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| **One Assorted Round** |
| Folsom Scrimmage—Winter Break 2009-2010 |
|  |
| Mira Loma Science Bowl |
|  |
| **Russ Islam** |
| **12/28/2009** |
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TOSS-UP

1. BIOLOGY; Multiple Choice: What are the two major carrier molecules involved in aerobic

respiration?

(W) Coenzyme A and FAD

(X) NAD+ and Ubiquinone

(Y) Cytochrome A and Ubiquinone

(Z) NAD+ and FAD

ANSWER: Z—NAD+ AND FAD

BONUS

1. BIOLOGY; Short Answer: How many molecules of ATP are produced in the Krebs cycle

for each molecule of glucose inputted?

ANSWER: 2

TOSS-UP

2. GENERAL SCIENCE; Short Answer: Which British-Jewish woman used X-ray

crystallography to help determine the structure of DNA?

ANSWER: ROSALIND FRANKLIN

BONUS

1. GENERAL SCIENCE; Multiple Choice: Which scientist performed experiments involving bacteria and mice to demonstrate the phenomenon of transformation?

(W) Griffith

(X) Hershey

(Y) Chase

(Z) Avery

ANSWER: W—GRIFFITH

TOSS-UP

1. EARTH SCIENCE; Short Answer: What type of moraine is located at the advancing edge of a glacier?

ANSWER: TERMINAL MORAINE

BONUS

3. EARTH SCIENCE; Short Answer: The crack between the headwall and the firn field of a glacier is known as the what?

ANSWER: BERGSCHRUND

TOSS-UP

4. CHEMISTRY; Short Answer: Also known as a voltaic cell, what type of cell produces an

electric current from a spontaneous chemical reaction?

ANSWER: GALVANIC CELL

BONUS

4. CHEMISTRY; Short Answer: What type of cell uses electrical energy to produce a nonspontaneous chemical reaction?

ANSWER: ELECTROLYTIC CELL

TOSS-UP

5. PHYSICS; Multiple Choice: The magnetic field of a wire is

(W) directly proportional to the distance from the wire

(X) inversely proportional to the distance from the wire

(Y) exponentially proportional to the distance from the wire

(Z) logarithmically proportional to the distance from the wire

ANSWER: X—INVERSELY PROPORTIONAL TO THE DISTANCE FROM THE

WIRE

BONUS

5. PHYSICS; Multiple Choice: A charge of mass m and charge q is moving in a circle of radius r and speed v due to a uniform magnetic field B. If the speed is doubled to 2v, what happens to the period?

(W) It increases by a factor of 2

(X) It decreases by a factor of 2

(Y) It remains the same

(Z) It increases by a factor of 4

ANSWER: Y—IT REMAINS THE SAME

TOSS-UP

1. MATH; Short Answer: The value of 10 pounds of gold is d dollars, and a pound of gold has the same value as p pounds of silver. What is the value, in dollars, of one pound of silver?

ANSWER: d/10p

BONUS

6. MATH; Multiple Choice: The average weight of five students is 150.4 pounds. If no student weighs less than 130 pounds and if no two students’ weights are within 5 pounds of each other, what is the most, in pounds, that any one of the students can weigh?

(W) 172

(X) 192

(Y) 202

(Z) 232

ANSWER: Y—202

TOSS-UP

7. ASTRONOMY; Multiple Choice: What is the largest moon in our solar system?

(W) Ganymede

(X) Io

(Y) Triton

(Z) Phoebe

ANSWER: W—GANYMEDE

BONUS

7. ASTRONOMY; Multiple Choice: Which of the following has a diameter smaller than that of Ganymede?

(W) Mercury

(X) Venus

(Y) Earth

(Z) Mars

ANSWER: W—MERCURY

TOSS-UP

8. BIOLOGY; Short Answer: Name the section of the small intestine where the most absorption occurs.

ANSWER: DUODENUM

BONUS

8. BIOLOGY; Multiple Choice: After fatty acids and glycerols have passed the membranes of lacteals, they are bonded together and covered in water-soluble molecules, forming particles known as what?

(W) Chylomicrons

(X) Tropomyosins

(Y) Glycosaminoglycans

(Z) Hyaluronic acids

ANSWER: W—CHYLOMICRONS

TOSS-UP

9. GENERAL SCIENCE; Multiple Choice: Which physicist developed the theory of black-body radiation during the beginning of the 20th century?

(W) Bohr

(X) Planck

(Y) Schrodinger

(Z) Einstein

ANSWER: X—PLANCK

BONUS

1. GENERAL SCIENCE; Short Answer: Name the Asian Indian 1983 Nobel Prize in Physics winner who conducted studies of the structure and evolution of stars and created a famous limit named after himself.

ANSWER: CHANDRASEKHAR

TOSS-UP

10. EARTH SCIENCE; Short Answer: A lens-shaped, usually acidic, igneous intrusion that domes overlying strata is known as what?

ANSWER: LACCOLITH

BONUS

10. EARTH SCIENCE; Multiple Choice: Which of the following is usually the largest?

(W) Stock

(X) Batholith

(Y) Boss

(Z) Sill

ANSWER: X—BATHOLITH

TOSS-UP

11. CHEMISTRY; Short Answer: What functional group in the amino acid glycine can accept protons in solution?

ANSWER: AMINO GROUP

BONUS

11. CHEMISTRY; Multiple Choice: What best describes the central carbon in histidine?

(W) Alpha

(X) Beta

(Y) Gamma

(Z) Delta

ANSWER: W—ALPHA

TOSS-UP

12. PHYSICS; Multiple Choice: Which of the following best describes the relationship

between the frequency and amplitude of a sound wave?

