

## Round 6 1st Section Toss-up Questions

#### **Question #1: Literature – U.S. Literature**

10 points

Mary tells the protagonist of this novel to eat his	Native Son
chicken, but the organic functions of his body had	
altered. In this novel, Gus devises a plan to rob Blum's	
delicatessen, and the body of Bessie Mears is disposed	
of even though there is money in the pocket of her	
dress. Bessie is killed in this book by the same man	
who uses a pillow to suffocate Mary Dalton and then	
decapitates her. The protagonist of this novel, who lives	
in poverty in Chicago, is Bigger Thomas. Name this	
novel by Richard Wright.	

## **Question #2: Mathematics – Math Concepts**

The Master Theorem is used to solve recurrence	<u>algorithm(s)</u>
relations that arise when analyzing these mathematical	
things. George Dantzig developed one of these things	
named for simplexes and used on linear programming	
problems. The Church-Turing thesis essentially says	
that the formal definition of these things is the same as	
the intuitive definition. These concepts are often	
presented in pseudocode, and if they take locally	
optimal actions, they are called greedy. Name this type	
of formal step-by-step procedure used to solve a	
problem.	



## Round 6 1st Section Toss-up Questions

## **Question #3: Social Studies – World History**

10 points

This person was the namesake of a German Marxist	<u>Spartacus</u>
organization founded by Rosa Luxembourg. This	
leader's forces used ropes and vines to descend onto	
Gaius Claber's troops. To avenge the death of his	
colleague Crixus, this man paired off his prisoners and	
had them fight each other to the death. He was killed at	
the Battle of Siler River during the Third Servile War,	
and his forces were crucified along the Appian Way.	
Crassus led the effort to stop his forces, but Pompey got	
the glory. Name this slave who led a revolt against the	
Roman Empire.	

## **Question #4: Science – Biology**

Along with a lactone ["LACK-tone"], this molecule is	<b>NADPH</b> [or <b>nicotinamide</b>
formed through the action of G6PD [G-"six"-P-D].	adenine dinucleotide
This compound allows glutathione reductase	phosphate; do not prompt
[GLOO-tah-"THIGH-own" ree-DUK-tayss] to act on	on "NAD" or "NADH"]
the antioxidant glutathione. Two molecules of this	
compound are formed during the oxidative	
["OX"-ih-day-tiv] phase of the pentose phosphate	
pathway. A ferredoxin [fair-uh-"DOCK-sin"] in	
photosystem I [1] forms this compound during the	
light-dependent reactions of photosynthesis, and it is	
later used as a reducing agent in the Calvin cycle.	
Name this dinucleotide ["die"-NOO-klee-oh-"tide"]	
that can be formed by phosphorylating	
[fahss-FOR-ih-lay-ting] NADH [N-A-D-H].	



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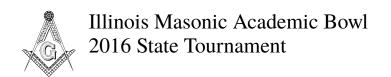
#### **Question #5: Literature – British Literature**

10 points

In this play's prologue, the messenger describes how	The Summoning of
the soul weeps while the body lies in clay. In this	<u>Everyman</u>
English-language drama, the Lord is referred to as	
"Adonai", and Beauty asks whether she should be	
smothered before leaving. In seeking out Confession,	
Knowledge points this work's protagonist towards the	
House of Salvation. After this play's protagonist is	
deserted by Five Wits, he believes that he is completely	
forsaken, and he learns that when the time comes, only	
good deeds will be seen by God. Name this medieval	
morality play.	

## **Question #6: Miscellaneous – Sports**

The Gleneagles Agreement was violated when this	rugby (union)
sport was played during a "Springbok Tour" of South	
Africa. Eric Rush and Jonah Lomu starred in this sport	
for New Zealand. At the 2015 World Cup in this sport,	
Richie McCaw was on the team that won the William	
Webb Ellis Cup. The "sevens" variation of this sport	
was accepted for the 2016 Rio Olympic Games. In this	
sport, throwing the ball forward is illegal, and a try is	
worth five points. When play stops, it can be restarted	
with a scrum. Name this full-contact sport, a	
predecessor to football.	



