

NEW TRIER VARSITY 2008

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Round 9: A Packet Is a Bleeping Valuable Thing, You Don't Just Give It Away Bonuses

1. (HT) Name the following biological terms related to the endomembrane system.

[10] Directly contiguous with the outer membrane of the nucleus, this organelle is involved in toxin processing, lipid production, and proteins marked for eventual export. Its two parts are differentiated by the presence of ribosomes.

ANSWER: **endoplasmic reticulum** (do not accept more specific answers)

[10] This is the name for the individual folds of the Golgi [GOHL jee] apparatus, the site of much protein processing and modification. The name derives from the Latin for reservoir.

ANSWER: **cisternae**

[10] These three words name the special ribonucleoprotein that mark a polypeptide chain for transport to the rough endoplasmic reticulum.

ANSWER: **signal recognition particle**

2. (DR) Name these Senators who did not run for reelection in 2008:

[10] This Idaho Republican plead guilty to disorderly conduct after an incident in a Minneapolis airport washroom in 2007.

ANSWER: Larry **Craig**

[10] This senior Nebraska Republican was a vocal opponent of continuing the Iraq War.

ANSWER: Chuck **Hagel**

[10] This Virginia Republican was replaced by a Democrat with the same last name.

ANSWER: John **Warner**

3. (DR) This man is especially sinister among Shakespeare villains because he often has no discernible motivation, and his "advice is free I give, and honest". For 10 points each:

[10] Name this character who convinces Othello that Othello's wife is having an affair because he is jealous that Othello promoted Cassio over him.

ANSWER: **Iago**

[10] In another Shakespeare work, this villain and wife of a title character plants bloody daggers on Duncan's servants after convincing her husband to murder Duncan.

ANSWER: **Lady Macbeth** (do not accept or prompt on partial answer)

[10] This villain of *Much Ado About Nothing* spreads a rumor that his brother Don Pedro is in love with Hero.

ANSWER: Don **John**

4. (AS) Answer the following about Southeast Asian history:

[10] This empire stretched from modern day Thailand through to parts of Vietnam and is best known for having built the huge temple complex at Angkor Wat, which was its capital at the height of its power.

ANSWER: the **Khmer**

[10] Even before European explorers arrived, this sultanate was the center of trade in Southeast Asia. This state's power emanated to Sarawak, Sabah, and the Sulu archipelago, though it is now very small and separated into two pieces.

ANSWER: **Brunei**

[10] The discovery of oil by this company in the Dutch East Indies in the late nineteenth century enhanced the strategic value of Southeast Asia for the European colonial powers and Japan.

ANSWER: **Shell** Oil

5. (DR) Computational — pencil and paper ready. Evaluate the following limits:

1. [10] The limit as x approaches infinity of the quantity x squared plus two x plus five, end quantity, divided by the quantity x squared minus x minus four.

2. [10] The limit as x approaches three of the fraction with a numerator of two minus the square root of the quantity x plus one, and with a denominator of x minus three.

3. [10] The limit as x approaches zero of the quantity one minus e to the x , quantity divided by the square root of x . Thirty seconds.

ANSWER 1: 1

ANSWER 2: -1/4 or -0.25

ANSWER 3: 0

6. (JG) For 10 each, name these American land treaties that bordered on important.

[10] This 1842 treaty signed by the Secretary of State and the British Foreign Secretary of the time set the border between Maine and New Brunswick, among other things, following the Aroostock War.

ANSWER: Webster-Ashburton Treaty

[10] Signed in 1817, this was merely an exchange of letters between the U.S. Secretary of State and the British minister to the U.S. and so was not technically a treaty. It limited naval activity on the Great Lakes and is still in force today, helping prevent disastrous war with Canada.

ANSWER: Rush-Bagot Agreement (accept "Pact" for "Agreement", but not "Treaty")

[10] The United States sent a special envoy to Spain to negotiate this treaty with Manuel de Godoy in 1795. In it, Spain recognized the United States' borders and granted the States navigation rights to the Mississippi River through Spanish territory.

ANSWER: Pinckney's Treaty or Treaty of San Lorenzo (accept Treaty of Friendship, Limits, and Navigation Between Spain and the United States or Treaty of Madrid)

7. (DR) Name these people from the Mother of Modern Presidents, the Birthplace of Aviation, the Buckeye State, Ohio:

[10] Though he died a few miles from here in 1938, he was born in Northeast Ohio in 1857. In between, he defended Eugene Debs, Leopold and Loeb, and John Scopes.

