

Round 7 1st Section Toss-up Questions

Question #1: Social Studies – U.S. History

10 points

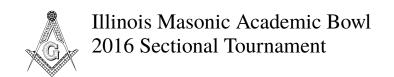
| This person's visit to the White House was the | Booker T(aliaferro) |
|---------------------------------------------------------|---------------------|
| backdrop for Scott Joplin's A Guest of Honor. This | Washington |
| person was derided as the "Great Accommodater" after | |
| he implored listeners to "cast down their buckets", and | |
| he claimed a factory-earned dollar was worth more than | |
| one spent on opera. That speech was called the Atlanta | |
| Compromise. This person was hired away from the | |
| Hampton Institute in 1881 to become principal of a new | |
| school in Alabama. Name this author of <i>Up From</i> | |
| Slavery who started the Tuskegee Institute and was a | |
| rival of W. E. B. Du Bois [doo boyss]. | |

Question #2: Science – Health

10 points

These problems are commonly caused by *Streptococcus mutans [STREP-tuh-kah-kus MYOO-tuns]*, which can survive in an acidic environment and can convert sugars into dextran and lactic acid. These problems can be classified as smooth-surface or as pit-and-fissure. These problems usually only occur in the cementum [suh-MEN-tum] in older people because of protection from the periodontium [PAIR-ee-oh-DAHN-shum]. These problems more typically involve demineralization of enamel. The incidence of these problems are reduced by water fluoridation. Name these problems, often treated with fillings, that involve the breaking down of teeth.

dental **caries** [or **cavity**/ies; accept **tooth decay** and prompt on **decay**]



Round 7 1st Section Toss-up Questions

Question #3: Literature – Grammar/Usage

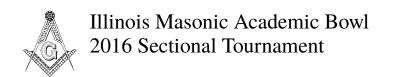
10 points

| In his Chinese room theory, John Searle argued that this | syntax |
|----------------------------------------------------------|--------|
| concept "is neither constitutive nor sufficient for | |
| semantics". Contextual inflection is dictated by this | |
| concept, while inherent inflection is not. The theory of | |
| transformational-generative grammar was refined in | |
| Aspects of the Theory of this concept, which was | |
| written by Noam Chomsky. Dependency grammar does | |
| not recognize categories of it, such as parts of speech. | |
| Name this term for the rules that govern a language's | |
| sentence structure. | |

Question #4: Social Studies – Religion

10 points

| In the book of the Bible named for this person, the | <u>Daniel</u> [may be pronounced |
|---------------------------------------------------------|-----------------------------------------|
| servants who eat nothing but vegetables for ten days | dah-nee-EL] |
| look healthier than the young men who eat the royal | |
| food. This person predicted the rise of Darius the Mede | |
| [duh-RY-us "the" MEED] after one king was weighed | |
| and found wanting. This man was the companion of | |
| Shadrach [SHAD-rahk], Meshach [MEE-shak], and | |
| Abednego [uh-BED-nuh-goh], who are thrown into a | |
| fiery furnace. This person interpreted the dreams of | |
| Nebuchadnezzar [neb-uh-kud-NEZ-ur]. Name this Old | |
| Testament prophet who was thrown into a lions' den. | |



Round 7 1st Section Toss-up Questions

Question #5: Miscellaneous – Technology

10 points

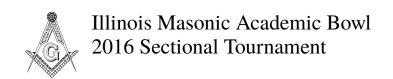
| Following a complaint by Sun about this company's | Microsoft Corporation |
|----------------------------------------------------------|-----------------------|
| licensing practices, the European Commission fined | |
| this company multiple times for antitrust violations. In | |
| 2008, this company pulled out of a major deal to buy | |
| Yahoo, but in 2011 it spent 8.5 billion dollars to | |
| purchase Skype. Its mobile division was established | |
| after it formed a partnership with Nokia. Its brand | |
| names include HoloLens, Surface, and Xbox. Name | |
| this tech giant, founded by Paul Allen and Bill Gates, | |
| that created the Windows operating system. | |