## **Question #7: Mathematics – Probability**

10 points per part

The	se stochastic ["stow-CAST"-ik] processes are	
nam	ned for a Russian mathematician.	
1	Name these processes that may use matrix multiplication to demonstrate transitions from one state to the next.	Markov chains or Markov processes
2	In a transition matrix for a Markov chain, the numbers in each row must add up to this value.	<u>one</u>
3	A transition matrix in a Markov chain has a top row of 0.6, 0.4 and a bottom row of 0.1, 0.9. If the initial state is given by the column matrix with 0.5 on top and 0.5 on the bottom, what is the probability of the top state after one step?	0 <u>.35</u> [or <u>7/20</u> or <u>35%</u> ]

## **Question #8: Mathematics – Probability**

This	s mathematical concept is used to model Brownian	
mot	ion.	
1	Name this process in which the next direction to move is chosen without any pre-existing pattern.	random walk [accept word forms]
2	If an object goes up half the time and down half the time, what is the probability that it will end up in its original position after four evenly spaced steps?	<u>3/8</u> [or 0 <u>.375</u> ]
3	If an object goes up half the time and down half the time, what is the probability that it will end up exactly one step away from its original position after four evenly spaced steps?	<u>0</u> [accept answers mentioning that the specified result is <u>impossible</u> ; do not accept "no answer"]



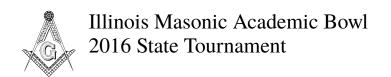
## **Question #9: Social Studies – Geography**

10 points per part

	s region's name came from a European folk tale in ch its inhabitants were giants.	, ,
1	Name this region in South America with many plateaus. The Mapuche [mah-POO-chay] expanded into this region during araucanization [ah-RAW-kah-nih-ZAY-shun].	<u>Patagonia</u>
2	This island group just south of Patagonia is where the HMS <i>Sheffield</i> was sunk during a 1982 conflict. Argentinians claim it belongs to them, and call it the Islas Malvinas [EES-lahs mahl-VEE-nahs].	Falkland Islands or Falklands
3	Patagonia is separated from Tierra del Fuego by this channel of water. The Evangelistas Lighthouse points eastward travelers to the entrance to it, and the port Punta Arenas, Chile is on it.	Strait(s) of Magellan [or Estrecho(s) de Magallanes]

## **Question #10: Social Studies – Geography**

The	Fulani and the Dogon [DOH-gon] are among this	
region's indigenous peoples.		
1	Name this transition region that includes the cities	<u>Sahel</u>
	of Dakar [duh-KAHR], Niamey [nee-AH-may],	
	and Bamako [BAH-muh-koe].	
2	The Sahel is just south of this desert, the largest by	Sahara Desert
	area in the world.	
3	The 2010 Sahel famine was worst near this river,	Senegal River
	which forms the border between its namesake	
	country and Mauritania [mor-uh-TAY-nee-uh].	



## **Question #11: Science – Physics**

10 points per part

For	a block on an inclined surface, the coefficient for	
the s	static form of quantity is equal to the tangent of	
the a	angle of the incline.	
1	Name this force that opposes motion.	<b>friction</b> (al force)
2	Friction can cause the buildup of charge in	<u>triboelectric</u> effect or
	materials that contact in this effect. Static	<u>triboelectric</u> ity
	electricity typically is caused by this effect.	
3	A friction factor used in fluid mechanics is named	Henry <b>Darcy</b>
	for this French physicist. That factor, which varies	
	inversely with the Reynolds number, is used in an	
	equation named for this person and Julius	
	1	
	Weisbach ["VISE"-bahk]	

## **Question #12: Science – Physics**

Fo	or a solid sphere of uniform density, this quantity	
eq	uals two-fifths times the mass of the sphere times	
th	e sphere's radius squared.	
1	Name this quantity, the rotational analog of mass.	(first mass) moment of
		inertia [do not prompt on
		partial answers]
		-
2	The moment of inertia applies to these kinds of	<u>rigid</u> bodies
	bodies that do not deform. In other words, the	
	distance between any two points in these idealized	
	solids does not change.	
3	The moment of inertia can be represented as a	principal axes [or principal
	symmetric matrix. In that representation, the	moments of inertia]
	moments of inertia are referred to by this term.	
	This adjective also describes the axes around which	
	those moments of inertia apply.	



