

## ACF Fall 2015

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### Tossup

1. The Hill equation was first used to describe the cooperative binding of this protein. The fetal form of this protein has a higher affinity than its adult form because it does not interact with 2,3-BPG ["two three b-p-g"]. This protein shows a lower binding affinity under acidic conditions and in higher carbon dioxide concentrations, a phenomenon known as the Bohr shift. This protein consists of two alpha and two beta subunits, and like catalase it contains four porphyrin rings with iron centers. This protein has a higher affinity to carbon monoxide than its typical substrate, oxygen. For 10 points, name this protein found in red blood cells.

ANSWER: hemoglobin [or Hb]

2. A town that produced this resource was hoaxed by an article in the *Territorial Enterprise* claiming that donations to the "Great Austin Flower Sack" would benefit a "Miscegenation Society." Large finds of this resource were referred to as "bonanzas." Mark Twain spent his formative years in one of this resource's boom towns, Virginia City. One seventh of the working male population was required to extract this resource for the Spanish government under the mita system. Major sources of this resource included Potosi in modern-day Bolivia and Nevada's Comstock Lode. For 10 points, name this metal that bimetalism supports using as legal tender in addition to gold.

ANSWER: silver [or Ag]

3. This author wrote a play in which the protagonist and a poet encounter a ship's crew singing "Christ Kyrie" ["KEE-ree-ay"] as they see Jesus walk on water. In a novel by this author, the title location within the Berns Salonger is where a group of bohemians meets with the protagonist Arvid Falk. This author created a character who is the Daughter of Indra in *A Dream Play*. A plan to open a hotel on Lake Como is discovered by Christine in one of his plays. In that play by this author of *The Red Room*, a bird is decapitated by Jean, who hands the title character a razor blade at the play's end. For 10 points, name this Swedish playwright of *Miss Julie*.

ANSWER: August Strindberg [or Johan August Strindberg]

4. This thinker wrote an essay discussing the rights of "civilized" nations in dealing with "barbarous" ones in his essay *A Few Words on Non-Intervention*. This thinker included residues and concomitant variations in his namesake "methods of experimental inquiry" in the treatise *A System of Logic*. This philosopher equated marriage with slavery in an essay he wrote with his wife, Harriet Taylor. This man wrote that intellectual pleasures are preferable to sensual pleasures, modifying the greatest-happiness principle of Jeremy Bentham. For 10 points, name this English philosopher who wrote *The Subjection of Women*, *Utilitarianism*, and *On Liberty*.

ANSWER: John Stuart Mill [or J. S. Mill]

5. This state contains a life-size concrete replica of Stonehenge in its town of Maryhill. One of the only temperate rain forests in the United States, the Hoh Rainforest, is located in this state. Lake Roosevelt was created by the construction of a dam to stem the Columbia River in this state; that dam is the Grand

Coulee Dam. This state is home to the most topographically prominent mountain in the contiguous US, Mount Rainier, and this state was the site of a large volcanic eruption in 1980 on Mount St. Helens. For 10 points, name this Pacific Northwest state that contains the Space Needle in Seattle.

ANSWER: Washington

6. A ruler of this kingdom was advised by John Young and Isaac Davis, who taught him how to use weapons found on the *Fair American*. A ruler of this kingdom issued a decree allowing noncombatants to “lie down to sleep by the roadside” without threat of injury. This kingdom was governed by the *kapu* law code. The Law of the Splintered Paddle originated in this kingdom. In 1893, Lorrin Thurston and Sanford Dole were among those who overthrew this kingdom’s final monarch. It was eventually annexed by the United States under William McKinley. For 10 points, name this kingdom that was led by Liliuokalani and Kamehameha from Honolulu.

ANSWER: Kingdom of Hawaii

7. This man claims “the capital-T Truth is about life *before* death” in a work that begins with a joke about two young fish swimming by an older fish. David Lipsky wrote about a road trip he took with this author in the book *Although of Course You End Up Becoming Yourself*. He gave a commencement address at Kenyon College that ends with the statement “this is water.” A group of Quebecois “wheelchair assassins” appear in a novel by this author set during the Year of the Depend Adult Undergarment. In that novel by this author, Hal Incandenza attends the Enfield Tennis Academy. For 10 points, name this author of *Infinite Jest*.