Question #6: Science – Chemistry

10 points

| This ion has an equal ranking on the Hofmeister |
|----------------------------------------------------------|
| [HAWF-"my"-stir] series with fluorine, which is why |
| its ammonium [uh-MOH-nee-um] salt is used for |
| "salting out" proteins. Gilbert Lewis proposed that this |
| anion [AN-"eye"-on] contains no double bonds, but |
| rather single bonds and a central atom with a formal |
| charge of 2+ ["two plus"]. This ion joins with |
| magnesium in Epsom salt, and is paired with calcium |
| in gypsum [JIP-sum]. The contact process is used to |
| make a compound equivalent to two hydrogens bonded |
| to this ion, sulfuric acid. Name this anion whose |
| formula is SO_4^{2-} ["S O four, two minus"]. |
| |

<u>sulfate</u> ion [before beginning to state the formula at the end, accept $\underline{SO_4}^{2-}$ or $\underline{SO_4}^{-2}$]



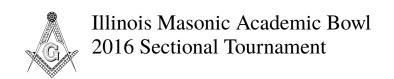
Question #7: Mathematics – Algebra

10 points per part

| Who | en considering solutions to the equation x minus | |
|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| thre | e, quantity squared, equals zero, you might say | |
| that | the solution is "three, with a <i>this</i> of two". | |
| 1 | Give this term used to measure a repeated root or | (algebraic) multiplicity |
| | factor. | [prompt on multiple] |
| 2 | Find the only unique factor of <i>x</i> cubed, plus nine <i>x</i> squared, plus twenty-seven <i>x</i> , plus twenty-seven. Keep in mind that this is an expression, not an equation. | x+3 [or 3+x; allow answers that also state it is cubed or raised to the third power] |
| 3 | Give the only root of that polynomial; again, it is <i>x</i> cubed, plus nine <i>x</i> squared, plus twenty-seven <i>x</i> , plus twenty-seven. | x = <u>-3</u> |

Question #8: Mathematics – Algebra

| The | graph of this type of function is a horizontal line. | |
|-----|-------------------------------------------------------------------|------------------------------------------------|
| 1 | Name this type of linear function, which can be | constant function |
| | expressed as f of x equals a number. | |
| 2 | What is the slope of a constant function? | zero [do not accept "no slope" or "undefined"] |
| 3 | How many distinct values are in the range of a constant function? | one |



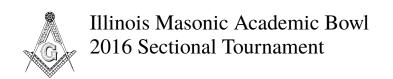
Question #9: Fine Arts – Jazz

10 points per part

| This | s singer called her autobiography Lady Sings the | |
|------|-----------------------------------------------------|------------------------------------|
| Blue | 2S. | |
| 1 | Name this jazz singer who struggled with heroin | Billie Holiday [or Eleanora |
| | addiction and died from cirrhosis [sur-OH-sis] of | Fagan] |
| | the liver at the age of 44. | |
| 2 | Billie Holiday performed and co-wrote this song | "God Bless the Child" |
| | that says, "Mama may have, Papa may have." | |
| 3 | Billie Holiday also performed and co-wrote this | "Don't Explain" |
| | song narrated by a woman who allows her cheating | |
| | lover to return. Its title follows the words, "Hush | |
| | now." | |

Question #10: Fine Arts – Jazz

| Ber | nie Hanighen added lyrics to this song, which | |
|------|----------------------------------------------------|----------------------------------|
| stat | es "It begins to tell" at the title time. | |
| 1 | Name this song that was used as a title track in a | 'Round Midnight [accept |
| | 1986 film starring Dexter Gordon. | 'Round About Midnight] |
| 2 | 'Round Midnight was written by this jazz pianist, | Thelonious (Sphere) Monk |
| | who also wrote "Straight, No Chaser". | |
| 3 | This musician featured the song "Round Midnight" | Miles (Dewey) Davis (III) |
| | on his first album at Columbia Records, 'Round | |
| | About Midnight. His later albums with Columbia | |
| | included Kind of Blue and Sketches of Spain. | |



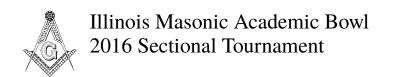
Question #11: Social Studies – World History