#### **Question #13: Literature – World Literature**

10 points per part

The	official lyrics to the song "Guantanamera	
[GW	/AHN-tahn-ah-MAIR-ah]" were adapted from one	
of th	nis writer's poems.	
1	Name this author of the poetry collection <i>Versos</i>	José <u>Martí</u> (Pérez)
	Sencillos [VAIR-sohss sen-SEE-yohss], which	
	contains the poem "A Simple Man am I".	
2	José Martí was a strong advocate for the	(Republic of) <u>Cuba</u> [or
	independence of this Caribbean nation. The title of	República de <u>Cuba</u> ]
	an Enrique Flores-Galbis novel refers to the fact	
	that this country is 90 miles from Florida.	
3	Cuba's Alejo Carpentier [ah-LAY-hoh	magical realism [or
	kar-pen-tee-AIR] used this literary style in the	marvelous realism; accept
	novel The Kingdom of This World, and in the	word forms like magical
	foreword contrasted it with European surrealism.	<u>realist</u> ]
	This genre [zhahn-ruh] tells about fantastical events	
	in a matter-of-fact style.	

#### **Question #14: Literature – World Literature**

This	s novel features a sign writer-turned-journalist	
who	was born with six fingers and was trapped into	
mar	rying into the Tulsi [TOOL-see] family.	
1	Name this novel in which Mohan seeks to make a	A House for Mr. Biswas
	better life by obtaining the title property.	
2	This Trinidadian author of A House for Mr. Biswas	V(idiadhar) S(urajsprad)
	wrote of Salim's experiences in an African country	<u>Naipaul</u>
	in A Bend in the River.	
3	Naipaul's novel <i>In a Free State</i> starts on a boat	(Arab Republic of) Egypt
	going to this country, the home of Naguib Mahfouz	
	[na-GEEB mah-FOOZ].	



#### Round 6 **3rd Section Toss-up Questions**

#### **Question #15: Fine Arts – Classical Music & Opera**

10 points

A movement from this composer's first symphony, now often played as a separate piece, is called *Blumine* [bloo-MEE-nuh]. That symphony's last movement is labeled "Stormily agitated—Energetic". After his eighth symphony, this composer wrote a piece for two singers with six songs, starting with "The Drinking Song of Earth's Misery". Like Brahms, several of this composer's other early symphonies are considered expressions of the folk poems in *Des Knaben* Wunderhorn [dayss kuh-NAH-bin VOON-dur-"horn"]. Name this composer of "The Song of the Earth", whose eighth symphony is nicknamed—thanks to the large group required to play it—the "Symphony of a Thousand".

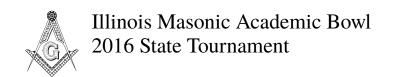
#### Gustav Mahler

#### **Question #16: Science – Chemistry**

10 points

This technique can only analyze transitions that change the dipole moment. Higher-resolution spectra generated from this technique have P and R branches due to rotations. Samples used in this technique are commonly placed on a salt plate. The rule of mutual exclusion states that transitions in centrosymmetric [SEN-troh-"symmetric"] molecules cannot be both Raman-active and active in this technique, which makes the two complementary techniques. Peaks in this technique are labeled using wavenumbers, and typically correspond to vibrational normal modes. Part of its output is in the fingerprint region. Name this form of vibrational spectroscopy, which uses a form of light with a longer wavelength than visible light.

**IR spec**troscopy [or **infrared spec**troscopy; accept just **IR** or **infrared** after "spectroscopy"; prompt on **spec**troscopy]



## Round 6 3rd Section Toss-up Questions

## **Question #17: Social Studies – U.S. History**

10 points

After this battle, Jesse Elliott was praised for	Battle of <b>Lake Erie</b>
encouraging other Americans to join the fighting, but	
was criticized for being slow to engage in action	
himself. William Powell painted another commander in	
this battle being rowed to the Niagara from the	
twice-captured <i>Lawrence</i> . This battle was fought near	
Put-In-Bay following the defeat of the <i>Queen Charlotte</i> .	
After this battle, William Henry Harrison was sent the	
message "We have met the enemy, and they are ours"	
by Oliver Hazard Perry. Name this naval battle of the	
War of 1812.	