ANSWER: David Foster Wallace

8. This substance can contain structures called Zundel cations and Eigen [“AY-gen”] cations. The Grotthuss mechanism attempts to explain this substance’s conductivity. This substance forms a “cage” around methane in a methane clathrate. This substance’s solid-liquid equilibrium line has a negative slope on a P-T diagram, and it has a high boiling point because each molecule of this compound forms four hydrogen bonds. This molecule has a bent geometry with two lone pairs. The boiling point and melting point of this compound define the Celsius scale. This compound is more dense as a liquid than as a solid. For 10 points, name this universal solvent, with formula of H<sub>2</sub>O.

ANSWER: water [or H<sub>2</sub>O before mention; or ice]

9. In one tradition, this holiday celebrates the release of prisoners in the city of Gwalior. Towards the end of this holiday, which occurs during the transition from Ashvin to Karthik, brothers visit the houses of their sisters. During this holiday, the transition into a new financial year is marked with gambling and with a prayer to the consort of Vishnu. This holiday marks the New Year in Marwadi culture and the attainment of Moksha by Mahavira in Jainism. This holiday commemorates the defeat of Ravana by Rama, and the goddess of wealth is celebrated during its Lakshmi Puja. For 10 points, name this Hindu celebration that is celebrated with “diyas” being lit.

ANSWER: Diwali [or Deepavali]

10. In a novel by this author, the protagonist has an affair with a French academic named Bernard before returning home, where her father had been a prominent communist. A man discovers his son Terry is gay in a novel by this author, in which Jacobus discovers a corpse on Mehring's farm. The title character of a novel by this author drives a truck called a "bakkie" in his native village, where Bamford and Maureen Smales are staying to escape the rebellion in Johannesburg. That book by this author of *Burger's Daughter* and *The Conservationist* was banned during apartheid. For 10 points, name this South African author of *July's People*.

ANSWER: Nadine Gordimer

11. In one book, this economist described how leveraged banks prevented investment by their subsidiaries, exacerbating the title event. This author of *The Great Crash, 1929* argued that advertising and vertical integration by large corporations has replaced supply and demand in capitalist countries. In another book, this economist predicted that consumerism in the post-World War II United States would lead to increased private sector wealth compared to the public sector. That book popularized the term "conventional wisdom". For 10 points, name this Canadian-American economist whose works include *The New Industrial State* and *The Affluent Society*.

ANSWER: John Kenneth Galbraith

12. This value is the slope of a double cone which separates space-like and time-like intervals in Minkowski space. When converting the energy-momentum relation to natural units, this constant is set to one. The Lorentz factor is defined using velocity, and this quantity, whose ratio with velocity is sometimes symbolized beta. One of the assumptions of special relativity is that this value appears the same in every reference frame. The Michelson-Morley experiment could not find evidence of the ether causing this value to change and exceeding this value violates causality. For 10 points, what universal speed limit is roughly three hundred million meters per second?

ANSWER: speed of light [prompt on "c"]

13. This character is troubled by a dream in which he is sexually attracted to a meteor that falls from the sky. He dons a lion skin before traversing a pitch-black mountain guarded by two scorpion-men. This character begins weeping when a snake sheds its skin after eating an immortality-granting plant retrieved from the bottom of a lake. With the help of the sun god Shamash, this hero infiltrates the Cedar Forest and slays its guardian, Humbaba. This character seeks out eternal life from the flood survivor Utnapishtim ["oot-na-PISH-tim"] after being traumatized by the death of his beastly friend Enkidu. For 10 points, name this hero who titles a Mesopotamian epic poem.

