Question #1: Fine Arts – Composers of the Modern Era

10 points

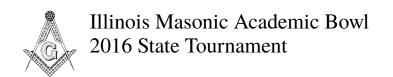| One piece by this composer repeats a high F sharp, B, F sharp chord. He composed the incidental music for Mikhail Lermontov's [lair-MAHN-tawff's] play *Masquerade*. In this composer's last ballet, based loosely on ancient history, Phrygia [FRIJ-ee-uh] is rescued by the title character. In another ballet by this composer, the title character falls in love with Kazakov after her husband is caught smuggling. One of his songs was the Armenian anthem when Armenia was part of the Soviet Union. Name this composer whose ballet *Gayane [gah-YAH-nuh]* features the "Sabre Dance".	Aram **Khachaturian** [ka-chuh-TUR-ee-an]

Question #2: Science – Physics

10 points

This equation can be combined with the London equation to determine the London penetration depth. Taking the divergence of this equation yields the continuity equation. Because the original form of this equation did not work with capacitors, a term symbolized *J* was introduced to it; that term is equal to the time derivative of the *D*-field, is also called the displacement current, and was added by James Clerk ["Clark"] Maxwell. This equation states that the path integral of the magnetic field in a loop is proportional to the current enclosed. Identify this equation, one of Maxwell equations, named for the Frenchman whose name is also given to the SI unit for electrical current.	**Ampère**'s (circuit) law [or the **Ampère**-Maxwell law]

Question #3: Social Studies – U.S. History

10 points

In the Five-Power treaty, this country was the 3 in the five-five-three ratio regarding tonnage. This country apologized to the United States during the 1930s for slapping a diplomat in the Allison incident and destroying a gunship in the *Panay* incident. Its capital was bombed during the Doolittle raid. This country stopped emigration to the U.S. in the 1907 Gentleman's Agreement. Poston, Tule Lake, and Manzanar housed people from this country living in the United States when they were interned during World War Two. Name this country on which the U.S. dropped two atomic bombs.	**Japan** [or **Nihon**-koku or **Nippon**-koku or Empire of **Japan** or Dai **Nippon** Teikoku or (Greater) **Japanese Empire**]

Question #4: Literature – Mythology

10 points

The god of these creatures saved the sons of Horus, and that god's worship was centered at Faiyum [FY-yoom]. Messengers of Set took the form of this animal. Neith [nayth], the "Nurse of" them, was the mother of the god of these creatures. When retrieving the body parts of Osiris, Horus took the form of this animal. Sobek was depicted with the head of one of these animals. In *Just So Stories*, one of these animals made elephants have a long nose. Roald Dahl wrote a story about an enormous one that wants to eat children. Name this amphibious animal that, in *Peter Pan*, swallowed a clock and chases Captain Hook.	**crocodile**s [do not accept "alligator(s)"]

Question #5: Science – Health

10 points

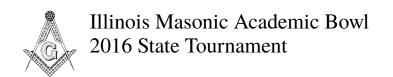|	
An epidemic of this disease in Australia in 1940 led to the discovery that it causes congenital cataracts. This disease was blamed for thousands of encephalitis [en-SEF-uh-"LIE"-tiss] cases in the United States during the 1960s, before its vaccine became common. This disease's symptoms include a rash that begins at the face. One nickname for it is based on the fact that the rash lasts three days. Another nickname is based on the nationality of Daniel Sennert, who first described it. Name this disease whose vaccine is usually combined with those for mumps and measles, providing the 'R' in the MMR vaccine.	**rubella** [prompt on **German measles** or **three-day measles**]

Question #6: Literature – World Literature

10 points

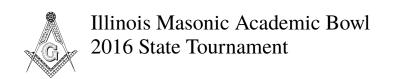|	
This character is sometimes referred to as though his last name is Zancas. This illiterate character often dictates letters to his wife. Eventually given control of the island of Barataria, he refused to help Ricote [ree-KOH-tay]—a Morisco—recover a lost treasure as it would be treason. This husband of Teresa Cascajo [kahss-KAH-hoh] is promised an island, and knows the truth about Aldonza Lorenzo, whom his boss calls Dulcinea [dul-see-NAY-uh]. He rides a donkey named Dapple. Name this squire to Don Quijote [dohn kee-HOH-tay].	**Sancho Panza** [accept either]

