Russ Islam

Mira Loma Science Bowl 2009

25 Lightning Round Questions

November 24, 2009

TOSS-UP

1. BIOLOGY; Short Answer: Human adults require eight essential amino acids in their diets.

Human infants require what ninth amino acid?

ANSWER: HISTIDINE

TOSS-UP

2. CHEMISTRY; Multiple Choice: Molecules that have both hydrophobic and hydrophilic

regions are known as what?

W) Zwitterionic

X) Amphoteric

Y) Amphipathic

Z) Zygomatic

ANSWER: Y—AMPHIPATHIC

TOSS-UP

3. PHYSICS; Short Answer: Order the following forces from weakest to strongest:

electromagnetic, grativational, strong nuclear, weak nuclear

ANSWER: GRAVITATIONAL, WEAK NUCLEAR, ELECTROMAGNETIC, STRONG NUCLEAR

TOSS-UP

4. MATH; Short Answer: Simplify

ANSWER: (ACCEPT: )

TOSS-UP

5. ASTRONOMY; Multiple Choice: Which of the following stars is farthest from Earth?

(W) Sirius

(X) Canopus

(Y) Betelguese

(Z) Vega

ANSWER: Y—BETELGUESE

TOSS-UP

1. EARTH SCIENCE; Multiple Choice: Which of the following best describes the foreshore?

W) The area exposed at low tide

X) The landward side at high tide

Y) The seaward side at low tide

Z) The seaward side at high tide

ANSWER: W—THE AREA EXPOSED AT LOW TIDE

TOSS-UP

7. GENERAL SCIENCE; Short Answer: Give the genus of the first bacteria to have its genome completely sequenced.

ANSWER: HAEMOPHILUS

TOSS-UP

8. BIOLOGY; Short Answer: Name the protein that connects homologues together during meiosis.

ANSWER: SYNAPTONEMAL COMPLEX

TOSS-UP

9. CHEMISTRY; Multiple Choice: What is the simplest alkyne?

(W) Acetylene

(X) Methyne

(Y) Propyne

(Z) Acetyne

ANSWER: W—ACETYLENE

TOSS-UP

10. PHYSICS; Short Answer: A graph of constant acceleration versus time would have a slope of what?

ANSWER: ZERO

TOSS-UP

11. MATH; Multiple Choice: Which of the following best describes the square root of the average of the squares of a set?

W) Arithmetic mean

X) Quadratic mean

Y) Cubic mean

Z) Quartic Mean

ANSWER: X—QUADRATIC MEAN

TOSS-UP

12. ASTRONOMY; Short Answer: To the nearest billion, how many years old is the universe?

ANSWER: 14 BILLION

TOSS-UP

13. EARTH SCIENCE; Multiple Choice: Alluvial fans are created by

(W) Rivers

(X) Wind

(Y) Lakes

(Z) Oceans

ANSWER: W—RIVERS

TOSS-UP

14. GENERAL SCIENCE; Short Answer: What Nobel-prize-winning German physicist

worked extensively on black body radiation in the late 19th century?

ANSWER: MAX PLANCK

TOSS-UP

15. BIOLOGY; Multiple Choice: In the human immune system, what cells release histamine?

W) Macrophages

X) Neutrophils

Y) Mast Cells

Z) Microphages

ANSWER: Y—MAST CELLS

TOSS-UP

16. CHEMISTRY; Short Answer: Name the most stable conformation of a cyclohexane.

ANSWER: CHAIR CONFORMATION

TOSS-UP

17. PHYSICS; Multiple Choice: A satellite that orbits the Earth so that it is always above the same place on the ground is known as

(W) Geosynchronous

(X) Pluripotent

(Y) Geopotent

(Z) Plurisynchronous

ANSWER: W—GEOSYNCHRONOUS

TOSS-UP

18. MATH; Short Answer: To the nearest tenth, calculate the standard deviation of the following numbers: 1, 2, 9, and 22.

ANSWER: 9.2

TOSS-UP

19. ASTRONOMY; Multiple Choice: Which terrestrial planet displays retrograde motion?

(W) Earth

(X) Mercury

(Y) Venus

(Z) Mars

ANSWER: Z—MARS

TOSS-UP

20. EARTH SCIENCE; Short Answer: What the term for the transformation of sediment

into sedimentary rock?

ANSWER: LITHIFICATION

TOSS-UP

21. GENERAL SCIENCE; Multiple Choice: What Russian scientist received the Nobel prize

in 1904 for his work on the digestive system and is widely known as the founder of

classical conditioning?

ANSWER: IVAN PAVLOV (ACCEPT: PAVLOV)

TOSS-UP

22. BIOLOGY; Short Answer: What hormone is released by the small intestine to inhibit

peristalsis and acid secretion by the stomach?

ANSWER: CHOLECYSTOKININ (ACCEPT: CCK)

TOSS-UP

23. CHEMISTRY; Multiple Choice: Which of the following functional groups is found in

the backbone of an alpha amino acid?

W) Amino

X) Sulfhydryl

Y) Methyl

Z) Acetyl

ANSWER: W—AMINO

TOSS-UP

24. PHYSICS; Short Answer: A three-dimensional recorded image created by the scattering

of light is known as a what?

ANSWER: HOLOGRAM

TOSS-UP

25. MATH; Short Answer: In terms of , calculate the surface area of a cylinder with radius 2 and height 4.

ANSWER: 24