#### **Question #18: Literature – World Literature**

Mahabharata [do not accept
"Bhagavad-Gita"]



### Round 6 3rd Section Toss-up Questions

#### **Question #19: Science – Astronomy**

10 points

The two scientists who independently discovered this process also developed a formula unrelated to it that finds atomic properties based on the number of protons and neutrons. In their honor, this can be called the Bethe-Weizsäcker [BEE-tuh "VISE"-zah-kur] process. In order, this process emits a gamma ray, positron, gamma ray, gamma ray, positron, and gamma ray. It converts four hydrogen nuclei into a helium nucleus and other particles. Though the proton-proton chain reaction is more common in the Sun, this fusion reaction is more common in larger stars. Name this cycle that uses its three namesake elements as catalysts.

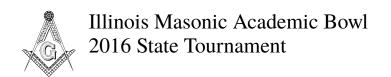
CNO cycle [or
carbon-nitrogen-oxygen
cycle; accept more specific
answers; accept
Bethe-Weizsäcker process
before it is mentioned]

#### **Question #20: Social Studies – Economics**

10 points

Jonathan Nitzan and Shimshon Bilcher proposed the differential accumulation theory to explain this phenomenon. Milton Friedman criticized Keynesian ["CANE"-zee-un] economics for causing this phenomenon and for its either/or approach to the underlying causes of this phenomenon. When this effect occurs, both of the quantities used to measure the misery index are high. Cited as a criticism of the Phillips curve, this phenomenon occurred in the 1970s thanks in part to OPEC instigating a supply shock in the market for oil. Name this phenomenon in which unemployment and inflation are both high.

**stagflation** [accept word forms; do not accept or prompt on "inflation" or "unemployment"]



#### **Question #21: Literature – U.S. Literature**

10 points per part

In th	nis play, Joseph Asagai—who plans to become a	
doct	or and move to Nigeria—is a suitor of Beneatha	
[buh	n-NEETH-uh].	
1	Name this play in which tensions come to a head	A Raisin in the Sun
	between the protagonist and Beneatha when a	
	\$6,500 investment in a liquor store business is	
	stolen.	
2	A Raisin in the Sun is by this African-American	Lorraine (Vivian)
	author, who also wrote The Sign in Sidney	Hansberry
	Brustein's Window.	
3	In A Raisin in the Sun, this representative of the	Karl Lindner [accept either]
	Clybourne Park Improvement Association fails to	_
	convince the Younger family not to relocate to his	
	neighborhood.	

#### **Question #22: Literature – U.S. Literature**

His	father struck it rich in Alaska, while Ben rode	
Afri	can diamonds to wealth.	
1	Name this former subordinate to Howard Wagner,	Willy Loman [prompt on
	who committed suicide by car crash.	<u>Loman</u> ]
2	Willy Loman is the protagonist of this Arthur	Death of a Salesman
	Miller play.	
3	Willy's son Biff had an opportunity to play football	Boston, Massachusetts
	in college, but lost interest in his summer school	
	math course after visiting Willy in this city.	



## **Question #23: Fine Arts – Art History**

10 points per part

In th	nis painter's Cat and Bird, the bird appears to be in	
the f	forehead of the cat, whose face takes up almost the	
enti	re painting.	
1	Name this Swiss-German painter who worked	Paul Klee ["clay"] [be
	closely with Wassily Kandinsky [VAH-sil-ee	generous with
	kan-DIN-skee] at the Bauhaus [rhymes with "cow	pronunciations]
	house"]. Several of his works include moon faces	
	or stick figures.	
2	This Paul Klee work shows several birds with open	Twittering Machine [or Die
	beaks on a hand crank.	Zwitscher-Maschine]
3	Klee joined the Blue Rider movement, which was	Franz Marc
	started by Kandinsky and this artist of Yellow Cow	
	and Fighting Forms.	