ANSWER: Gilgamesh [or Bilgames]

14. Guilds in this city attempted to stay in power by passing the Ordinances of Justice. The Albizzi family rose to prominence in this city shortly after Michele di Lando led the Ciompi ["CHOM-pee"] Revolt here in 1378. A leader of this city was nicknamed "the Gouty," and another leader of this city survived an assassination attempt that killed his brother as part of the Pazzi conspiracy. The Bonfire of the Vanities took place in this city during its period of dominance by the Dominican friar Girolamo Savonarola. For 10 points, name this Italian city ruled during the Renaissance by Cosimo the Great and Lorenzo the Magnificent, members of the Medici family.

ANSWER: Republic of Florence [or Repubblica Fiorentina; or Firenze; or Fiorenza; or Florentia]

15. An album by this musician begins its second track with a double bass solo played by Jimmy Garrison. That album's final track is the timpani roll-introduced "Psalm," while a single gong strike begins its opening track, "Acknowledgement." This composer paid tribute to his bassist in the "Mr. P.C." track of an album that includes a ballad titled for his wife Naima. That album is titled for the frequent leaps between chords used in its title track. This jazz musician adapted a song from *The Sound of Music* into the title track of the album *My Favorite Things*. For 10 points, name this saxophonist who wrote the albums *Giant Steps* and *A Love Supreme*.

ANSWER: John Coltrane [or John William Coltrane]

16. A poem named for this place explains how its inhabitants have given up their "dower / Of inward happiness" because they are "selfish men". The narrator of another poem titled for this place hears the "mind-forg'd manacles" and the "Infants" who "cry of fear" in it. A poem titled for this city exhorts the man who "shouldst be living at this hour", John Milton, and was written by Wordsworth. Another poem titled for this city describes its "charter'd streets" where the one meets "marks of weakness, marks of woe" and was written by William Blake. For 10 points name this city paired with Paris in Dickens' *A Tale of Two Cities*.

ANSWER: London

17. The Newark Supergroup largely consists of rocks from the end of this period. A massive climate change that took place during this period included an increase in overall temperature and is known as the Carnian Pluvial Event. An event that preceded this period produced a "coal gap" in geological records. During this period, the continent of Pangaea began its separation into the two continents of Laurasia and Gondwana. This period also gave rise to the archosaurs, whose subclasses include pterosaurs and dinosaurs. For 10 points, name this period which followed a "Great Dying" at the end of the Permian and began the Mesozoic Era.

ANSWER: Triassic Period

18. A figure in this painting is wearing a gold pendant that shows a winged figure spearing a serpent. In this painting's upper left corner, a crucifix is partially covered by a green curtain. This painting may have commemorated Good Friday of 1533. A Lutheran psalm book lies next to a lute in this painting, in which a pendant of the Order of St. Michael is worn by Jean de Dinteville. The central figures of this painting are standing on an oriental rug and rest their arms on a table holding a globe and other instruments of science. An anamorphic skull is painted across the bottom of this painting. For 10 points, name this double-portrait by Hans Holbein the Younger.

ANSWER: *The Ambassadors* [or *The French Ambassadors*]

19. Late in his career, this leader advised Antiochus III of Syria. Under this general, Ducarius killed Flaminius in the largest military ambush of recorded history, and this leader defeated forces under Lucius Aemilius Paullus and Gaius Terentius Varro by using a double-envelopment technique at the Battle of Cannae. An opponent of this victor at Lake Trasimene successfully used the sound of horns to create a stampede among some of this man's troops. This leader was ultimately defeated by Scipio Africanus at the Battle of Zama. For 10 points, name this son of Hamilcar, a Carthaginian general who crossed the Alps with elephants during the Second Punic War.

ANSWER: Hannibal Barca

20. At this event, an agreement to set a certain national border at the Curzon Line was made official. In the aftermath of this event, one of the involved parties began formulating Operation Unthinkable in case agreements made during this event were not adhered to. This event's agreement to hold fair elections in Poland was completely ignored by one of its participants. All of the delegations at this event agreed to join the United Nations, and one of them agreed to declare war on Japan shortly after this event. For 10 points, name this second "Big 3" conference after Tehran, in which Churchill, Stalin, and Roosevelt met near a resort town in Crimea.