Question #7: Social Studies – World History

10 points per part

	A successor of this structure spanned between the River Clyde and the Firth of Forth.	
1	Name this structure targeted during the Barbarian Conspiracy. It separated Caledonia from the rest of the Roman Empire.	**Hadrian's Wall** [or **Vallum Aelium**; prompt on **Wall**]
2	At the time of construction, Hadrian's Wall was meant to keep this tribe out of Roman Britain. Their namesake stones often features inscriptions written in their "ogam" language.	**Pict**s [accept **Cruithne** or **Cruthin** people; prompt on **Scots**, do not accept "Irishmen"]
3	Hadrian and his successor Antoninus Pius were part of this group of Roman rulers that ruled from 96 to 180 CE.	**Five Good** Emperors [prompt on **Nerva-Antonine** dynasty]

Question #8: Social Studies – World History

10 points per part

	Isaac Komnenos [KOHM-nuh-nohss] was overthrown by this leader after he made the mistake of imprisoning this man's wife, Berengaria of Navarre [bair-en-GAIR-ee-uh "of" nuh-VAR].	
1	Name this leader falsely accused of involvement in the death of Conrad of Montferrat [mawnt-fair-ah]. He was later captured by Leopold V [5] of Austria.	**Richard I** [accept **Richard** the **Lionheart**ed or **Richard Coeur de Lion**; prompt on **Richard**]
2	Richard Lionheart's rescue of his wife from Cyprus occurred during this expedition, which also saw the death of Frederick Barbarrosa.	**Third Crusade** [prompt on **King's Crusade** or **Crusade**s]
3	The Third Crusade was ended via the Treaty of Jaffa, which was signed by this founder of the Ayyubid ["EYE"-yoo-bid] dynasty.	**Saladin** [or **Salah ad-Din** Yusuf ibn Ayyub]

Question #9: Science – Biology

10 points per part

During this process in humans, the three tissue layers begin to differentiate.	
1 Identify this process that develops a namesake structure from the blastula when it folds into itself, forming a pore which later becomes the digestive cavity.	**gastrula**tion [or **gastrulating**; do not accept "blastulation" or "blastulating"]
2 The nervous tissue is oddly not derived from mesoderm, but from this outer layer that forms the skin, as it folds into the gastrula to form the neural crest.	**ectoderm**
3 In addition to the neural crest, the ectoderm contains cells that develop into this structure, which in turn develops into the brain and spinal cord. Defects in this structure cause spina bifida [SPIE-nuh BI-fi-duh].	**neural tube** [prompt on **tube**, **neural groove**, **neural plate**, or **medullary groove**]

Question #10: Science – Biology

10 points per part

This woody tissue is composed of tracheids [TRAY-kee-idz] and vessel elements.	
1 Name this plant tissue that transports water, in contrast to the nutrient-carrying phloem ["FLOW"-im].	**xylem** [ZYE-lim]
2 Xylem and phloem are derived from the vascular cambium, which is a type of this undifferentiated plant tissue. The apical [AY-pi-kul] portion of this tissue is responsible for leaf and root growth.	**meristem**
3 In plants, this ground tissue becomes the soft tissue found in leaves. With animals, this term refers to functional organs, opposed to the structural stroma.	**parenchyma** ["PAIR-in"-KY-muh]

Question #11: Literature – U.S. Literature

10 points per part

	In this play, "strike one" stemmed from a fight regarding one person's desire to play football, while "strike two" stemmed from a fight after one protagonist revealed his infidelity.	
1	Name this play in which Troy Maxson fought to become a garbage truck driver	***Fences***
2	*Fences* was written by this author of *Ma Rainey's Black Bottom* and *The Piano Lesson*.	August **Wilson** [or Frederick August **Kittel** Jr.]
3	*Fences* is part of a ten-play cycle named after this city.	**Pittsburgh**, Pennsylvania [accept *The **Pittsburgh Cycle***]

