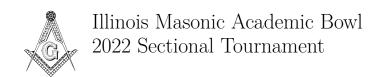## Question #1: Literature

10 points

In this novel, Master Brackett brings a physician to see a prisoner. This novel's prisoner asks "Hast thou enticed me into a bond that will prove the ruin of my soul?", and the doctor replies "Not thy soul; no, not thine!". The prisoner is later released and makes a living doing needlework. The beginning, middle, and end of this novel have scaffold scenes, in the last of which Arthur Dimmesdale publicly confesses that he is Pearl's father. The title of this novel refers to a punishment used to shame Hester Prynne [prin]. Name this novel about the effect of an adulterous affair, written by Nathaniel Hawthorne.	*The **Scarlet Letter***

Question #2: Science

10 points

In high-power circuits, the "expulsion" type of this device is used and contains boric acid to prevent arcing. This device often has metal caps at the ends of a glass tube. In household applications, this device is sometimes replaced with a penny, which is very dangerous. This device contains a wire or soldered [SAH-durd] joint that melts when it is overheated. This device is similar to a circuit breaker but cannot be reused once it blows. Name this device designed to stop a circuit that has too much current.	**fuse**

Question #3: Fine Arts

10 points

This musician often began concerts with the song "When It's Sleepy Time Down South" even though it was controversial to African-American audiences. This musician added tuba player Pete Briggs and drummer Baby Dodds to his band in 1927, turning his Hot Five into his Hot Seven. That group recorded "Potato Head Blues". This person played the bandleader in the film version of *Hello, Dolly!* after he had a popular version of the title song. Another popular song by this person begins with the lyrics "I see trees of green, red roses too." Name this trumpeter who recorded "What a Wonderful World" and was nicknamed "Satchmo".	Louis (Daniel) **Armstrong**

Question #4: Social Studies

10 points

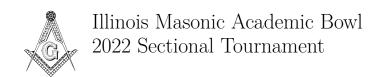|	
This person built on the success of Francisco de Miranda, who won the Battle of La Victoria [veek-toh-REE-ah]. After a series of disagreements, this person allied himself with Santiago Mariño [mah-REEN-yoh] by appointing him General of the Army of the East. This person defeated Domingo de Monteverde [mohn-tay-VAIR-day] after writing the Cartagena [kar-tah-HAY-nah] Manifesto during the Admirable Campaign. That victory allowed this person to re-establish the Venezuelan Republic in 1813. This person later became the leader of Peru. Name this person nicknamed "The Liberator" because he liberated several South American countries from Spanish rule.	Simón (José Antonio de la Santísima Trinidad) **Bolívar** (y Palacios Ponte y Blanco)

Question #5: Literature

10 points

The anthropologist Alfred Radcliffe-Brown noticed that a serpent named for these things was a central figure in many Aboriginal [ab-"original"] Australian myths. Greek gods often sent messages using a goddess who traveled along these things. That goddess of these things, who cut a lock of Dido's ["DIE"-doh'z] hair when Dido was on the funeral pyre, was Iris. In Norse mythology, a burning bridge between Midgard and Asgard is one of these things called Bifrost [BIV-rahst]. Name these things that in Irish mythology have a pot of treasure at their end, guarded by a leprechaun.	**rainbow**s

Question #6: Science

10 points

The virus that causes this disease is very similar to the Coxsackie ["cocks-SACK"-ee] viruses and echoviruses in that it is an Enterovirus [EN-tuh-roh-"virus"]. The oral vaccine for this disease causes three cases per million doses, so it is no longer given in the U.S. Vaccines for this disease have nearly eliminated the use of iron lungs. The best-known symptom of this disease is due to its attacking of the anterior horn cells. The vaccines for this disease were developed by Albert Sabin [SAY-bin] and Jonas Salk. Name this disease that is sometimes called infantile paralysis because of its past effect on many children.	**polio**(myelitis) [accept **polio**virus; prompt on **infantile paralysis**]

Question #7: Social Studies

10 points per part

	This country has coasts on the Gulf of Thailand and South China Sea.	
1	Name this country whose most populous city, Ho Chi Minh City, used to be called Hanoi.	(Socialist Republic of) **Vietnam** [or Công Hòa Xã Hôi Chu Nghia **Viêt Nam**]
2	The southern part of this river has its delta in Vietnam. This river forms much of the border between Thailand and Laos ["louse"].	**Mekong** River
3	This island east of Vietnam makes up most of China's smallest province by area. The city of Haikou ["hi"-KOH] is at the north end of this island.	**Hainan**