10 points per part

| | mobility of liburna [lih-BUR-nuh] compared to queremes [KWIN-kwuh-reemz] proved decisive | |
|-------|------------------------------------------------------------------------------------------|-------------------------------|
| in th | his battle, as did the defection of Quintus Dellius. | |
| 1 | Name this battle in the Ionian Sea, whose first | Battle of <u>Actium</u> |
| | attack was launched by Gaius Sosius ["GUY"-us | |
| | SOH-shus] from the losers' left side. | |
| 2 | The victorious leader at Actium, Marcus Agrippa, | Augustus Caesar [or Gaius |
| | became the son-in-law of this founder of the | Octavius or Gaius (Julius |
| | Roman Empire. | Caesar) Octavianus] |
| 3 | Following defeat at Actium, these two lovers fled to | Marc Antony [or Marcus |
| | Egypt; both committed suicide after another defeat | Antonius] and Cleopatra |
| | at Alexandria. | VII Philopator [either order] |

Question #12: Social Studies – World History

| A fo | ormer cook for the King's African Rifles, this | |
|-------|--------------------------------------------------------|----------------------------------|
| dicta | ator shelled the palace of King Mutesa | |
| [mo | o-TAY-suh] II on the orders of Prime Minister | |
| Milt | ton Obote [oh-BOH-tay]. | |
| 1 | Name this strongman who seized power from | Idi <u>Amin</u> [EE-dee |
| | Obote in 1971 after the prime minister left for a trip | ah-MEEN] (Dada) |
| | to Singapore. | |
| 2 | Idi Amin thus took power in this country. | (Republic of) <u>Uganda</u> [or |
| | Historians disagree as to whether he was born in | Jamhuri ya <u>Uganda]</u> |
| | this country's capital, Kampala [kum-PAH-luh]. | |
| 3 | Idi Amin's fall from power was spurred by a failed | <u>Tanzania</u> |
| | invasion of this neighboring nation, led by Julius | |
| | Nyerere [nee-uh-RAIR-ay], in an effort to take over | |
| | Kagera [kah-GAIR-uh]. | |



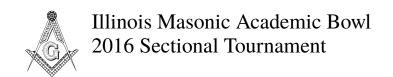
Question #13: Science – Chemistry

10 points per part

| The | Pauling scale is one way to define this quantity. | |
|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|
| 1 | Name this value that describes how strongly an atom attracts electrons. Differences in this quantity can be used to determine if a bond will be ionic or covalent [koh-VAY-lint]. | <u>electronegativity</u> |
| 2 | On the Pauling scale, this element has the highest electronegativity: 4. It is the lightest halogen. | fluorine [accept F] |
| 3 | The Allred-Rochow definition of electronegativity uses this quantity, sometimes symbolized "Z eff". This quantity is calculated with consideration of shielding due to inner electrons. | effective nuclear charge [do not accept or prompt on partial answers] |

Question #14: Science – Chemistry

| At s | tandard temperature and pressure, it is a diatomic | |
|------|-------------------------------------------------------------------------|--------------------------------------------|
| ["D | [E-atomic"] gas with a triple bond. | |
| 1 | Name this gas, the most abundant component of | <u>nitrogen</u> [or di <u>nitrogen;</u> or |
| | the Earth's atmosphere. | N_2 |
| 2 | Nitrogen gas is produced in the Wolff-Kishner | <u>hydrazine</u> |
| | reduction, where its source is this compound used | ["HIGH"-druh-zeen] |
| | in rocket fuel. Its formula is N ₂ H ₄ ["N two, H | |
| | four"]. | |
| 3 | This compound is formed from nitrogen and | ammonia [do not accept |
| | hydrogen gases in the Haber process. It is | "ammonium"] |
| | commonly used in fertilizers, and its formula is | |
| | NH ₃ ["N H three"]. | |



Round 7 3rd Section Toss-up Questions

Question #15: Literature – U.S. Literature

10 points

| In this story, one character "would have been a good | | | |
|----------------------------------------------------------|--|--|--|
| woman, if it had been somebody there to shoot her | | | |
| every minute of her life". That character touched a man | | | |
| on the shoulder before being hit by three bullets in the | | | |
| chest. In this story, the cat Pitty Sing caused an | | | |
| accident, after which John Bailey and his family | | | |
| encounter a group of criminals. The grandmother in | | | |
| this story wants to travel to Tennessee instead of | | | |
| Florida. Name this Flannery O'Connor story in which a | | | |
| family is killed by the Misfit. | | | |