Question #12: Literature – U.S. Literature

10 points per part

	His biography of Abraham Lincoln's "War Years" won him a Pulitzer Prize.	
1	Name this poet who described bodies piling high in "Grass." In another poem, he wrote of fog coming in on little cat feet.	Carl (August) **Sandburg**
2	The speaker in this Sandburg poem has seen "the marks of wanton hunger" and "the gunman kill and go free to kill again".	"**Chicago**"
3	Most of the stories in this Carl Sandburg collection are told by the Potato Face Blind Man, a resident of the town of Liver-and-Onions.	***Rootabaga*** *Stories*

Question #13: Fine Arts – Art History

10 points per part

	Though it was not painted by him, this painting shows the artist Gustave Caillebotte [kye-"boat"] sitting backwards in a chair.	
1	Name this painting that shows the artist's future wife, Aline Charigot [ah-leen shar-ee-goh], playing with a dog at a table.	**Luncheon of the Boating Party** [or Le **dejeuner des canotiers**]
2	*Luncheon of the Boating Party* was painted by this Impressionist. His other works include *Girl With a Hoop* and a portrait of Claude Monet [moh-nay] holding a brush.	Pierre-Auguste **Renoir**
3	Renoir also made portraits of this other Impressionist, who painted *Flood at Port-Marly* and several works set at Hampton Court.	Alfred **Sisley**

Question #14: Fine Arts – Art History

10 points per part

	There are two places by this name, one in Spring Green, Wisconsin, and the other in Scottsdale, Arizona.	
1	Name these homes and architecture studios that share a Welsh name.	**Taliesin** [tah-lee-ESS-in] [accept **Taliesin East** and **Taliesin West**]
2	The Taliesin studios were designed by this architect, who also designed the Robie House and Fallingwater.	Frank Lloyd **Wright** [or Frank Lincoln **Wright**]
3	Wright designed this company's headquarters in Racine [ruh-SEEN], Wisconsin.	**Johnson** Wax Company [or S. C. **Johnson** & Son]

Question #15: Miscellaneous – Journalism

10 points

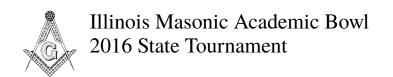| In October 2015, this person caused controversy by tweeting a suggestion that Ben Carson would be the first "real black President". This person was attacked with a pie during the Leveson inquiry, which stemmed from allegations that several of his employees engaged in phone hacking. In September 2015, one of his companies purchased a majority stake in *National Geographic*. This Australian founded a cable news channel whose shows include *The O'Reilly Factor* and *Hannity*. Name this founder of News Corporation and Fox News.	(Keith) Rupert **Murdoch**

Question #16: Social Studies – Religion

10 points

This office's insignia includes gold and silver keys held together by a red cord. When the holder of this job dies, a piece of jewelry is destroyed with a silver hammer after the death is confirmed by tapping him on the forehead with that hammer. The holder of this office used to be the only person to wear a pallium, but he now can confer them to other people. Mehmet Ali Agca [AH-jah] tried to assassinate the holder of this office in 1981. This person wears the Ring of the Fisherman, commemorating the first holder of this job, St. Peter. White smoke signals the selection of a new one. Name this leader of the Roman Catholic Church.	**Pope** [or **Pontiff** (of Rome); or **Pontifex Maximus**; or **Bishop of Rome**]

Question #17: Mathematics – Math Concepts

10 points

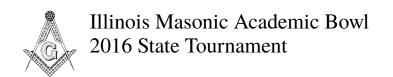| A tangential quadrilateral is this type of shape if and only if the products of its opposite side lengths are equal. When one of these quadrilaterals has three interior angles of 72 degrees, it can be combined with a dart in Penrose tiling. When these shapes have opposite right angles, they are cyclic, meaning that they have circumcircles. Exactly one of the diagonals of these shapes is the perpendicular bisector of the other one. Name this type of quadrilateral, also called a deltoid, in which there are two pairs of *adjacent* congruent sides.	**kite** [accept **deltoid** before it is mentioned]