ANSWER: Yalta Conference [or Argonaut Conference; or Crimea Conference until "Crimea" is read]

### Extra

This poem's final stanza is quoted at the end of Tracy Letts' play *August: Osage County* by Johanna. The stanzas of this poem's final sections end with quotations of the Lord's Prayer and the statement "life is very long." This poem includes a mock-nursery rhyme beginning "here we go round the prickly pear." The speaker reflects "the eyes are not here" while describing figures who "grope together and avoid speech." The title figures are described as "leaning together headpiece filled with straw." The statement "this is the way the world ends, not with a bang but with a whimper" concludes, for 10 points, what T.S. Eliot poem about a group of empty men?

ANSWER: "The Hollow Men"

## Bonuses

1. This sculpture was discovered by amateur archaeologist Charles Champoiseau. For 10 points each:  
[10] Name this headless statue of a Greek Goddess that is prominently displayed at the Louvre.  
ANSWER: Winged Victory of Samothrace [or *Winged Nike of Samothrace*; prompt on partial answers]  
[10] Marinetti declared that a race car is more beautiful than the *Winged Victory* in the Manifesto for this art movement. Giacomo Balla and Umberto Boccioni were members of this technology-loving movement.  
ANSWER: futurism [or futurismo]  
[10] Boccioni explored this quality of many active figures including a soccer player and a cyclist. A Giacomo Balla work is titled for this property of a “dog on a leash.”  
ANSWER: dynamism [or *Dynamism of a Soccer Player*; or *Dynamism of a Cyclist*; or *Dynamism of a Dog on a Leash*; or word forms like dynamic]
2. Two uncharged metal plates in this medium will still experience some amount of attraction due to the Casimir effect. For 10 points each:  
[10] Give this term for an area with few particles and near-zero pressure.  
ANSWER: vacuum  
[10] This scientist created one of the first vacuums in a lab, and, due to creating an early barometer, is the namesake of a unit of pressure equal to one 760th of an atmosphere.  
ANSWER: Evangelista Torricelli [prompt on “torr”]  
[10] Ultra-high vacuum is used in molecular-beam epitaxy, which can be used in producing these materials. These materials, which include gallium arsenide, have a small distance between their valence bands and their Fermi levels.  
ANSWER: semiconductors
3. Answer some of the following about horses in Greek mythology, for 10 points each.  
[10] Born from the blood of Medusa, this winged horse helps Bellerophon in his fight against the Chimera.  
ANSWER: Pegasus  
[10] This hero steals four flesh-eating horses from the giant Diomedes some time after rerouting the rivers Alpheus and Peneus to clean the Augean stables in a single day.  
ANSWER: Heracles [or Hercules]  
[10] The extremely swift horse Arion allows Adrastus to escape certain death after this event, during which Tydeus is denied immortality for eating the brains of Melanippus.  
ANSWER: the war of the Seven Against Thebes [or anything with Seven Against Thebes]
4. The Confederation of the Rhine was dissolved as a result of this battle. For 10 points each:  
[10] Name this victory for Alexander I and the Prince of Schwarzenberg. Because of the large coalitions that fought in it, this battle is also called the “Battle of the Nations”.  
ANSWER: Battle of Leipzig  
[10] The Battle of Leipzig was a major loss for this Emperor of France. At the end of a period of rule known as the Hundred Days, this ruler lost the Battle of Waterloo and was exiled to St. Helena.  
ANSWER: Napoleon Bonaparte [or Napoleon I]  
[10] After this battle, the Treaty of Pressburg effectively destroyed the Holy Roman Empire. It is often considered to be Napoleon’s greatest tactical victory and included the recapture of the Pratzen Heights.  
ANSWER: Battle of Austerlitz

5. Talal Asad's essay "Ethnography, Literature, and Politics" discusses different readings of a book by this author. For 10 points each:
 

[10] Name this British Indian novelist. Ayatollah Khomeini issued a *fatwa* calling for this author's death following the publication of his novel *The Satanic Verses*.  
 ANSWER: Salman **Rushdie**

[10] At the beginning of *The Satanic Verses*, this Bollywood actor is flying in a hijacked plane with his fellow actor Saladin Chamcha. Much of the novel is taken up by this character's dream sequences.  
 ANSWER: **Gibreel Farishta** [accept either underlined portion]