## **Question #24: Fine Arts – Art History**

This painter combined his love of jazz with his love of		
New	York City in his painting <i>Broadway</i>	
Boo	gie-Woogie.	
1	Name this Dutch De Stijl [shteel] painter.	Piet
		Mondrian [MON-dree-ahn]
2	Other than white and grey, what three colors are	red, yellow, and blue [any
	used in <i>Broadway Boogie-Woogie</i> ? Unlike	order]
	Mondrian's earlier works, there is no black.	
3	Mondrian worked on this painting similar to	Victory Boogie-Woogie
	Broadway Boogie-Woogie but on a tilted canvas.	
	He died before completing it.	



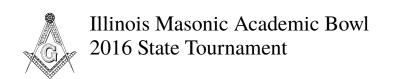
## **Question #25: Science – Chemistry**

10 points per part

The	fractional form of this technique is useful for	
sepa	arating compounds with very similar boiling	
poin	its.	
1	Name this technique of purifying a liquid by	distillation or distilling
	boiling it.	
2	It is difficult to separate components of one of these	<u>azeotrope</u> s
	mixtures, as their compositions do not change	[AY-zee-oh-"tropes"]
	when they boil.	
3	When performing an azeotropic distillation, one of	<b>Dean-Stark</b> apparatus [or
	these devices may be used along with a condenser	<b>Dean-Stark</b> trap]
	to capture water. This type of trap uses a	
	fractionating column and circulates cooling water.	

## **Question #26: Science – Chemistry**

The	first metallocene [meh-TAL-oh-seen] to be	
anal	yzed was a complex with a center of this metal.	
1	Name this element that is the primary component	iron [accept Fe]
	of steel and that is coated with zinc in	
	galvanization.	
2	Name that first metallocene, a sandwich complex	ferrocene ["FAIR-oh-seen"]
	whose structure was proposed by Robert Woodward	
	as an iron atom between two cyclopentadienyl	
	[sie-kloe-pen-tuh-DIE-ee-nul] ligands.	
3	Iron oxide and aluminum are the most common	<u>thermite</u>
	components of this highly exothermic mixture.	
	Steven Zumdahl stopped doing demonstrations	
	after students were injured when a beaker with this	
	chemical exploded.	



## **Question #27: Social Studies – U.S. History**

10 points per part

In re	esponse to this act's passage, the House of	
Burgesses approved the Virginia Resolves, the fourth		
of w	which outlined opposition to "taxation without	
repr	esentation".	
1	Name this 1765 act that regulated printed materials	Stamp Act of 1765
	in the American colonies to raise money for Great	
	Britain.	
2	John Dickinson, who represented this colony, wrote	Delaware
	the Declaration of Rights and Grievances as agreed	
	upon at the Stamp Act Congress. Peter Minuit	
	[min-YOO-it] founded New Sweden in this colony.	
3	Dickinson also wrote this document issued by the	Olive Branch Petition
	Second Continental Congress, which King George	
	III refused to read. Meant as a critique of	
	ministerial policy, this document led the King to	
	proclaim that the colonies were in a state of	
	rebellion.	

## **Question #28: Social Studies – U.S. History**

Also	o called "Men of Bronze," two of its members,	
Hen	ry Johnson and Needham Roberts, were awarded	
the (	Croix de Guerre [kroy de gair].	
1	Give the two-word nickname for the 369th Infantry	Harlem Hellfighters [or
	Regiment out of New York that spent more time in	Black Rattlers]
	combat than any other regiment.	
2	The Harlem Hellfighters fought as part of this	American Expeditionary
	coalition of U.S. Armed Forces, led by John	Forces [accept AEF]
	Pershing, that fought in France during World War I.	
3	The Harlem Hellfighters included Bill Robinson,	Bojangles
	who became a famous dancer using this nickname.	