Question #8: Social Studies

10 points per part

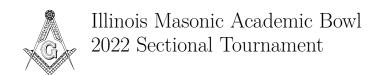|	This country contains Lake Balaton [BAH-lah-tohn], which is 48 miles long.	
1	Name this country whose capital is Budapest.	**Hungary** or **Magyarország**
2	Budapest, like Hungary itself, is divided almost in half by this river.	**Danube** River [or **Duna**]
3	Budapest is the location of a famous Catholic basilica named for this person, whose right hand is supposedly on display there.	St. **Stephen** or (King St.) **Stephen** I [accept St. **Stephen**'s Basilica; accept **Vajk**]

Question #9: Mathematics

10 points per part

	This set of numbers is often represented by the letter **Z** because of the German word *Zahlen* [TSAH-len], meaning "numbers".	
1	Name this set that consists of zero, positive and negative 1, positive and negative 2, positive and negative 3, and so on.	**integer**s
2	In these equations, only integer solutions are considered. These equations are named after an ancient Greek mathematician.	**Diophantine** [**"die-oh-FAN-teen"**] equations [prompt on **Diophantus**]
3	The search for Pythagorean [puh-THA-guh-ree-un] triples is a Diophantine equation. Find the two numbers other than 7 that are in the only primitive Pythagorean triple that contains the number 7.	**24** and **25** [either order]

Question #10: Mathematics

10 points per part

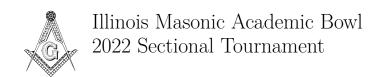|	These segments meet at the centroid of a triangle.	
1	Name these segments from the vertex of a triangle to the midpoint of the opposite side.	**median**s
2	This special case of Stewart's theorem relates the length of a median to the lengths of the triangle's sides.	**Apollonius**'s theorem
3	If a median is 36 units long, find the distance from the vertex at the median's endpoint to the centroid of the triangle.	**24** units

Question #11: Literature

10 points per part

	The characters in this work are seven women and Panfilo, Filostrato, and Dioneo [dee-oh-NAY-oh].	
1	Name this 14th century collection of stories.	*The **Decameron** (Tales)* [or ***Decamerone***]
2	This author wrote *The Decameron*.	Giovanni **Boccaccio** [joh-VAH-nee **boh-KAHT-choh**]
3	This playwright's *The Confounded Husband* and *The School for Husbands* both had plots based on tales from *The Decameron*.	**Molière** [**mohl-yair**] [or Jean-Baptiste **Poquelin**]

Question #12: Literature

10 points per part

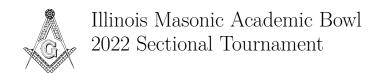|	When a magistrate tells this play's title character that the treasury covers war expenses, she replies "That's our first principle—no War!"	
1	Name this play in which the title character convinces women to refrain from sex in order to end the Peloponnesian [pel-uh-puh-NEE-zhun] War.	***Lysistrata*** [**"lie"-SISS-truh-tah** or **lih-sih-STRAH-tuh**]
2	This person wrote *Lysistrata*, *The Clouds*, and *The Birds*.	**Aristophanes** [**air-ih-STAH-fuh-neez**]
3	*Lysistrata* opens with a discussion between the title character and this woman. This woman later repeats after Lysistrata to represent all of the women taking an oath.	**Calonice** [**kal-UH-nee-kay**]

Question #13: Science

10 points per part

	Solar versions of this type of event are generally more dramatic than lunar ones.	
1	Name this type of event in which one astronomical object blocks the view of another or passes into a shadow.	**eclipse**s [or **occultation**s]
2	This similar event occurs when an object is partially blocked, such as when Mercury or Venus passes between Earth and the Sun.	**transit**s
3	This eclipse cycle lasting a little over 18 years has been known since ancient times. This cycle is shorter than the Inex ["EYE-necks"].	**Saros** cycle