[10] This is the name given to Muhammad in Gibreel's dream sequences. It was often used in medieval English literature to ridicule Muslims, such as in Spenser's *The Faerie Queene*.  
 ANSWER: **Mahound** [prompt on "the Messenger"]
  
6. Field taxonomists often check whether these structures are arranged in "opposite" or "alternate" patterns, and in some species, stipules grow just adjacent to these structures. For 10 points each:
 

[10] Name these organs that are described by adjectives like "palmate" and "obovate" and which have petioles at their bases.  
 ANSWER: **leaves** [or **leaf**]

[10] Most traditional botanists study the morphology of these reproductive organs which are composed of carpels and stamens arranged inside petals.  
 ANSWER: **flowers**

[10] The placement of this structure in flowers is described either as "superior" or "inferior." Sperm from pollen grains travel down the stigma to reach this structure.  
 ANSWER: **ovary** [or **ovaries**; accept **ovules**]
  
7. A very difficult problem involving these structures is the clique problem, which seeks to find certain connected subsets within these structures. For 10 points each:
 

[10] Name these mathematical structures which consist of vertices connected by edges. They can be used to represent things like Facebook friendships, and several unsolved problems involve coloring them.  
 ANSWER: **graphs**

[10] This mathematician's paper proving the lack of a solution to the Seven Bridges of Konigsberg problem is considered to be the first paper on graph theory. For a planar connected graph, his namesake characteristic is 2.  
 ANSWER: Leonhard **Euler** ["OY-ler"]

[10] In graph theory, any path that visits each vertex exactly once is named after this man. He also created the quaternions, which are an extension of the complex numbers.  
 ANSWER: William Rowan **Hamilton**

8. NOTE: DO NOT READ ALTERNATE ANSWERS TO THE FIRST PART.

The third movement of this piece is a Presto agitato that begins with a chain of rapidly ascending C-sharp minor arpeggios in sixteenth notes. For 10 points each:

[10] Name this piece in C-sharp minor whose opening movement Ludwig Rellstab compared to a nighttime phenomenon shimmering above Lake Lucerne.

ANSWER: Moonlight Sonata [or Piano Sonata No. 14 by Ludwig van Beethoven]

[10] *Moonlight* is among the thirty-two piano sonatas by this German composer, whose music marks a transition between the Classical and Romantic periods.

ANSWER: Ludwig van Beethoven

[10] This B-flat major piano sonata by Beethoven, written during his late period, is unusually in four movements, the last of which is comprised mostly of a lengthy three-voice fugue in triple meter.

ANSWER: Hammerklavier Sonata [or Piano Sonata No. 29]

9. Frank Money tries to find his way back to Lotus, Georgia, in a novel by this author. For 10 points each:

[10] Name this author of *Home* and *The Bluest Eye*. She received the Nobel Prize for Literature in 1993, the last American author to do so.

ANSWER: Toni Morrison [or Chloe Ardelia Wofford]

[10] The title character of this novel by Toni Morrison appears one day on the doorstep of 124 Bluestone Road. She is thought to be a reincarnation of the child that Sethe ["seth-uh"] killed to save from slavery.

ANSWER: Beloved

[10] This character from *Beloved* keeps his memories "in that tobacco tin buried in his chest where a red heart used to be". He is an escaped slave who used to work for schoolteacher with Halle and Sixo.

ANSWER: Paul D [prompt on "Paul"]

10. This philosopher served as an in-house physician for Anthony Ashley Cooper, 1st Earl of Shaftesbury. For 10 points each:

[10] Identify this philosopher who claimed that a man's property is just that with which he has "mixed his labor" in his *Second Treatise on Government*.

ANSWER: John Locke

[10] In addition to a discussion of a parrot that can speak Portuguese, this work by John Locke includes his attempts to establish the existence of abstract ideas and his presentation of the *tabula rasa*.