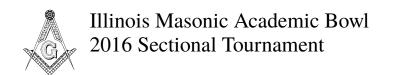
"A Good Man is Hard to Find"

Question #16: Fine Arts – Art History

10 points

| One painting by this artist is based on Leonardo's | | | |
|--------------------------------------------------------------|--|--|--|
| Madonna and Child with Flowers and is nicknamed for | | | |
| the flowers symbolizing marriage held by Mary and the | | | |
| baby Jesus. A painting by this artist similar to the | | | |
| Mona Lisa shows a woman holding a little unicorn. | | | |
| This person and his assistants painted the Stanza della | | | |
| Segnatura [sen-yah-TOO-rah] and three other rooms | | | |
| for the Vatican. One fresco in that room, which shows | | | |
| the Trinity above theologians arguing about | | | |
| transubstantiation, is <i>La Disputa</i> [lah dees-POO-tah]. | | | |
| Name this painter who depicted Plato, Aristotle, and | | | |
| several other great thinkers in his School of Athens. | | | |
| | | | |

Raphael [or Raffaello or Sanzio or Raffaello Sanzio da Urbino]



Round 7 3rd Section Toss-up Questions

Question #17: Mathematics – Math Concepts

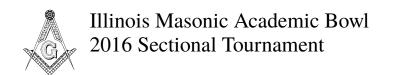
10 points

| This mathematical term can refer to the transformation | inversion [or inverting or |
|-----------------------------------------------------------|----------------------------|
| of a point relative to a circle by dividing the radius | inverse] |
| squared of the circle by the distance of the point from | |
| the circle center. This term also refers to changing the | |
| proposition "If P, then Q" to "If not P, then not Q." If | |
| this operation is performed on a square matrix, then | |
| multiplying the new matrix by the original gives an | |
| identity matrix. This operation can be performed on | |
| functions that are both one-to-one and onto; for | |
| instance, this operation applied to the function "x | |
| cubed" gives "the cube root of x ". Name this operation | |
| whose "multiplicative" type is equivalent to taking the | |
| reciprocal. | |

Question #18: Social Studies - U.S. Government

10 points

| The Supreme Court overturned Anthony Cramer's | <u>treason</u> |
|-------------------------------------------------------------|----------------|
| conviction for this crime, ruling that buying drinks was | |
| not a sufficient act. Enlistment of persons to commit | |
| this crime is not sufficient for a conviction, according to | |
| the majority opinion in Ex parte Bollman, which | |
| concerned a man who recruited people for the | |
| Burr-Wilkinson Plot. This crime is mentioned before | |
| bribery and high crimes and misdemeanors as an | |
| impeachable offense in the Constitution. Name this act | |
| of levying war against, or giving aid and comfort to, | |
| enemies of the United States. | |



Round 7 3rd Section Toss-up Questions

Question #19: Science – Physics

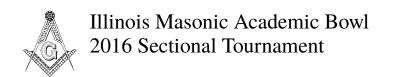
10 points

| In an equation describing these devices, the reciprocal | <u>lens</u> |
|-------------------------------------------------------------|-------------|
| of a characteristic length is proportional to n minus one | |
| times various terms containing the two radii that define | |
| one of these structures. The power of one of these | |
| devices is measured in diopters ["die"-AHP-turz]. One | |
| of these devices named for Fresnel [fruh-NEL] is | |
| commonly used in lighthouses. Chromatic aberrations | |
| can occur in these devices. Like mirrors, they can be | |
| concave or convex, and they create images that are real | |
| or virtual depending on their distance from the focal | |
| point. Name these devices that focus light refracting | |
| through them, and which are often made of glass. | |

Question #20: Literature – Mythology

10 points

| This god's trishula [trih-SHOO-lah] symbolizes the | Shiva [or Siva; prompt on |
|------------------------------------------------------------|---------------------------|
| past, present, and future. During the churning of the | <u>Mahadeva</u>] |
| ocean, this god swallowed halahala | |
| [HAH-lah-HAH-lah], whose presence in his throat led | |
| to the epithet "Neelakantha [nee-lah-KAHN-thah]". | |
| This god cursed the ketaki [keh-TAH-kee] flower after | |
| it conspired with Brahma in a contest with Vishnu, | |
| which involved a lingam. Ganesh was decapitated by | |
| this god for refusing his demand to see his wife, Parvati. | |
| Name this Hindu destroyer god, a member of the | |
| trimurti along with Brahma and Vishnu. | |



