Mira Loma Science Bowl

Questions due 7 Jan 2013

1. Chemistry toss-up

Q) Which of the following metals can be obtained from its ore only by electrolysis of a molten salt?

w) Cobalt x) Chromium y) Copper z) Sodium A) Z

2. Chemistry Bonus

Q) Bauxite is a mineral that primarily contains which metal? A) Aluminum

3. Chemistry Toss-up

Q) Which of the following is a strong electrolyte in aqueous solution?

w) Ammonia x) Coffee y) Gatorade z) Corn syrup A) Y

4. Chemistry Bonus

Q) Name the term that defines the temperature above which the liquid phase cannot exist)

A) Critical Temperature

5. Biology Toss-up

Q) Which of the following describes the major difference between bryophytes and tracheophytes ?

w) tracheophytes can survive on land

x) tracheophytes have seeds inside fruits

y) tracheophytes can make their own food

z) tracheophytes have vessels to transport materials A) Z

6. Biology Bonus

Q) What are rings of muscle which CLOSE body openings such as the lips called?

A) Sphincters

7. Biology Toss-up

Q) What has the most energy in its chemical bonds?

w) AMP x) ADP y) ATP z) They are equal A) Y

8. Biology Bonus

Q) The small intestine is composed of three segments. Two of these segments are the jejunum and the ileum. Name the third segment. A) Duodenum

9. Physics Toss-up  
Q) A piano tuner notices a standing Lissajous curve on his oscilloscope. The tone being projected is:

w) Out of harmony x) sharp y) resonating z) flat A) y

10. Physics Bonus

Q) A freight car weighing 20 tons and moving at a speed of 7 miles per hour on a horizontal track collides and couples with a stationary car that weighs 15 tons. Neglecting friction, determine the velocity of the coupled cars. A) 4 MPH

11. Physics Toss-up

Q) Photons and gravitons are names associated with a category of particles called:

w) mesons x) bosons y) leptons z) Baryons A) x

12. Physics Bonus

Q) What is the name of the Scottish physicist who developed the mathematical explanation of the theory of light? A) Maxwell -or- James Clerk Maxwell

13. Earth Science Toss-up

Q) A volcano which is composed of lava flows and pyroclastic material and which is steep-sided and very tall is known as-

w) Syncline x) Composite cone y) Anticline z) none of these A) x

14. Earth Science Bonus

Q) After what geophysical occurrence might you see Bishop's Ring around the sun?

A) Volcanic Eruption

15. Astronomy Toss-up

Q) Of the following four times, which one best represents the time it takes energy generated in the core of the sun to reach the surface of the sun and be radiated?

w. 3 minutes x. 3 days y. 1000 years z. 1,000,000 years A) z

16. Astronomy Bonus

Q) Where in space is Cassini’s division? A) Between 2 rings of Saturn

17. Energy Toss-up

Q)  Which of the following is a key component of energy sustainability?

W. Investing in research and development for advanced energy technologies   
X. Utilizing efficiency and conservation to ensure that future generations will have the energy resources they need   
Y. Promoting energy independence in the United States

Z. All of the above A) Z

18. Energy Bonus  
Q) The average American uses how many gallons of gasoline every year?

w.500 x. 50 y. 100 z. 1000 A) W

19. Energy Toss-up

Q) How many hydrogen-fueled vehicles currently exist in the United States?

w. 200 x. 25 y. 500 z. 800 A) w

20. Energy Bonus

Q) In which country was the first geothermal station built? A) Italy

21. Mathematics Toss-up

Q) What is the length of the major axis of the ellipse with an equation of (x2/36) + (y2/16) = 1 A) 12

22. Math Bonus

Q) A "reunion of broken parts" is the meaning of the root of what word:

w) algebra x) calculus y) mathematics z) none of the above A) w

23. Math toss-up

Q) If sinA = 3/5, what is tanA ? A) ¾

24. Math Bonus

Q) What is the equation of the normal line of the equation y= (x3-23)2 at x=2?

w. y= -72x + 369 x. y= -72x + 361 y. y= (x+16198)/72 z. y= (x+19198)/36

A) Y