Question #14: Science

10 points per part

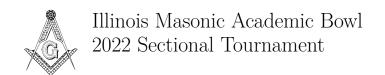|	The Moon has a near side and far side, the latter of which is sometimes called the dark side.	
1	The moon is described as waxing when it is in a phase where its visibility is increasing. What term is used when its visibility is decreasing?	**waning** [accept **wane**]
2	Several dark regions on the Moon are called *mare* [MAR-ay], which is translated from Latin into English as this word.	**sea**s
3	Scientists have given this name to the planet that is believed to have created the Moon by colliding with Earth over four billion years ago.	**Theia** [**THEE-uh**]

Question #15: Social Studies

10 points

When Congressman Wright Patman got frustrated with the I.R.S. and this agency, he made public a list of foundations that gave money to the J. M. Kaplan Fund. During the Eisenhower Administration, this agency was led by Allen Dulles [DULL-us], whose brother was the secretary of State. During the 1980s, this agency was led by William Casey, who may have admitted on his deathbed that he knew about diverting funds to the Contras in Nicaragua. This agency replaced the Office of Strategic Services and was created at the same time as the National Security Agency. Name this U.S. agency that collects national security information from outside the U.S.	**CIA** or **Central Intelligence Agency**

Question #16: Mathematics

10 points

The number of intersections of these geometric things equals "n choose 4". The product of the lengths of these figures gives one side of the equation in Ptolemy's [TOL-uh-mee'z] theorem for cyclic quadrilaterals. The number of these figures is maximized in a convex shape, in which they number one-half n times the quantity n minus 3. One of these segments is the perpendicular bisector of the other one in a kite, and these segments bisect each other in a parallelogram. Name these entities that are not edges but connect vertices [VER-tuh-seez] of a polygon.	**diagonal**s

Question #17: Literature

10 points

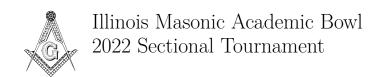|	
In one novel by this author, a loose tile from the floor hides an account book with the strongbox combination, and it is found after a photographer commits suicide. At the end of that novel, this author wrote that the *New Fidelity* boat was waving the yellow plague flag after the boat is used by Florentino and Fermina [fair-MEE-nah]. In another novel by this author, the future is predicted by the gypsy Melquíades [mel-KEE-ah-dayss]. This author wrote that novel about the family started by Úrsula Iguarán [OOR-soo-lah ee-gwah-RAHN] and José Arcadio Buendía, who start the town of Macondo. Name this Colombian author of *Love in the Time of Cholera [KAH-luh-ruh]* and *One Hundred Years of Solitude.*	Gabriel **García** Márquez [prompt on **Márquez**]

Question #18: Science

10 points

The Donnan effect, which is sometimes named for this situation, is caused by a net electric charge across a barrier. Changes in the constant named for this situation are related to enthalpy and temperature by the van 't Hoff [vahnt hawff] equation. This situation exists when free energy is minimized. The constant named for this situation can be found by dividing two rate constants. A change in conditions will in turn affect the conditions of this situation according to Le Chatelier's [luh "shot"-lee-ay'z] principle. Name this situation in which the rate of a forward reaction equals the rate of a backwards reaction, so that concentrations do not change.	chemical **equilibrium**

Question #19: Social Studies

10 points

Though this symptom usually does not have a medical cure, it can be cured by thiamin ["THY"-uh-min] if it is caused by Korsakoff syndrome. This symptom is both a cause and a result of fugue [fyoog] states, though William James described how Reverend Ansell Bourne was able to eliminate this symptom by using hypnosis. Ironically, a common type of this symptom is called posthypnotic [post-hip-NAH-tik] and can be caused on purpose by the hypnotist. The anterograde [AN-tur-oh-"grade"] form of this symptom is often caused by brain trauma and does not affect information stored before the injury. Name this loss of long-term memory.	**amnesia** [**am-NEE-zhuh**] [prompt on **memory disorder**(s) or **memory loss** or similar descriptions]

Question #20: Miscellaneous

10 points

The type of statute named for this type of crime requires certain contracts to be in writing. Theranos founder Elizabeth Holmes was indicted both for conspiracy to commit this crime and for this crime itself. In 2020, Lori Loughlin [LAWFF-lin] pled guilty to conspiracy to commit this type of crime. Loughlin was accused of committing the mail and wire types of this crime. Identity theft is often committed so that this crime can be committed. To protect people from this type of crime, the Federal Trade Commission has a scam alert system. Name this crime in which somebody loses something due to intentional deception.	(wire and/or mail) **fraud** [do not accept similar terms like "scam"]