ANSWER: An Essay Concerning Human Understanding

[10] Locke's *Essay* also includes a discussion of this category that include colors and tastes which exist in virtue of features like size and shape and are distinguished from "barely powers".

ANSWER: secondary qualities

11. Thomas Mann wrote a response to this novel subtitled "The Beloved Returns". For 10 points each:

[10] Name this novel whose title character is distraught at the betrothal of his beloved Lotte to Albert, from whom he borrows a pair of pistols.

ANSWER: *The Sorrows of Young Werther* [or *Die Leiden des jungen Werthers*]

[10] *The Sorrows of Young Werther* is a novel by this German author who also wrote the two-part verse-drama *Faust*.

ANSWER: Johann Wolfgang von Goethe

[10] After he is introduced to Shakespeare by Jarno, this Goethe character acts in a version of *Hamlet*. This character travels to the Pedagogical Province with his son Felix in the second of two novels he appears in.

ANSWER: Wilhelm Meister [accept either name]



12. Plaques consisting of amyloid beta tend to be present in sufferers of this condition. For 10 points each:  
[10] Name this form of dementia most notable for the symptom of memory loss.  
ANSWER: Alzheimer's disease  
[10] Alzheimer's is sometimes thought to be caused by these infectious misfolded proteins. These agents also cause mad cow disease and kuru.  
ANSWER: prions  
[10] One hypothesis of the cause of Alzheimer's is that it is caused when this microtubule-associated protein is hyper-phosphorylated and tangled.  
ANSWER: tau protein
13. A Holy Roman Emperor with this name was so depressed that he eventually started carrying his coffin everywhere with him. For 10 points each:  
[10] Give this name shared by two Holy Roman Emperors. Another man with this first name was shot by a firing squad after he was overthrown as Emperor of Mexico.  
ANSWER: Maximilian [or Maximilian I; or Maximilian II]  
[10] Those men named Maximilian were members of the House of Habsburg, which was also called the "House of" this modern-day country. The Schönbrunn Palace is located in this country's capital of Vienna.  
ANSWER: Austria [or Österreich]  
[10] With Henry VII, Maximilian I won a battle named after these items during the War of the League of Cambrai. In another battle named for these clothing items, the French cavalry were obliterated by pikemen from Flanders.  
ANSWER: spurs [or Battle of the Spurs; or Battle of the Golden Spurs]
14. Answer the following about artificial intelligence in film, for 10 points each.  
[10] This director cast Haley Joel Osment as a "Mecha" child trying to turn into a real human in his film *A.I. Artificial Intelligence*. He also directed *Jaws*, *Jurassic Park* and *Schindler's List*.  
ANSWER: Steven Spielberg [or Steven Allan Spielberg]  
[10] In Stanley Kubrick's *2001: A Space Odyssey*, this sentient computer tries to kill the crew of the *Discovery One*. It sings "Daisy Bell" as Dave shuts it down.  
ANSWER: HAL 9000  
[10] This computer system runs the spaceship *Nostromo* in the film *Alien*. Ellen Ripley eventually realizes that this computer brought the *Nostromo* into contact with the alien so that the Weyland corporation could weaponize it.  
ANSWER: MOTHER
15. A philosopher involved in this religion debated whether he could know if a fish is happy, and was named Zhuangzi. For 10 points each:  
[10] Name this religion that emphasizes *wu wei*, or non-action. It venerates Laozi and believes in the harmony of yin and yang.  
ANSWER: Daoism [or Taoism]  
[10] Zhuangzi is perhaps best known for recording a dream in which he was one of these creatures, and upon waking up could not tell if he had dreamt it or if this creature was dreaming that it was him.  
ANSWER: a butterfly  
[10] Tang scholar Du Guangting wrote a "biography" of this Daoist deity. She is most often depicted atop the mythical Mount Kunlun, from which Sun Wukong steals her peaches of immortality in *Journey to the West*.  
ANSWER: Queen Mother of the West [or Xi Wangmu; or Yaochi Jinmu]