ANSWER: Clarence Darrow

[10] This author wrote the short story cycle *Winesburg, Ohio*.

ANSWER: Sherwood Anderson

[10] Born in Athens, Ohio in 1959, she designed the Civil Rights Memorial in Montgomery, Alabama and the Vietnam Veterans Memorial in Washington, DC.

ANSWER: Maya Ying Lin

8. (DT) We all know that two heads are better than one. However, what about more than two heads? Name these creatures with that characteristic for 10 points each:

[10] For his twelfth labor, Hercules was ordered to fetch this three-headed guardian of Hades.

ANSWER: Cerberus

[10] This member of the Trimurti developed five heads so that he could look at Shatarupa. However, when this Hindu god of creation lied about finding an end of Shiva's lingam, one was cut off.

ANSWER: Brahma (do not accept "Brahman" or "Brahmana")

[10] This goddess of crossroads was often depicted with the heads of a dog, snake, and horse. She is often associated with witchcraft, as Medea was a devotee of her.

ANSWER: Hecate [heh kuh TEE]

9. (DR) The state of Maine is represented by two women in the Senate. Name these other Maine women:
[10] Though she was born and she died in Connecticut, this woman spent much of her life in Maine, which is where she wrote *Uncle Tom's Cabin*.

ANSWER: Harriet Beecher **Stowe** (accept **Beecher**)

[10] In the 1840s and 50s, she was a researcher and activist on behalf of the insane. She was born in Hampden, Maine, but she moved and traveled significantly.

ANSWER: Dorothea **Dix**

[10] This poet and playwright was born in Rockland, Maine, though she spent much of her career in Greenwich Village in New York. She sometimes used the pseudonym Nancy Boyd and wrote "First Fig" and "The Ballad of the Harp-Weaver".

ANSWER: Edna St. Vincent **Millay**

10. (DR) Computational — pencil and paper ready. Ignore units. Find the surface areas of the following figures:

1. [10] A rectangular prism with side lengths one, two, and three.

2. [10] A sphere with radius two.

3. [10] The plane z equals two x plus three y above the square with x and y each going from zero to one. You have thirty seconds.

ANSWER 1: **twenty-two**

ANSWER 2: **sixteen** times **π**

ANSWER 3: the square **root** of **fourteen**

11. (DR) Computational — pencil and paper ready. For each function, give the equation of its horizontal or oblique asymptote, whichever one of which exists. You do not need to say "y equals" each time.

1. [10] y equals the quantity x plus one divided by the quantity x squared plus x plus one.

2. [10] y equals the quantity x squared plus one divided by x .

3. [10] y equals the quantity x cubed plus two x squared plus three x plus four divided by the quantity x squared plus x plus one. You have thirty seconds.

ANSWER 1: $y=0$

ANSWER 2: $y=x$

ANSWER 3: $y=x+1$

12. (JG) Water's values can be approximated with the Antoine [AN twahn] equation, and substances with a high value of this are called volatile. For 10 points each:

[10] Name this property of substances that assesses their tendency to change between gaseous and non-gaseous phases.

ANSWER: **vapor pressure**

[10] This law, named for a French chemist also noted for his work on freezing point depression, relates vapor pressure to the mole fraction of the substance present.

ANSWER: **Raoult's** [rah OOLTS] law

[10] This doubly eponymous equation relates pressure, temperature, latent heat, and volume for any phase transition. It gives the slopes for each part of a phase diagram.

ANSWER: **Clausius-Clapeyron** [CLAW-see-uhs cluh-PAY-rah] equation (accept reasonable equivalents for "equation")

13. (JG) This is usually expressed as a product of seven terms, only one of whose value is widely agreed-upon. For 10 each:

[10] Name this equation that gives the number of civilizations in the universe that have interstellar communication abilities.

ANSWER: **Drake** equation (accept reasonable equivalents for "equation")

[10] A more legit equation used in astronomy is this equation, named for an early 20th century American astronomer, which gives the recessional velocity of galaxies using that same astronomer's constant.

ANSWER: **Hubble's** Law (accept reasonable equivalents for "Law")

[10] A Russian cosmologist developed these namesake equations from Einstein's field equations of gravity. The two of them give the Hubble constant and its derivative in terms of a whole bunch of other constants.

ANSWER: **Friedmann** equations (accept reasonable equivalents for "equations")

14. (DR) Created in the 1730s, this series of eight paintings hangs in Soane's Museum in London.

[10] Name this series that starts with *The Heir* and ends with *The Prison* and *The Madhouse*.