Question #21: Literature

10 points per part

	At the beginning of this book, the author writes about forgetting her lines during an Easter church service.	
1	Name this 1969 autobiography set mostly in Stamps, Arkansas.	***I Know Why the Caged Bird Sings***
2	This poet wrote *I Know Why the Caged Bird Sings*. She read "On the Pulse of Morning" at Bill Clinton's inauguration.	Maya **Angelou** [or Marguerite Ann **Johnson**]
3	The title *I Know Why the Caged Bird Sings* is taken from a line in this poet's *Sympathy*. This poet also wrote the poem "Dawn" in his collection *Lyrics of Lowly Life*.	Paul Laurence **Dunbar**

Question #22: Literature

10 points per part

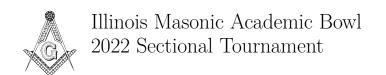|	The protagonist of this novel becomes a legendary enemy of a group of Native Americans called Yeehats.	
1	Name this novel that begins "Buck did not read the newspapers."	*The **Call of the Wild***
2	Buck's original owner in the Santa Clara Valley is Miller, who has this job.	**judge**
3	This author wrote *The Call of the Wild* and the short story "To Build a Fire".	Jack **London** [or John Griffith **London** or John Griffith **Chaney**]

Question #23: Social Studies

10 points per part

	This country gained control of the West Bank shortly after fighting Israel in 1948.	
1	Name this country whose capital is Amman.	(Hashemite Kingdom of) **Jordan** [or al-Mamlakah al-**Urdun**iyah al-Hashimiyah]
2	Jordan lost the West Bank in this 1967 war. It is named for the short amount of time that it lasted.	**Six-Day** War
3	This king led Jordan from 1952 to 1999. In 1994, he became the second Arab leader to sign a peace treaty with Israel.	**Hussein** bin Talal [prompt on **Talal**]

Question #24: Social Studies

10 points per part

	This ruler was the son of Tolui [TOH-loo-ee] Khan and the brother of his predecessor Möngke [MOHNG-kay] Khan.	
1	Name this grandson of Genghis Khan.	**Kubla**i Khan [or **Shizu**]
2	Kublai Khan is considered the founder of this dynasty that was also called the Mongol dynasty.	**Yuan** dynasty
3	Kublai Khan moved the capital away from this city that is now in Mongolia. Kublai's brother Arig Böge [ar-ig BOHJ] tried ruling from this city, but Kublai captured him.	**Karakorum**

Question #25: Science

10 points per part

	This word means "center-seeking".	
1	Name this adjective used to describe the force or acceleration on an object in circular motion.	**centripetal** (force or acceleration) [do not accept "centrifugal"]
2	If there is uniform circular motion with a constant radius, then the centripetal acceleration varies directly with what power of the speed?	**second** power or power of **2** [or **square**d]
3	The magnitude of centripetal acceleration can also be expressed as speed times this scalar quantity, which is equal to tangential speed divided by radius.	**angular speed** or **angular frequency** [accept **circular frequency**; prompt on **omega**; do not prompt on "speed" or "frequency"]

Question #26: Science

10 points per part

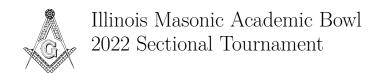|	This quantity equals force per unit area.	
1	Name this quantity that can be measured in pascals or atmospheres.	**pressure**
2	This ancient principle, which states that any completely or partially submerged object in a fluid at rest is acted upon by a buoyant [BOY-unt] force equal to its weight, is used to calculate water pressure.	Archimedes' [ark-ih-MEE-deez'] principle
3	This pressure used in Bernoulli's [bair-NOO-lee'z] law is the difference between total pressure and static pressure. This pressure is calculated as one-half times fluid mass density times the square of flow speed.	**dynamic** pressure

Question #27: Fine Arts

10 points per part

	This sculpture was originally part of a work showing scenes from the *Inferno*.	
1	Name this sculpture that represented Dante [DAHN-tay] and was part of *The Gates of Hell*.	*The* **Thinker** [or *Le* **Penseur**]
2	This French artist sculpted *The Thinker*.	(François) Auguste (René) **Rodin** [oh-goost **roh-dan**]
3	Rodin had a relationship with this woman who was his student and model. She sculpted *The Waltz* and *The Mature Age*.	Camille (Rosalie) **Claudel**