16. This colony was home to the oldest Jewish house of worship in North America, Touro Synagogue. For 10 points each:
- [10] Name this colony that attracted dissenters from other more religiously conservative New England colonies. It grew out of a plantation at the modern-day state capital of Providence.  
ANSWER: Rhode Island [or Rhode Island and Providence Plantations]
- [10] This man founded Rhode Island after Massachusetts kicked him out for being too damn tolerant.  
ANSWER: Roger Williams
- [10] Roger Williams bought Rhode Island from this Native American tribe. Although it got along with Rhode Island, it was practically wiped out after it allied with the Wampanoag during King Philip's War.  
ANSWER: Narragansett tribe
17. A painting by this artist shows a man pull back a curtain to reveal a young George Washington holding an axe he has used to cut a cherry tree. For 10 points each:
- [10] Name this Iowan artist of *Parson Weems' Fable* who painted his sister and a bald pitchfork-holding dentist in *American Gothic*.  
ANSWER: Grant Wood
- [10] Three thin-lipped old women stand in front of a recreation of *Washington Crossing the Delaware* in this Grant Wood painting.  
ANSWER: Daughters of Revolution
- [10] Wood, along with Thomas Hart Benton and John Steuart Curry, was a leader in this school of art. Many paintings from this movement depict rural scenes.  
ANSWER: American regionalism [or word forms like regionalist art]
18. These equations can be solved by using Runge-Kutta methods or by the separation of variables. For 10 points each:
- [10] Name these equations which come in ordinary and partial varieties and which contain derivatives.  
ANSWER: differential equations [or diff E-Qs; or ordinary differential equations; or partial differential equations]
- [10] This parabolic partial differential equation is a common example of one solvable with boundary conditions. This equation, which sets " $d^2u/dx^2$ " equal to a constant times the Laplacian of  $u$ , shows the distribution of a certain phenomenon over time.  
ANSWER: heat equation
- [10] A differential equation can be used to express this scientist's namesake law of cooling.  
ANSWER: Isaac Newton
19. This poet urged a friend to not tell a lie to children who are "ardent for some desperate glory". For 10 points each:
- [10] Name this World War I poet who borrowed from Horace in the poem "Dulce et Decorum est".  
ANSWER: Wilfred Owen [or Wilfred Edward Salter Owen]
- [10] Owen wrote that "The shrill, demented choirs of wailing shells" and "bugles calling for them from sad shires" are, along with "the monstrous anger of the guns," the only "passing-bells for these who die as cattle" in this poem.  
ANSWER: "Anthem for Doomed Youth"
- [10] This other World War I poet wrote "If I should die, think only this of me: / That there's some corner of a foreign field / That is for ever England" in his poem "The Soldier."  
ANSWER: Rupert Brooke [or Rupert Chawner Brooke]

20. This play opens as the Director is preparing to begin a rehearsal of *The Rules of the Game*, which is another play in its author's metatheatrical trilogy. For 10 points each:

[10] Name this play in which the Father, the Mother, and their children demand that their own story be completed.

ANSWER: *Six Characters in Search of an Author* [or *Sei personaggi in cerca d'autore*]

[10] This Italian playwright wrote *Six Characters in Search of an Author*. He also wrote about an actor who falls off a horse during a historical re-enactment and wakes up convinced that he is the title emperor in *Henry IV*.

ANSWER: Luigi Pirandello

[10] This other Italian Nobel Prize winner wrote about The Maniac, who impersonates a judge investigating the title character's fall from a police station window, in *Accidental Death of an Anarchist*.

ANSWER: Dario Fo

### Extra

They were captured and executed by Ma Yuan's army. For 10 points each:

[10] Name this semi-legendary pair of sisters who led a rebellion against the Han dynasty in the early 40 AD's.

ANSWER: the Trung sisters [or Trung Trac and Trung Nhi]

[10] The Trung sisters are regarded as national heroes in this Southeast Asian nation, which was unified between rival North and South portions in 1975 after the fall of Saigon.

ANSWER: Socialist Republic of Vietnam [do not accept or prompt on North Vietnam or South Vietnam]

[10] The Trung sisters are often depicted riding these animals. They were utilized by King Porus at the Battle of the Hydaspes River.

ANSWER: war elephants