lilith**
3	This enemy of Ra and Ma'at was a giant serpent. His opposition to Ra made him the god of darkness, and his opposition to Ma'at made him the god of chaos.	**Apep** [or **Apophis**]

Extra Question #9: Literature

10 points per part

Brontes [BRAHN-teez], Steropes [stuh-ROH-peez], and Arges [ARG-eez] were all master blacksmiths and were this type of creature.		
1	Name these mythological creatures with one eye in the center of their forehead.	**cyclops**es
2	The cyclopses built a helmet for Hades [HAY-deez] that gave him this power.	**invisibility** [accept any reasonable answer conveying the idea of being **unseen**]
3	The cyclopses helped the gods after the gods freed them from this dark pit.	**Tartarus** [TAR-tar-uss]