Question #28: Fine Arts

10 points per part

	This house is in Mill Run, Pennsylvania, which is about 40 miles from Pittsburgh.	
1	Name this house designed for the Kaufmann family.	**Fallingwater**
2	This architect designed *Fallingwater* as well as many houses in Illinois, such as the Frederick Robie House and Dana Thomas House.	Frank Lloyd **Wright** [or Frank Lincoln **Wright**]
3	Fallingwater uses this type of projecting beam that is only supported on one end. These beams are often used to make bridges.	**cantilever**ed beam or **cantilever**s

Question #29: Science

10 points

For some organisms, this cell is surrounded by the vitelline ["vie"-TELL-un] membrane, and in other organisms it is surrounded by the zona pellucida [puh-LOO-sid-uh]. The nucleus of this cell is the germinal [JER-muh-nul] vesicle. This cell is the largest human cell. The structure holding this cell either goes through a disintegration process called atresia [uh-TREE-zhuh] or turns into a corpus luteum [LOO-tee-um]. Like hair, these cells originate from follicles, which release this cell in response to the luteinizing [LOO-tee-un-"eyes"-ing] hormone. Name this cell that is released from the ovaries and can be fertilized by sperm.	**egg** cell or **egg**s or **ovum** or **ova** [or **oocyte**(s)]

Question #30: Social Studies

10 points

The Supreme Court invalidated this state's criminal syndicalism [SIN-duh-kul-izm] statute in a 1969 decision that was brought by Ku Klux Klan leader Clarence Brandenburg. The ability of prosecutors to use illegally gained evidence was taken away by a 1961 U.S. Supreme Court decision on a case brought against this state by Dolly Mapp. The Environmental Policy Act passed after a river in this state caught fire in 1969. In 1970, National Guardsmen from this state shot four protesters at Kent State University. Name this state where the Cuyahoga [kie-uh-HOE-guh] River caught fire in 1969 in Cleveland.	**Ohio**

Question #31: Mathematics
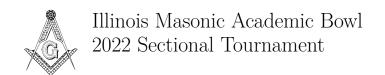
10 points

All irrational numbers map to this number in the Thomae [TOH-may] function. If all of the equations in a system equal this number, then the system is classified as homogeneous. If the determinant of a matrix equals this number, then the matrix cannot be inverted. If factors multiply to equal this number, then at least one of the factors equals this number, according to this number's product property. This number is the only real number without a multiplicative inverse, which means that this number does not have a reciprocal. Identify this number that is the additive identity and that is neither positive nor negative.	<u>zero</u>

Question #32: Literature

10 points

This novel uses the phrase "angry people are not always wise" before a woman reminds a man that he sarcastically said of another woman, "She a beauty!—I should as soon call her mother a wit." The woman who talks in that part of this novel is the sister of Louisa Hurst and lives at Netherfield Park with her brother. In this novel, that brother, Charles Bingley, marries Jane, who is the oldest of five sisters. The second oldest of those five sisters eventually falls in love with Fitzwilliam Darcy. Name this novel about the Bennet sisters written by Jane Austen.	***<u>Pride and Prejudice</u>***

Extra Question #1: Social Studies

10 points

This organization carried out Operation Active Endeavour in the Mediterranean Sea shortly after invoking Article V [5] for the first time. This organization's Article X [10] governs its expansions. The headquarters of this organization moved from Paris to Brussels when France pulled out of its military structure. In 1999 and 2004, this organization added several eastern European countries, which according to Russia was a broken promise. In reaction to West Germany joining this organization in 1955, the Warsaw Pact was formed. Name this organization formed in 1949, an alliance of countries who were opposed to the Soviet Union.	**NATO** or the **North Atlantic Treaty Organization**

Extra Question #2: Fine Arts

10 points

This city's oldest landmarked building was commissioned by and named for Lewis L. Bradbury, and it is near the Million Dollar Theater. This city has a contemporary art museum that purchased a "Single Elvis" by Andy Warhol when it opened in 2015, the Broad [brohd]. A different major art museum in this city opened a second location in 1997, designed by Richard Meier and set on two ridges. This city contains the Getty Center and a concert hall designed by Frank Gehry ["Gary"] that is known for its reflective exterior. Name this city that contains the Walt Disney Concert Hall and is the most populous city in California.	**Los Angeles**, California [accept **L. A.**]