#### Round 6 5th Section Toss-up Questions

#### **Question #29: Mathematics – Math Concepts**

10 points

A system has this property if every statement in it can be either proved or disproved. The axiom that in the real numbers, every nonempty subset with an upper bound has a least upper bound means that the real numbers have this property. The number of edges of an undirected graph with this property equals a triangular number. To add a vertex to such a graph and maintain this property, it is necessary to add a number of edges equal to the previous number of vertices

[VER-tuh-sees]. Such graphs have an edge connecting each pair of vertices. Name this adjective that generally

refers to anything that has all of its possible parts.

completeness [accept longer
answers like logical
completeness or logically
complete]

#### **Question #30: Literature – British Literature**

10 points

Immediately prior to this event, its beneficiary was asked "Who watered the wick in Melbourne?". The manager of a boarding house, Peter, did not attend this event, as he had arranged to play chess with friends. Before this event starts, Lulu shows up with a package. Held at the insistence of a Jew named Goldberg and an Irishman named McCann, this event is kicked off by Meg Boles playing a toy drum. Name this title celebration held for the benefit of Stanley Webber in a play by Harold Pinter.

the **Birthday Party** [accept similar answers indicating a **celebration** for a **birthday**; prompt on answers indicating a **celebration** or **party** without specifying the occasion]



## Round 6 5th Section Toss-up Questions

## **Question #31: Social Studies – World History**

10 points

Before taking part in the Armenian genocide, Halil Kut	<b>Baghdad</b> , Iraq
lost control of this city to British troops under	
Frederick Maude. When this city was first built as	
al-Mansur's capital, it was called "the Round City" or	
Madinat al-Salaam [MAH-dee-not al-sah-LAHM],	
which means "City of Peace". Hulegu [HOO-luh-goo]	
Khan captured and badly damaged this Abbasid capital	
in 1258, executing Al-Musta'sim. Firdos Square in this	
city held a statue that was toppled by Americans in	
2003. Its museum was then looted, destroying many	
Mesopotamian artifacts. Name this national capital	
located on the Tigris River.	

## **Question #32: Science – Physics**

	<b>.</b>
This quantity's quantum mechanical operator is	kinetic energy [prompt on
negative h-bar squared over 2 m times the Laplacian	energy; accept just kinetic
[luh-PLAH-see-un]. In Lagrangian	after "energy"; prompt on
[luh-GRAHN-jee-un] mechanics, this quantity is	<u><b>K</b></u> E]
symbolized $T$ , and in the definition of the Lagrangian a	
quantity symbolized V is subtracted from it. For a	
photon, this quantity is equal to Planck's constant times	
the frequency. This quantity is equal to momentum	
squared over twice the mass. This quantity is not	
conserved in inelastic collisions, and is often defined as	
one-half times mass times speed squared. Name this	
energy that an object has because of its motion.	



### Round 6 Extra Section Toss-up Questions

## Extra Question #1: Fine Arts – Art History

10 points

Several paintings by this artist show the area around his	Paul <u><b>Cézanne</b></u>
home in Bastide du Jas de Bouffan [bah-steed doo zhah	
day boo-faw] in southern France. One of his paintings	
shows four skulls stacked in the shape of a pyramid.	
Another painting by this artist, in which 14 women are	
in the foreground in front of arched trees, is nicknamed	
The Large Bathers. Some of his paintings show Mount	
Sainte-Victoire [sent veek-twar]. A group of paintings	
this artist made during the 1890s show men at small	
tables, and sometimes one man is smoking a pipe.	
Name this post-Impressionist who painted <i>The Card</i>	
Players.	

## Extra Question #2: Social Studies – U.S. History

This justice wrote the unanimous opinion by which	William Howard <u><b>Taft</b></u>
Martha Lum was excluded from white schools. As	
Chief Justice, he advocated for legislation to allow the	
Supreme Court to only issue rulings after writs of	
certiorari [ser-shee-uh-RAR-ee] were granted. While	
serving as Secretary of War, this person told Teddy	
Roosevelt that he would like to be Chief Justice, but	
Roosevelt encouraged him to run for president instead.	
He was eventually nominated to the Supreme Court in	
1921 upon the death of Edward White, whom he had	
appointed. Name this Chief Justice, the only one to	
have also occupied the White House.	



# Round 6 Extra Section Toss-up Questions

#### Extra Question #3: Mathematics – Math Concepts

10 points

One of the integral versions of this theorem sets the	mean value theorem [accept
integral of a product of functions equal to a function	MVT]
value times the integral of one function. An extended	
version of this theorem, named for Cauchy [koh-shee],	
uses two functions rather than one. Rolle's ["role's"]	
theorem is a special case of this theorem, which is often	
used to prove the fundamental theorem of calculus, and	
is itself proved using the Intermediate Value Theorem.	
Name this theorem stating that somewhere in an	
interval, a differentiable function's tangent line has the	
same slope as the secant line over that interval.	