Question #18: Literature – Grammar/Usage

10 points

Richard Rorty wrote a book about philsophy's turn towards this field of study. Randy Harris wrote a book about an academic war in this field, which featured George Lakoff and John Ross on one side. Charles Bally and Albert Sechehaye [SESH-uh-hay] complied a key text in this field based on the lectures of Ferdinand de Saussure [saw-sur], which argued for synchronic analysis within it. The Sapir-Whorf hypothesis is also known as the principle of relativity of this field, and states that how people communicate influences how they see the world. Name this study of the structure and origin of languages.	**linguistic**s [prompt on answers mentioning **language**s]

Question #19: Social Studies – U.S. History

10 points

Richard Lawrence was beaten due to his failed attempt to assassinate this man. This man killed Charles Dickinson after being shot in the chest in a duel. This person accepted the surrender of William Weatherford following a resounding victory that put down the Red Stick resistance at the Battle of Horseshoe Bend. Francis Preston Blair and Amos Kendall were part of this person's group of informal advisers formed after the Peggy Eaton Affair. Name this man who formed the Kitchen Cabinet and got revenge for the "Corrupt Bargain" by defeating John Quincy Adams in the 1828 presidential election.	Andrew **Jackson**

Question #20: Science – Chemistry

10 points

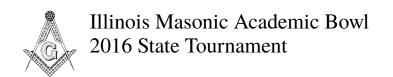|	
Defects in these molecules appear as D-bands in Raman [RAM-un] spectra. These molecules can contain Stone-Wales defects. One type of these molecules can come in chiral [KYE-rul], armchair, or zig-zag conformations. One type of these molecules can be single-walled or multi-walled, and resembles a rolled-up graphene sheet, while another was prepared by firing a laser at graphite. These molecules have extremely high tensile strength and are named for an architect whose designs resembled geodesic domes. Name this class of molecules that includes carbon nanotubes and a 60-carbon soccer ball-shaped molecule.	**fullerene**s [accept buckminister**fullerene**; accept carbon **nanotube**s before "nanotubes"; prompt on **buckyball**s; prompt on answers mentioning **carbon** allotropes]

Question #21: Mathematics – Algebra

10 points per part

In 1900, this mathematician presented 23 unsolved problems that he thought mathematicians should focus on during the 20th century.		
1	Name this mathematician who also introduced the paradox of the Grand Hotel.	David **Hilbert**
2	The paradox of the Grand Hotel addresses sets of this type. This specific kind of infinity is sometimes represented by aleph [AH-lef] null, and sets with this size can be put in one-to-one correspondence with the natural numbers.	**countably infinite** sets [accept **countable** sets or **enumerable** sets or **denumerable** sets]
3	One of Hilbert's Problems involved sphere packing. What is the volume of a sphere with a radius of one?	**four-thirds pi** [accept equivalents such as **four pi over three**]

Question #22: Mathematics – Algebra

10 points per part

This form of division is straightforward when dividing by a first degree binomial whose first term is x.		
1	Name this alternative to long division of polynomials, which begins by placing the number subtracted from x in the upper left corner.	**synthetic** division
2	Synthetic division is often used to find roots of polynomials. Another tool used is this mathematician's rule of signs, which gives bounds on the possible number of positive and negative roots.	René **Descartes** [reh-nay day-kart]
3	Divide the quantity x cubed plus two x squared minus three, end quantity, by the quantity x minus one.	$x^2 + 3x + 3$ [or equivalents]

Question #23: Literature – Mythology

10 points per part

	In Aztec myth, those who traveled to the east and west parts of this region accompanied the sun.	
1	Name this region whose nothern section is ruled by Mictlantecuhtli [MIKT-lahn-teh-KOOT-lee], who sat on a throne surrounded by spiders and owls. Humans traveling to it had to endure barrages of arrows and crashing mountains.	the Aztec **underworld** [accept Aztec **hell**; prompt on **Mictlan**]
2	After returning from the underworld with bones, Quetzalcoatl [KET-sul-koh-AH-tul] ground them up and mixed them with this substance to make a new race of humans.	**blood**
3	Mictlantecuhtli's [mikt-lahn-TEK-oo-tlee's] headdress is made of these things taken from owls. Coatlicue [KWAHT-lee-kway] became pregnant after stuffing a ball of them into her bosom.	**feather**s