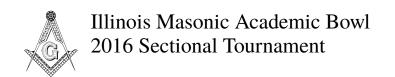
Question #21: Social Studies – Economics

10 points per part

| In <i>The Nature of Rent</i> , this person described the rent as the difference in productivity for plots of land. | | |
|--------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| 1 | Name this writer of "Essay on the Principle of Population", who warned about the arithmetic growth of resources in contrast to the geometric growth of population. | Thomas Malthus |
| 2 | Malthus opposed these laws, since he argued that they inhibited labor mobility, instead advocating for "indoor relief" where the "fare should be hard". | English Poor Laws [accept Old Poor or New Poor Law or Poor Law Amendment Act of 1834] |
| 3 | Thomas Malthus clashed with David Ricardo over these British laws regarding a certain crop. Robert Peel oversaw their repeal, and the subsequent defeat of the Irish Coercion bill led to his resignation. | Corn Laws |

Question #22: Social Studies – Economics

| | | , , , |
|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|
| | nis kind of market, the Herfindahl-Hirschman ex is 10,000. | |
| 1 | Name this market structure in which there is a single seller. | monopoly [do not accept "monopolistic competition"] |
| 2 | Monopolies can result from high barriers to entry, such as these expenses that are independent of the amount of output. Common examples include building and land leases. | fixed costs |
| 3 | In a monopoly, deadweight loss occurs because of the monopolist setting marginal revenue equal to marginal cost so as to maximize this value. | profit |



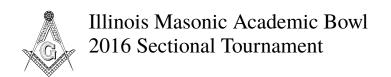
Question #23: Science – Biology

10 points per part

| | se proteins can diversify via V(D)J [V-D-J] | |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|
| recombination. | | |
| 1 | Name these <i>y</i> -shaped proteins that bind to antigens [AN-tih-jinz]. | <pre>antibodies [or immunoglobulins or antibody]</pre> |
| 2 | Antibodies are released from these lymphocytes [LIM-foh-"sites"], which develop in the bone marrow and are commonly contrasted with T cells. | B cells |
| 3 | The immune system recognizes cells by antigens, as well as these glycoproteins [GLY-koh-"proteins"] that are classified as class one and class two. These are used to distinguish the self from the non-self. | MHC [or major histocompatability complex] |

Question #24: Science – Biology

| The | se structures contain hydrogen bonds between | |
|------|-----------------------------------------------------|---------------------------------------------|
| ever | y four units. | |
| 1 | Name these structures that, along with beta-pleated | alpha helices or alpha helix |
| | sheets, are characteristic of proteins' secondary | [prompt on <u>helices</u> or <u>helix</u>] |
| | structure. | |
| 2 | Alpha helices [HEE-luh-sees] are common in | cell membrane [or plasma |
| | proteins that span this cellular structure, which | membrane] |
| | surrounds the cell and is composed of a lipid | |
| | [LIP-id] bilayer. | |
| 3 | Alpha helices were discovered by this chemist, who | Linus Pauling |
| | is also known for proposing that people take | |
| | megadoses of vitamin C. | |



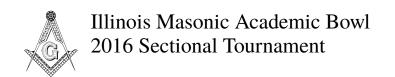
Question #25: Literature – U.S. Literature

10 points per part

| This site was home to Tuttle's grocery, where French | | |
|------------------------------------------------------|------------------------------------------------------|---------------------------------|
| Pete and Kanaka [kuh-NAH-kuh] Joe shot each other. | | |
| 1 | Name this location where a hotel was planned | The Luck of Roaring Camp |
| | before the overflow of the North Fork River killed | |
| | Thomas Luck. | |
| 2 | This author of "The Luck of Roaring Camp" wrote | (Francis) Bret Harte |
| | about the suicide of gambler John Oakhurst in | |
| | "The Outcasts of Poker Flat." | |
| 3 | In "The Luck of Roaring Camp", Oakhurst's | Hamlet |
| | "melancholy air and intellectual abstraction" drew a | |
| | comparison to this Shakespearean character, the | |
| | Prince of Denmark. | |