Extra Question #3: Science

10 points

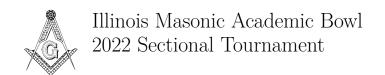|	
One way to calculate this value is to multiply 2 times the fine-structure constant times the von Klitzing constant and divide by the speed of light. This value is also equal to 1 plus the magnetic susceptibility. The difference between diamagnetic ["DIE-uh-magnetic"] and paramagnetic ["PAIR-uh-magnetic"] materials is that in diamagnets the relative type of this value is less than 1. This value equals the ratio of a magnetic *B*-field to an auxiliary magnetic *H*-field. Until recently, 4 pi times 10 to the −7th power was the defined value for this quantity in free space. Name this measure of resistance to the formation of a magnetic field.	(magnetic) **permeability** (of free space)

Extra Question #4: Literature

10 points

After listing several Biblical men who were led astray by women, this character states "If I be led astray, methinks I may be excused." This character's horse is Gringolet [grahn-goh-lay]. This character receives a slain deer and then gives a kiss to Bertilak as part of a bargain that they give each other what they received during the day. This character later wears a magic girdle that is supposed to protect him. Before that, this character chops off a giant's head, but the giant picks up the head and walks away. Name this nephew of King Arthur who, according to the Pearl Poet, had an adventure involving a green knight.	Sir **Gawain** [**guh-WAYN**]

Extra Question #5: Mathematics

10 points

This rule provides direct justification for the most common polar coordinates distance formula. In the isosceles ["eye"-SAH-suh-leez] case, this rule can be stated by the formula "1 minus c squared over the quantity 2 b squared". This rule is used to find either a triangle angle when the three sides are known or to find the third side of a triangle when two sides and the angle between them are known. Name this "law" in which there is a term equal to twice the product of two side lengths times its namesake trigonometric function.	law of **cosine**s [accept **cosine** rule; do not accept or prompt on "law of sines"]

Extra Question #6: Science

10 points per part

	These blood vessels are often shown in blue on diagrams. They can be classified as pulmonary, systematic, superficial, or deep.	
1	Name these vessels that carry blood to the heart.	**vein**s
2	These two veins, the superior and the inferior, are large veins that bring blood to the right side of the heart.	**vena**e **cava**e [**VEE-nee KAY-vee** or **VEE-nuh KAY-vuh**]
3	Give the Latin name for the innermost layer of a vein.	tunica **intima**

Extra Question #7: Science

10 points per part

	Identify these body parts located near the throat:	
1	This tube brings food from the throat to the stomach.	**esophagus** [**eh-SAH-fuh-guss**]
2	This projection at the back of the soft palate of the mouth hangs down into the throat.	(palatine) **uvula** [**YOOV-yoo-luh**]
3	This enlarged lymphatic tissue is sometimes called the pharyngeal [fair-un-JEE-ul] tonsil. It is higher and further back than what is normally called the tonsils.	**adenoid**s

Extra Question #8: Social Studies

10 points per part

	Name these ships and a submarine from U.S. history:	
1	This English ship reached Cape Cod in 1620.	the ***Mayflower***
2	This ship, nicknamed *Old Ironsides*, is now used as a museum. It defeated several British ships during the War of 1812.	USS *Old **Constitution***
3	This Confederate submarine sank twice during construction and a final time after its only success. When it sank the USS *Housatonic* [hoo-suh-TAH-nik], it became the first submarine to sink a warship.	*H. L.* ***Hunley*** [accept CSS *H. L.* ***Hunley***]

Extra Question #9: Social Studies

10 points per part

	This place was attacked on December 7, 1941.	
1	Name this place on the island of Oahu in Hawaii, where four U.S. ships were sunk and four others were damaged.	**Pearl Harbor**
2	Complete the quote: President Franklin Roosevelt addressed Congress the next day with a speech that began "Yesterday, December 7, 1941 a date which will live in…"	a date which will live in **infamy**
3	Name both of the ships that were sunk at Pearl Harbor and never completely raised. The *Oklahoma* was raised but never rebuilt.	USS ***Arizona*** and USS ***Utah*** [either order]