Question #24: Literature – Mythology

10 points per part

	This king chained Thanatos to a tree and dodged death by instructing Merope [mur-OH-pee] to not place an *obol* under his tongue.	
1	Name this Corinthian king who was eventually given an unending task by Zeus.	**Sisyphus**
2	Proteus attempted to engineer the death of this grandson of Sisyphus by having Iobates ["eye"-AH-buh-teez] put him to death. Instead, he slew the Chimera [ky-MAIR-uh].	**Bellerophon** [beh-LAIR-oh-fahn]
3	Bellerophon's cousin Melampus gained the ability to communicate with animals after sparing two of these creatures that were about to be killed.	**snake**s [accept **serpent**s]

Question #25: Social Studies – U.S. Government

10 points per part

	In September 2014, this agency went after Corinthian Colleges over its recruiting practices.	
1	Name this federal organization tasked with helping borrowers understand the terms of their debt, and protecting them against unfair practices by lenders.	**Consumer Financial Protection Bureau** or **CFPB**
2	This Massachusetts Senator was an early champion of the CFPB, but she was passed over in favor of Richard Cordray to chair it.	Elizabeth (Ann **Herring**) **Warren** [accept either underlined name]
3	The law that created the CFPB was named for Michigan Senator Chris Dodd and this gay former Congressman from Massachusetts.	Barney **Frank**

Question #26: Social Studies – U.S. Government

10 points per part

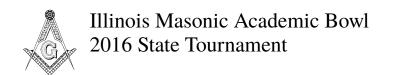|	Shaun McCutcheon won his suit against this organization in a 2014 Supreme Court case.	
1	Name this group of six presidential appointees, tasked with regulating political campaigns.	**Federal Election Commission** or **FEC**
2	The Federal Election Commission also lost a Supreme Court decision against this group that produced *Hillary: The Movie*. That 2010 decision in favor of this group makes it easier for organizations to spend money on campaigns.	**Citizens United**
3	The Citizens United decision limited the impact of a campaign finance reform law sponsored by John McCain and this senator from Wisconsin who is trying to regain his seat in 2016.	Russell Dana "Russ" **Feingold**

Question #27: Science – Physics

10 points per part

	This relationship cannot be held by events that are separated by a space-like interval.	
1	Name this relationship between two events in which one is the result of the other.	**causal**ity [accept forms of **cause**]
2	If two particles are in a space-like interval, there exists some reference frame where they have this temporal relationship. This cannot happen in a time-like interval.	**simultaneity** [or **simultaneous**; accept any answer containing the idea of happening at the **same time**]
3	In Minkowski [meen-KAWFF-skee] space, the slope between space-like and time-like intervals is this value, the so-called "speed limit of the universe".	**speed of light** in a vacuum [or $\underline{c_0}$]

Question #28: Science – Physics

10 points per part

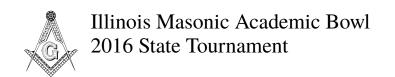|	Gerard 't Hooft [GAIR-ard et HOH-uft] and Alexander Polyakov theorized a type of this particle.	
1	Name this hyptothetical particle that would be an isolated source of magnetic field.	magnetic **monopole**
2	This man's namesake law of magnetism states that monopoles cannot exist, in a form analogous to that of his law that the electric flux through some closed surface is proportional to the charge enclosed by the surface.	(Johann) Carl Friedrich **Gauss** [rhymes with "house"]
3	Paul Dirac [duh-rahk] showed that the existence of magnetic monopoles would imply the quantization of this quantity. It is debatable whether this quantity is quantized at the value found in Millikan's oil-drop experiment or at one-third of that value.	electric **charge**