ANSWER: A ***Rake's Progress***

[10] Identify the painter of *A Rake's Progress*, which tells the story of Tom Rakewell.

ANSWER: William **Hogarth**

[10] *A Rake's Progress* was in some senses the sequel of this work, which portrayed a woman who died at the age of twenty-three.

ANSWER: A (or *The*) ***Harlot's Progress***

15. (JG) Answer the following about a 1798 experiment in physics for 10 points each.

[10] This man used a torsion balance with two large lead balls to measure a fundamental constant and also obtain the Earth's mass. He also discovered hydrogen.

ANSWER: Henry **Cavendish**

[10] This is the constant he measured. It is used in a noted theory developed by Newton, but its value wasn't known until the aforementioned experiment.

ANSWER: universal **gravitational** constant (prompt on **G**; accept **capital G** after prompt)

[10] Cavendish was a fellow of this group of British scientists, whose first president was Christopher Wren. Isaac Newton and Humphry Davy were among its other presidents.

ANSWER: the **Royal Society** of London for the Improvement of Natural Knowledge

16. (JG) He started his most famous work as a student of Cauchy [KOH shee] and Fourier [for ee YAY], but he was expelled from the Ecole Normal [eh-COHL nor-MAHL] for criticizing its headmaster. Then he joined the French National Guard and ended up developing some of his mathematical ideas in the Bastille. For 10 points each:

[10] Name this mathematician who was killed at the age of twenty in a duel, whose namesake branch of mathematics grew from the general unsolvability of quintic or higher-order polynomials.

ANSWER: Évariste **Galois** [gal WAH]

[10] Galois [gal WAH] developed the modern notion of this mathematical entity, a set with a single defined operation. The axioms for these entities are closure, associativity, and the existence of identities and inverses.

ANSWER: **group**

[10] Groups with certain additional properties may also be called fields, of which the real numbers is an example using the two operations addition and multiplication. This field axiom combines addition and multiplication.

ANSWER: **distributivity** (accept word forms)

17. (DR) This novel argues that choices in life are meaningless because we can never find out what would have happened had we made different decisions. It expresses disagreement with the ideas of Friedrich Nietzsche.

[10] Identify this novel featuring a surgeon who does not get along with Communists.

ANSWER: *The Unbearable Lightness of Being* (or *Nesnesitelná lehkost bytí*)

[10] Name the author of *The Unbearable Lightness of Being*, who disliked the movie version and no longer allows movies to be made of his works.

ANSWER: Milan Kundera

[10] Before Kundera, this German author who wrote *Doctor Faustus* and *Death In Venice* defended Nietzsche.

ANSWER: Thomas Mann

18. (DR) Identify these American plays:

[10] This play set in the 1980s typically takes about seven hours to stage. It is broken down into two parts, Millennium Approaches and Perestroika, and some of its characters suffer from AIDS.

ANSWER: *Angels in America*: *A Gay Fantasia on National Themes*

[10] This work by Arthur Miller is about Happy, Biff, Linda, and Willy Loman.

ANSWER: *Death of a Salesman*

[10] This work by Lillian Hellman is about Regina Hubbard Giddens and her greedy family.

ANSWER: *The Little Foxes*

19. (AS) Answer the following about some historians.

[10] An adopted grandson of the Roman general Scipio Africanus, he wrote extensively on the Punic Wars and other events of the later Hellenistic Period in his work *The Histories*.

ANSWER: Polybius

[10] After admiring his dissertational work on Abraham Lincoln's chief of staff, Dwight D. Eisenhower requested that this man write his biography. This historian went on to write about Richard Nixon, D-Day, and the history of the 101st Airborne Division's 506th Parachute Infantry, and he was the historical adviser for the movie *Saving Private Ryan*.

ANSWER: Stephen Ambrose

[10] The first man to analyze historical events only in terms of causes and effects rather than ascribing outcomes to divine intervention, this ancient Greek historian is said to have introduced political realism in his *History of the Peloponnesian War*.

ANSWER: Thucydides [thoo SIHD ihd eez]

20. (DR) Name these Russian composers who were not in The Five:

[10] His ballets include *The Firebird* and *Petrushka*.

ANSWER: Igor Stravinsky

[10] He wrote four piano concertos and *Rhapsody on a Theme of Paganini*.

ANSWER: Sergei Rachmaninov

[10] This early composer wrote the operas *A Life for the Tsar* and *Ruslan and Lyudmila*.

ANSWER: Mikhail Glinka