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11/21/12

Science Bowl Questions

25 Toss-ups

Varied

1. BIOLOGY; *Multiple Choice:* Which of the following is not considered a metabolic stage of cellular respiration?

W. Glycolysis

X. Citric acid cycle

Y. Electron transport

Z. Oxiosmosis

Answer: Z

1. BIOLOGY; *Short Answer:* The process of glycolysis results in the synthesis of what molecule?

Answer: Pyruvate

1. BIOLOGY; *Multiple Choice:* Which of the following enzymes are not involved in glycolysis?

W. Hexokinase

X. Phosphoglucoisomerase

Y. Amylase

Z. Enolase

Answer: Y

1. BIOLOGY; *Multiple Choice:* Where does the Krebs cycle take place in the cell?

W. The cytoplasm

X. The mitochondrial outer compartment

Y. The mitochondrial crista

Z. The mitochondrial matrix

Answer: Z

1. BIOLOGY; *Short Answer:* What is the name given to the protein complex in the mitochondrial membrane that synthesizes adenosine triphosphate?

Answer: ATP synthase

1. PHYSICS; *Multiple Choice:* If a ray of light travels from a medium with a low index of refraction to a medium of high index of refraction, the ray of light will bend—

W. Away from the normal

X. Towards the normal

Y. The light will not bend

Z. Not enough information is given.

Answer: X

1. PHYSICS; *Short Answer:* The human eye is most sensitive to what color of light?

Answer: Yellow

1. PHYSICS; *Multiple Choice:* If an object is place in front of a concave mirror, beyond the center of curvature, the resulting image of the object will be—

W. Inverted, reduced in size, and between the center of curvature and focal point.

X. Inverted, reduced in size, and beyond the center of curvature.

Y. Right side up, larger in size, and between the center of curvature and focal point.

Z. Right side up, larger in size, and beyond the center of curvature.

Answer: W

1. PHYSICS; *Short Answer:* If a ray of light reflects off of a convex mirror parallel to the principal axis, the reflected ray of light will reflect as if it is coming from what point?

Answer: The focal point

1. PHYSICS; *Multiple Choice:* You are standing on a sidewalk, and a fire truck races by with its siren blaring. While the truck is passing you, the siren’s pitch will sound—

W. Higher than it actually is the whole time.

X. Lower than it actually is the whole time.

Y. Higher than it actually is, and then lower than it actually is.

Z. Lower than it actually is, and then higher than it actually is.

Answer: Y

1. CHEMISTRY; *Multiple Choice:* Which of the following is not a metalloid?

W. Polonium

X. Silicon

Y. Boron

Z. Germanium

Answer: W

1. CHEMISTRY; *Short Answer:* Water spontaneously rising from a sequoia’s roots to all its parts is an example of what phenomenon?

Answer: Capillary action

1. CHEMISTRY; *Short Answer:* If a substance is 100 times more acidic than another substance with a pH level of 4, what is the first substance’s pH level?

Answer: 2

1. CHEMISTRY; *Multiple Choice:* 1s22s22p63s1 is the electron configuration of what element?

W. Sodium

X. Magnesium

Y. Aluminum

Z. Silicon

Answer: W

1. CHEMISTRY; *Multiple Choice:* Aluminum reacting with copper (II) chloride dehydrate to produce copper and aluminum chloride is an example of a—

W. Acid base reaction

X. Double displacement reaction

Y. Single displacement reaction

Z. Decomposition reaction

Answer: Y

1. MATH; *Short Answer:* The equation (x-4)2-(y+9)2=16, when graphed, will form what conic structure?

Answer: Hyperbola

1. MATH; *Short Answer:* What is the sum of the infinite series 3+1.5+0.75+…?

Answer: 6

1. MATH; *Multiple Choice:* Which of the following cannot be the length of the third side of triangle with two sides measuring 17 and 6 units in length?

W. 22 units

X. 12 units

Y. 17 units

Z. 10 units

Answer: Z

1. MATH; *Multiple Choice:* Which of the following is equal to (5x-25)(5x+25)?

W. 25x2+250x+625

X. x2-25

Y. 25x2-625

Z. x2+10x+25

Answer: Y

1. MATH; *Short Answer:* What is the volume of a sphere with a radius of 3 pi in terms of pi?

Answer: 36pi4

1. EARTH AND SPACE SCIENCE; *Multiple Choice:* Which of the following star is closest to earth, other than the Sun?

W. Barnard’s Star

X. Proxima Centauri

Y. Sirius

Z. Wolf 359

1. EARTH AND SPACE SCIENCE; *Short Answer:* What is the hardest common mineral, which ranks 7 on the Mohs Hardness Scale?

Answer: Quartz

1. EARTH AND SPACE SCIENCE; *Multiple Choice:* Which of the following minerals does not have a black color?

W. Anthracite coal

X. Biotite

Y. Bituminous coal

Z. Azurite

Answer: Z

1. EARTH AND SPACE SCIENCE; *Short Answer:* Calcium-rich minerals are part of which branch of the Bowen’s reaction series?

Answer: Continuous series

1. EARTH AND SPACE SCIENCE; *Multiple Choice:* The volcano, Olympus Mons, can be found on which planet?

W. Mercury

X. Venus

Y. Mars

Z. Jupiter

Answer: Y