Question #29: Literature – U.S. Literature

10 points

In one poem, this writer contrasted strong things like "feeding a wife" and "rent" with "Dream". One of her poetry collections features sections titled "Noted from the Childhood and Girlhood" and "The Womanhood". This writer said "You can never be forgotten" about Mayor Harold Washington. Her first collection, set on the South Side of Chicago, was *A Street in Bronzeville*. This author set one poem at the Golden Shovel, where seven pool players "lurk late" and "strike straight". Name this author of "Annie Allen" and "We Real Cool".	Gwendolyn (Elizabeth) **Brooks**

Question #30: Mathematics – Math Concepts

10 points

The test named for this quantity says that if this quantity does not equal zero for a sequence, then its associated series cannot converge, but that test named for this concept can only prove that a series *does* converge for alternating sequences. Examples of these quantities involving indeterminate forms can be evaluated using derivatives according to l'Hôpital's [loh-pee-tahl'z] rule, and derivatives themselves are defined using this operation for f of x minus f of a, all over x minus a, as x approaches a. For a continuous function, this quantity must exist and equal the output of the function. Name these values that are approached by a function.	**limit**s

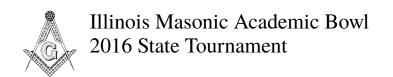## Question #31: Social Studies – World History

10 points

In 2005, this country launched Operation Restore Order, which targeted illegal settlements. In 1992, the "willing buyer, willing seller" provision was removed from its land reform agreement, which gave the government the power to force whites off of farmland. Following an electoral victory by the Movement for Democratic Change, its president entered into a power-sharing agreement with Morgan Tsvangirai [CHANG-ih-"rye"]. This country suspended its dollar in 2009 when it became nearly worthless from hyperinflation. Name this country led by Robert Mugabe [moo-GAH-bay].	(Republic of) **Zimbabwe**

Question #32: Science – Biology

10 points

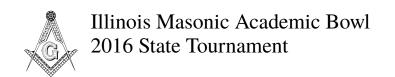|	
The protein ABCD1 [A-B-C-D-"one"] is responsible for transporting fatty acids to this organelle, and mutations in that protein can result in adrenoleukodystrophy [uh-DREE-noh-LOO-koh-DISS-troh-fee]. For fatty acids with chains too long for mitochondria ["my-toe-CON"-dree-uh] to process, beta-oxidation begins in this organelle. A non-hemoglobin enzyme in this organelle contains four heme [heem] groups and is known for its extremely high turnover. This organelle, which is affected by Zellweger syndrome, contains catalase ["CAT-uh-lace"], which breaks down a reactive oxygen species. Name this organelle responsible for the breakdown of the radical H_2O_2 ["H two O two"].	**peroxisome**(s)

Extra Question #1: Mathematics – Math Concepts

10 points

One example of this concept is named after the fictional Colonel Blotto, while another type is classified as either noisy or silent. A Hicks-optimal outcome in one of these things maximizes the total output and is always Pareto-optimal. When there is no reason for any of the inputs to one of these things to change, which always occurs for some mixed strategies, then this has achieved a Nash equilibrium. When one person's loss is another's gain, these are called zero-sum. Name these strategic situations often involving players making a decision about cooperation, such as the prisoner's dilemma.	**game**s [or **game** theory]

Extra Question #2: Literature – British Literature

10 points

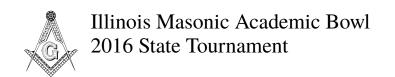|	
In one of this writer's poems, the speaker claims his love will last "while the sands o' life shall run" and will outlast "rocks melting with the sun". Songs by this poet such as "Had I A Cave" are sung at events in late January to commemorate his life, called his namesake "suppers". He wrote of a creature "shunned by saint and sinner" that was observed "on a lady's bonnet at church". The narrator "will come again, my love, tho it were ten thousand mile" in this poet's "My Love is Like a Red, Red Rose". Name this author of "To a Mouse", a Scottish poet who wrote the words to "Auld Lang Syne."	Robert **Burns**