#### Extra Question #4: Literature – U.S. Literature

10 points

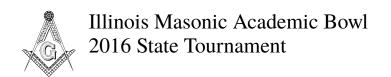
In this story, one character's "fineness of blood" was compared to "conventional heroes of romance". A king in this story held that his subjects were "refined and cultured" through exhibitions of valor in the public arena, which always featured either hired wailers or an impromptu wedding. This story calls that king "semi-barbaric". At this story's climax, the princess gave a subtle signal for her lover to choose the door on the right. Name this Frank Stockton story in which the conclusion is never revealed.



## Round 6 Extra Section Toss-up Questions

## Extra Question #5: Science – Physics

Laguerre [luh-GAIR] polynomials and the spherical	hydrogen atom [accept H]
harmonics appear in the wavefunction for this system.	
A transition in this system produces radiation with a	
21-centimeter wavelength that permeates the universe.	
This system demonstrates energy splitting due to the	
Lamb shift and fine structure. This object's energy	
levels can be calculated with the Rydberg formula. This	
is the only system that fits the Bohr model, though the	
Bohr model was unable to explain why its spectral lines	
differed in brightness. Name this system, consisting of	
one electron orbiting one proton, comprising the	
simplest element.	



## Extra Question #6: Literature – U.S. Literature

10 points per part

The	detective who solved this woman's murder did so	
usin	g only newspaper reports.	
1	Name this "cigar-girl" who was hired by Monsieur	Marie Roget or Mary
	Le Blanc to work in a perfume shop. Her body was	Cecilia <b>Rogers</b> [accept any
	found after it washed up on the shore.	underlined name]
2	"The Mystery of Marie Roget" was written by this	Edgar Allan <u><b>Poe</b></u>
	author as a follow-up to "The Murders in the Rue	
	Morgue".	
3	Marie's body was eventually found on the shores of	Seine River
	this river, across from the Rue Pavée-Saint-André.	

#### Extra Question #7: Literature – U.S. Literature

This	stitle character is scared of "little formless fears"	
and of the sound of tom-toms.		
1	Name this former Pullman Porter who cultivated	Emperor ( <b>Brutus</b> ) <b>Jones</b>
	the myth that he could only be killed by a silver	[accept either underlined
	bullet.	name]
2	The Emperor Jones was written by this author.	Eugene (Gladstone) O'Neill
3	O'Neill wrote about the Tyrone family in this play.	Long Day's Journey into
		<u>Night</u>



## Extra Question #8: Mathematics - Geometry

10 points per part

The	ancient Greeks studied problems related to	
cons	structing geometric figures with a compass and	
strai	ghtedge.	
1	The three major problems that remained unsolved	trisecting an angle [accept
	by the Greeks were to construct a cube with twice	answers that mean dividing
	the volume of a given cube, construct a square with	by three or splitting into
	the same area as a given circle, and to do this to any	thirds or dividing into
	angle.	three congruent parts]
2	This 19th-century French mathematician proved	Pierre Wantzel
	cube-doubling and angle-trisecting are sometimes	
	impossible using only a straightedge and compass.	
3	A ninety degree angle can be trisected by drawing	<u>60</u> degrees
	an equilateral triangle. What is the degree measure	
	of each angle of an equilateral triangle?	

## Extra Question #9: Mathematics - Geometry

-	Γhe	altitudes of a triangle are the segments from one	
1	verte	ex that form a right angle with the opposite side,	
1	whic	ch may need to be extended.	
	1	The three altitudes of a triangle meet at a single	orthocenter
		point, which is given this name.	
	2	In this type of triangle, two of the three altitudes	obtuse triangle
		are outside of the triangle.	
	3	Find the length of the altitude to the hypotenuse in	6 root 2 [accept equivalents
		an isosceles right triangle where each leg is of	such as <b>6 radical 2</b> and <b>6</b>
		length twelve.	times the square root of 2]