(W) Frequency is directly proportional to amplitude

(X) Frequency is proportional to the square of the amplitude

(Y) Frequency is inversely proportional to amplitude

(Z) Frequency and amplitude are independent

ANSWER: Z—FREQUENCY AND AMPLITUDE ARE INDEPENDENT

BONUS

12. PHYSICS; Short Answer: The distance between two successive nodes in a standing wave

is equal to what number times the wavelength?

ANSWER: ½

TOSS-UP

13. MATH; Short Answer: What is the derivative of f(x) =

ANSWER:

BONUS

13. MATH; Short Answer: What is the indefinite integral of f(x) = ?

ANSWER:

TOSS-UP

14. ASTRONOMY; Short Answer: Quasar is an abbreviation for which three words?

ANSWER: QUASI-STELLAR RADIO SOURCE

BONUS

14. ASTRONOMY; Short Answer: A highly magnetized, rotating neutron star that emits

beams of EM radiation is known as a what?

ANSWER: PULSAR

TOSS-UP

15. BIOLOGY; Short Answer: The cytoplasms of plant cells are interconnected and are collectively known as the what?

ANSWER: SYMPLAST

BONUS

15. BIOLOGY; Multiple Choice: Which of the following best describes the symplast?

(W) It is a relatively static structure

(X) It is a highly dynamic structure

(Y) It is a completely static structure

(Z) It is a relatively insignificant structure

ANSWER: X—IT IS A HIGHLY DYNAMIC STRUCTURE

TOSS-UP

16. GENERAL SCIENCE; Short Answer: Which British geologist developed the theory of uniformitarianism, upon which Charles Darwin laid the foundation of his own theory of evolution?

ANSWER: CHARLES LYELL

BONUS

16. GENERAL SCIENCE; Short Answer: Which French scientist came before Darwin with

his theory of use and disuse?

ANSWER: LAMARCK

TOSS-UP

17. EARTH SCIENCE; Multiple Choice: What type of mass movement is characterized by a slow and nearly imperceptible movement of soil?

(W) Earth flow

(X) Slumping

(Y) Rockfall

(Z) Soil creep

ANSWER: Z—SOIL CREEP

BONUS

17. EARTH SCIENCE; Short Answer: What type of mass movement killed many after the eruption of Mt. Vesuvius due to the flowing of volcanic ash and dust mixed with soil and water?

ANSWER: MUDFLOW

TOSS-UP

18. CHEMISTRY; Multiple Choice: What is the most abundant protein in the human body in terms of dry mass?

(W) Fibrinogen

(X) Chondroitin sulfate

(Y) Collagen

(Z) Ribulose

ANSWER: Y—COLLAGEN

BONUS

18. CHEMISTRY; Short Answer: What are the two major conformations of the secondary

structure of proteins?

ANSWER: ALPHA HELIX AND BETA PLEATED SHEET

TOSS-UP

19. PHYSICS; Short Answer: What is the term for the change in wave speed when that wave crosses from one medium into another?

ANSWER: REFRACTION

BONUS

19. PHYSICS; Multiple Choice: Which of the following is NOT experienced by sound waves?

(W) Reflection

(X) Refraction

(Y) Polarization

(Z) Interference

ANSWER: Y—POLARIZATION

TOSS-UP

20. MATH; Short Answer: What is the determinant of the matrix

ANSWER: 36

BONUS

20. MATH; Short Answer: What is the identity matrix of the matrix ?

ANSWER: DOES NOT EXIST

TOSS-UP

21. ASTRONOMY; Short Answer: What is the second space shuttle orbiter NASA put into

space, which broke apart 73 seconds into its descending flight?

ANSWER: *CHALLENGER*

BONUS

21. ASTRONOMY; Short Answer: What is the first nation to launch one of its citizens into space?

ANSWER: USSR (ACCEPT: RUSSIA)

TOSS-UP

22. BIOLOGY; Short Answer: Cells of the immune system that are contact with the external

environment and resemble the dendrites of neurons are known as what?

ANSWER: DENDRITIC CELLS

BONUS

22. BIOLOGY; Multiple Choice: Which of the following cells would be most effective in

combating a parasitic member of the phylum Platyhelminthes?

(W) Macrophages

(X) Natural killer cells

(Y) Eosinophils

(Z) Cytotoxic T cells

ANSWER: Y—EOSINOPHILS

TOSS-UP

23. GENERAL SCIENCE; Short Answer: Which Russian scientist won the 1904 Nobel Prize

for Physiology or Medicine for his studies of classical conditioning in dogs?

ANSWER: IVAN PAVLOV

BONUS

23. GENERAL SCIENCE; Multiple Choice: Which of the following won the 1983 Nobel Prize for Physiology or Medicine for his or her discovery of transposons?

(W) McClintock

(X) Tonegawa

(Y) Koch

(Z) Blobel

ANSWER: W—MCCLINTOCK

TOSS-UP

24. EARTH SCIENCE; Short Answer: What period immediately preceded the Silurian

Period?

ANSWER: ORDOVICIAN PERIOD

BONUS

24. EARTH SCIENCE; Short Answer: What is the period whose strata are thick with coal-

producing carbon?

ANSWER: CARBONIFEROUS PERIOD

TOSS-UP

25. CHEMISTRY; Short Answer: Enzymes lower what type of energy of reaction, allowing that reaction to proceed faster?

ANSWER: ACTIVATION ENERGY

BONUS

25. CHEMISTRY; Multiple Choice: Which of the following best describes organic enzymes?

(W) They are substrate-specific

(X) They are substrate-nonspecific

(Y) They can only be used once

(Z) They can function at any pH

ANSWER: W—THEY ARE SUBSTRATE-SPECIFIC