Extra Question #3: Fine Arts – Classical Music & Opera

10 points

When he died, Béla Bartók was working on a concerto for this instrument, eventually finished by Tibor [TEE-bor] Serly and performed by William Primrose. This is the main instrument in *Flos Campi [KAM-pee]* by Ralph [rayff] Vaughan Williams. Alessandro Rolla was falsely credited for writing the first concerto for this instrument years after Georg Philipp Telemann wrote one. The lowest note this instrument can play is the C below middle C. Music for this string instrument is commonly written in the alto clef. Name this instrument that joins two violins and a cello to form a string quartet.	**viola**

Extra Question #4: Science – Chemistry

10 points

This role, which is not catalysis, is served by zeolites [ZEE-oh-"lights"] placed in an aquarium. A glass frit may be used in this process. A flask used in a setup for this process has an opening near the top to connect to a vacuum. That vacuum setup commonly uses sintered crucibles or Büchner [BOOK-ner] funnels to facilitate this process. Typically some sort of porous medium is used in this process, such as a namesake type of paper commonly used when using gravity for this process. This method is commonly used to purify water in homes. Name this process used to remove solids from a liquid.	**filtration** [accept word forms such as **filter**ing]

Extra Question #5: Social Studies – World History

10 points

In this city, an intellectual group called the White Rose opposed Adolf Hitler, but its leaders were beheaded. This city was the main site of Operation Hummingbird, the planned massacre of a number of Brownshirts. This major city is only 10 miles from the Dachau [DAH-"cow"] concentration camp used by the Nazis. An agreement signed in this city in 1938 led Neville Chamberlain to proclaim "peace in our time". The Black September group killed 11 Israeli athletes during the 1972 Summer Olympics in this city. Name this site of Adolf Hitler's failed Beer Hall Putsch, the capital of Bavaria.	**Munich** [or **München**; accept **Minga**]

Extra Question #6: Science – Chemistry

10 points per part

	This law is used to determine the purity of a solution of DNA by observing values at 260 and 280 nanometers.	
1	Name this law central to spectrophotometry [SPEK-troh-foh-TAH-mih-tree], which states that concentration is proportional to absorbance.	**Beer**'s law [or **Beer-Lambert** law]
2	In one formulation of Beer's law, this quantity is multiplied by path length times concentration. This quantity is represented by the Greek letter epsilon.	molar **absorbtivity** or the **extinction** coefficient [or **molar attenuation** coefficient]
3	When using Beer's law, typically this value is initially measured. The opposite of the logarithm of this quantity is used to find absorbance.	(percent) **transmittance**

Extra Question #7: Science – Chemistry

10 points per part

	This process involves the formation of a namesake "cage" of molecules.	
1	Name this specific process, sometimes called dissolution or dissolving, in which a solute associates with molecules of solvent.	**solvation** [accept **solvating**]
2	A model of solvation is named for Max Born, who, along with this scientist, names a cycle that uses Hess's law to calculate various enthalpies. This scientist invented a process for the production of ammonia.	Fritz **Haber**
3	The affinity that polar molecules have for polar solvents, and that nonpolar molecules have for nonpolar solvents, is commonly remembered using this three-word phrase.	**like dissolves like**

Extra Question #8: Literature – World Literature

10 points per part

	Her father's looming presence is symbolized by gloves and boots, and her mother told her to "think like and act as a man."	
1	Name this character who, after an affair with Jean, took the valet's razor and killed herself.	Miss **Julie** [or Froken **Julie**]
2	This Swedish author wrote *Miss Julie*.	(Johan) August **Strindberg**
3	Jean was engaged to Christine, who held this job. In *To Kill a Mockingbird*, Calpurnia had this job in the Finch household.	**cook** [accept **chef**]

Extra Question #9: Literature – World Literature

10 points per part

	A mistake in his position on Frou-Frou's saddle leads to this military officer breaking his leg.	
1	Name this character who rejected the love of Kitty. Kitty turned down a proposal because of her love for this man.	Count **Alexei** (Kirilich) **Vronsky** [accept either underlined name]
2	This lover of Count Vronsky is the title character of the Leo Tolstoy novel that she and Vronsky appear in.	**Anna** **Karenina** [accept either]
3	Kitty eventually came around and married this farmer. At one point, the urge to commit suicide within this man was so strong that he made a point of hiding knives and guns.	**Konstantin** **Levin** [accept either]