Question #26: Literature – U.S. Literature

| | s sailor was impressed into service on the HMS | |
|-----|------------------------------------------------------|----------------------------|
| Веш | ipotent. | |
| 1 | Name this "foretopman" who refused a bribe of two | Billy Budd [accept either] |
| | guineas before accidentally killing John Claggart. | |
| 2 | Billy Budd is the title character of a novel by this | Herman Melville |
| | author, who wrote about Captain Ahab pursuing a | |
| | whale in <i>Moby-Dick</i> . | |
| 3 | This four-word phrase was the last thing uttered by | "God bless Captain Vere" |
| | Billy Budd before he was hanged. | |



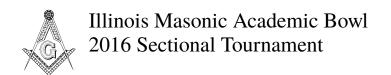
Question #27: Mathematics – Analytic Geometry

10 points per part

| This | s way of describing a curve often uses the variable | |
|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|
| t to | represent the progression of time. | |
| 1 | Name this system in which the variables that represent coordinates are expressed using a different variable. Often, <i>x</i> and <i>y</i> are expressed in terms of <i>t</i> . | <pre>parametric equations [accept parameterization; prompt on parameter]</pre> |
| 2 | What curve is generated by the set of parametric equations <i>x</i> equals the tangent of <i>t</i> , and, <i>y</i> equals the secant of <i>t</i> ? | hyperbola [prompt on conic section] |
| 3 | Find the <i>area</i> of the shape generated by the parametric equations <i>x</i> equals 3 times the sine of <i>t</i> , and, <i>y</i> equals 4 times the cosine of <i>t</i> . | <u>12 pi</u> |

Question #28: Mathematics – Analytic Geometry

| This | s mathematical entity can be thought of as | |
|-------|--------------------------------------------------------|---------------|
| infir | nitely long, infinitely wide, and infinitely thin. | |
| 1 | Name this shape generated by equations of the | <u>plane</u> |
| | form $A x$ plus $B y$ plus $C z$ plus D equals zero, | |
| | where A , B , C , and D can be any number. | |
| 2 | For the equation above, the vector whose | normal vector |
| | components are (A, B, C) is perpendicular to the | |
| | plane, so it is given this name. | |
| 3 | Find the shortest distance from the origin to the | 1/3 |
| | plane x plus 2 y plus 2 z equals 1. | |



Round 7 5th Section Toss-up Questions

Question #29: Social Studies – World History

10 points

This leader outlawed the practice of splitting immovable property when its owner died in his Law of Single Inheritance. He initially shared power with his brother, Ivan V, and was succeeded by his daughter, Elizabeth I. He gained control of the Baltic via the Treaty of Nystad [NYE-stad], which was signed shortly after his victory at Poltava ["pole"-TAH-vuh] over Sweden in the Great Northern War. Among his policies was a tax for noblemen with beards. Name this Russian tsar who modernized the nation and built a new capital on the Gulf of Finland.

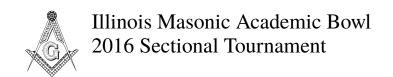
Peter the Great [accept Peter I or Pyotr I Alexeyevich Romanov; prompt on Peter]

Question #30: Science – Biology

10 points

| A mutation in this protein can cause the blue sclera | <u>colla</u> |
|------------------------------------------------------------|--------------|
| [SKLAIR-uh] characteristic of osteogenesis | |
| [AHS-tee-oh-"genesis"] imperfecta. This protein | |
| contains the unusual amino acid hydroxyproline | |
| ["high"-DRAHK-see-PROH-leen]. This protein, which | |
| requires vitamin C to synthesize, contains glycines | |
| [GLY-seenz] at roughly one in three residues, which | |
| allows it to form its triple helix structure. This protein | |
| forms a basket-weave shape when it forms scars. This | |
| protein is used to make gelatin. Name this most | |
| common protein in the human body, which makes up a | |
| large part of connective tissue. | |
| | |

<u>collagen</u>



Round 7 5th Section Toss-up Questions

Question #31: Literature – British Literature

10 points

| In this novel, Anne's revelation of a secret engagement | | | |
|-------------------------------------------------------------|--|--|--|
| led to the Steele sisters being thrown out of Barton Park. | | | |
| A sprained ankle in this novel leads to a brief affair with | | | |
| the father of Miss Williams' baby, John Willoughby. | | | |
| Upon learning of her fiancé's disinheritance, Lucy | | | |
| Steele opted to marry Robert Ferrars instead of Edward. | | | |
| Henry dies at the beginning of this novel, leaving it up | | | |
| to his son from his first wife to take care of his second | | | |
| wife and their daughters. Name this Jane Austen novel | | | |
| about Elinor and Marianne Dashwood. | | | |

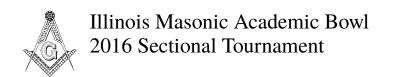
Sense and Sensibility

Question #32: Mathematics – Math Concepts

10 points

An example of this solid named for Prince Rupert can pass through a smaller example of this solid. The difference between this solid and a rhombohedron [rahm-boh-HEE-dron] is that this solid has right angles. The Delian [DEE-lee-un] problem is to construct one of these shapes with exactly twice the volume of another one, which is impossible using a straightedge and compass. Also known as a regular hexahedron ["HEX"-uh-HEE-drun], this shape is one of the Platonic [pluh-TAH-nik] solids. Name this square prism with has six square faces.

cube [before "hexahedron",
accept regular hexahedron
and prompt on hexahedron;
prompt on square prism
before "prism"]



Round 7 Extra Section Toss-up Questions

Extra Question #1: Social Studies – World History

10 points

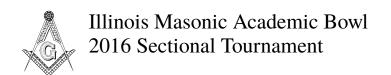
| In 1999, Nairi Hunanyan [NAY-ree hoo-NAN-yun] led | (Republic of) Armenia [or |
|-------------------------------------------------------|---------------------------|
| an attack on this country's parliament that killed | Hayastan Hanrapetut'yun] |
| Parliament Speaker Karen Demirchyan | |
| [duh-MIRCH-yun] and Prime Minister Vazgen | |
| Sargsyan [sargs-YAN]. This country has a longstanding | |
| dispute over the region of Nagorno-Karabakh with | |
| Azerbaijan [az-ur-by-ZHAHN]. Its predominant ethnic | |
| group was targeted by Enver Pasha in a World War I | |
| genocide orchestrated by Turkey. Name this eastern | |
| European nation whose capital is Yerevan. | |

Extra Question #2: Fine Arts – Classical Music & Opera

10 points

This composer dedicated his first set of twelve études [ay-toods] to Franz Liszt ["least"] and his second set to Liszt's mistress Marie d'Agoult [dah-gool]. Though he did not nickname the individual pieces, they are often referred to by names such as *Waterfall*, *Ocean*, or *Revolutionary*. After John Field wrote the first nocturnes, this composer wrote 21 of them that are still widely performed. He also composed a large number of mazurkas and the "Tragic" and "Military" Polonaises. Name this pianist who spent the first half of his life in Poland and second half in Paris, the composer of the Minute [MIH-nit] Waltz.

Frédéric (François) Chopin [fray-day-REEK shoh-PAN] [or Fryderyk Franciszek Szopen]



Round 7 Extra Section Toss-up Questions

Extra Question #3: Mathematics – Math Concepts

10 points

The organization TPTP maintains a list of thousands of problems for which this entity can be created by a computer. Herbert Robbins used a computer system called EQP to create one of these. Computers assisting with the creation of these things became controversial after one was created by Wolfgang Haken and Kenneth Appel for the four color theorem. Andrew Wiles wrote a famous example for Fermat's [fair-mah'z] Last Theorem. A basis step and an inductive step comprise ones of these that are done "by induction". Name these writings used to demonstrate the certainty of mathematical theorems, which in high school are often written in two columns.

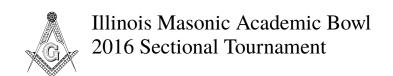
mathematical **proof**(s) [accept answers referring to **proving** mathematical statements]

Extra Question #4: Science - Earth Science

10 points

Two measurements of this condition are the Keetch-Byram index and the Palmer index. To monitor this condition, a center at the University of Nebraska releases a map each Thursday supported by the National Oceanic and Atmospheric Administration and the Department of Agriculture. This condition can lead to excessive dust storms. One measure of this condition uses wildfire risk, while another uses temperature and precipitation levels. Name this condition, recently a major problem in California, in which an area does not have enough water.

drought [prompt on descriptive answers that mention lack of rain or precipitation]



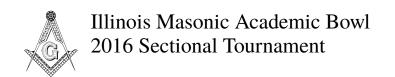
Round 7 Extra Section Toss-up Questions

Extra Question #5: Literature – British Literature

10 points

As part of his self-education, this character read Plutarch's [PLOO-tark's] *Lives of Illustrious Greeks and Romans*. During a trip to the Orkney Islands, he vowed to be with a man on his wedding night, during which this character killed Elizabeth Clerval. He used a locket to frame Justine Moritz for a murder. This character, who has yellow eyes and is eight feet tall, pursues its creator. Name this creation of a Swiss scientist named Victor in a novel by Mary Shelley.

Frankenstein's monster [accept similar answers including both underlined parts; prompt on the creature; do not accept or prompt on "Frankenstein"]



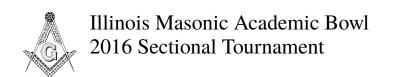
Extra Question #6: Social Studies – U.S. History

10 points per part

| Muc | ch of this person's local support waned after John | |
|-----|----------------------------------------------------|---------------------------|
| Win | throp was elected governor. | |
| 1 | Name this supporter of antinomianism who, was | Anne (Marbury) |
| | formally excommunicated by the Boston Church | Hutchinson [accept either |
| | before being encouraged by Roger Williams to start | underlined name] |
| | a colony in present-day Rhode Island. | |
| 2 | Convicted of slandering the ministers, Anne | Massachusetts Bay Colony |
| | Hutchinson was banished from this colony, as were | [prompt on Massachusetts] |
| | many unrepentant non-Puritans. | |
| 3 | The charter for the Massachusetts Bay Colony was | Charles I [prompt on |
| | granted by this king. Following the English Civil | Charles] |
| | War, he was hanged outside Whitehall. | |

Extra Question #7: Social Studies – U.S. History

| To a | illeviate the effects of this event, J. P. Morgan and | |
|-------------------------------------------------------|-------------------------------------------------------|--------------------------------|
| the Rothschilds helped replenish the gold reserves of | | |
| the | U.S. Treasury. | |
| 1 | Name this financial collapse during the second | Panic of 1893 |
| | term of Grover Cleveland. | |
| 2 | One cause of the Panic of 1893 was this act that | Sherman Silver Purchase |
| | mandated additional purchases of the namesake | Act [prompt on partial |
| | precious metal on top of the requirements outlined | answer] |
| | in the Bland-Allison Act. | |
| 3 | The Sherman Silver Purchase Act was passed | McKinley Tariff |
| | alongside this protective tariff that raised the | |
| | average rate to over 48%. Its namesake | |
| | congressman became president after Cleveland's | |
| | second term. | |



Extra Question #8: Mathematics - Probability

10 points per part

| To calculate binomial probabilities, this operation is | | |
|--------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|
| usec | l on a combination and the powers of two | |
| prob | pabilities. | |
| 1 | Name this operation also performed on two | multiplication or |
| | independent probabilities to calculate the | multiplying or product |
| | probability of both events occurring. | [accept <u>times</u>] |
| 2 | If the probability of event <i>A</i> is one-fifth, and the probability of event <i>B</i> is ten-elevenths, and events <i>A</i> | 2/11 [or 0 .18 repeating] |
| | and B are independent, then what is the probability | |
| | that both events will happen? | |
| 3 | If a fair coin is flipped five times, what is the probability of getting exactly four heads? | <u>5/32</u> [or 0 <u>.15625</u>] |

Extra Question #9: Mathematics – Probability

| NO' | Y-mun] to make predictions on the ENIAC -nee-aak] computer during the development of the rogen bomb. | |
|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| 1 | Name this type of statistical method that incorporates randomness and is named for a region in Europe. | Monte Carlo method [or Monte Carlo experiment] |
| 2 | If a Monte Carlo method was used to roll a pair of fair dice 36 times, what would be the expected number of times that a sum of 7 would come up? | <u>6</u> times |
| 3 | A roulette wheel has 18 red slots, 18 black slots, and 2 green slots. If a Monte Carlo method was used to spin the wheel 190 times, what would be the expected number of times the ball landed in a green slot? | <u>10</u> times |