Vendor: Test Prep

Exam Code:OAT

Exam Name: Optometry Admission

Version: Demo

QUESTION 1

In which of the following stages of embryo development are the three primary germ layers first present?

A. Blastula

B. Zygote

C. Gastrula

D. Coelomate

E. Morula

Correct Answer: C

The gastrula is formed from the blastocyst, which contains a bilayered embryonic disc. One layer of this disc\\'s inner cell mass further subdivides into the epiblast and the hypoblast, resulting in the three primary germ layers (endoderm, mesoderm, ectoderm).

QUESTION 2

Which hormone is responsible for red blood cell production?

A. Prolactin

B. Aldosterone

C. ACTH

D. Oxytocin

E. Erythropoietin

Correct Answer: E

Erythropoietin is produced in the kidneys and travels to the bone marrow signaling the production of RBC.

QUESTION 3

Ma\\'Tia drove 400 miles in 6 hours. She has an additional 180 miles to drive. If she drives at the same rate of speed, how long will it take her rounded to the nearest hour?

A. 3 hours

B. 2 hours

C. 4 hours

D. 1 hour

Correct Answer: A

400/6 = 180/x, 400x = 1080, x = 2.7.

Rounded to the nearest hour, it will take her approximately 3 hours.

QUESTION 4

In the food chain below, vultures represent grass ?gt; cow ?gt; wolf ?gt; vulture:

A. Scavengers

B. Primary carnivores

C. Detritivores

D. Secondary consumers

E. Herbivores

Correct Answer: A

Vultures eat carrion, or dead animals, so they are considered scavengers. Detritivores are heterotrophs that eat decomposing organic matter such as leaf litter. They are usually small.

QUESTION 5

The synaptonemal complex is present in which of the following phases of the cell cycle?

A. Telophase of meiosis I

B. Metaphase of meiosis II

C. Metaphase of meiosis I

D. Metaphase of mitosis

E. Telophase of meiosis II

Correct Answer: A

The synaptonemal complex is the point of contact between homologous chromatids. It is formed when nonsister chromatids exchange genetic material through crossing over. Once meiosis I has completed, crossovers have resolved and the synaptonemal complex no longer exists. Rather, sister chromatids are held together at their centromeres prior to separation in anaphase II.

QUESTION 6

$$\frac{5}{8} = \frac{w}{3}$$

w = ?

A. 5/24

B. 15/24

C. 1 7/8

D. 1 15/8

E. 8

Correct Answer: C

This is a simple algebraic problem. Multiply both sides by 3 to get `w\\' alone. This results in 15/8, which is equivalent to 1 7/8.

QUESTION 7

Sin(30+50) = ?

A. cos30sin50 - sin30cos50

B. cos80

C. sin30cos50 + cos30sin50

D. tan80 - cos30

E. 2sin30cos50

Correct Answer: C

Sin(x + y) = sinxcosy + cosxsiny

QUESTION 8

In a sample with 46 homologous pairs of chromosomes, what is the total number of chromatids present in the sample?

A. 23

B. 46

C. 92

D. 184

E. 256

Correct Answer: D

If there are 46 homologous chromosomes present, it means there is a total of 92 chromosomes. 46 come from the father, 46 from the mother. Thus with 92 chromosomes, there is a total of 184 chromatids.

QUESTION 9

8 dogs must line up behind each other in single file to get a treat. How many different ways can the dogs line up?

A. 8

B. 16

C. 64

D. 320

E. 40320

Correct Answer: E

This question is asking for the different ways the 8 dogs can be arranged, without repeats. This is represented by the factorial (!). Thus, 8! = 8 × 7 × 6 × 5 × 4 × 3 × 2 × 1 = 40320. Thus, the number of ways to arrange the 8 equal dogs is 40320.

QUESTION 10

A double-stranded DNA molecule consists of 20% Guanine. What percentage does Thymine represent in this stand?

A. 20%

B. 30%

C. 40%

D. 60%

E. 80%

Correct Answer: B

Guanine pairs up with Cytosine. So, if 20% of the DNA stand is Guanine, it means 20% of it is Cytosine. Thus, the 60% left is made up of Adenine and Thymine. Since Adenine pairs up with Thymine, it must be evenly split into 30:30. Thus, 30% is composed of Thymine.

QUESTION 11

The density of helium is much lower than that of air. How does the speed of sound traveling through helium has compare to the speed of sound in air?

A. It is faster.

B. It is slower.

C. It is the same speed.

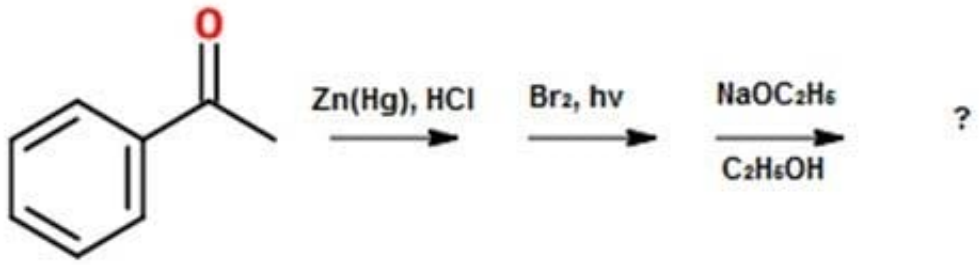
D. It cannot be determined without knowing their atomic masses.

Correct Answer: A

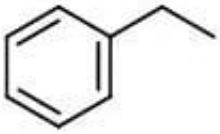
Sound travels much faster through helium than through air. Generally, the speed of sound can be calculated by speed = (k ?P /), where k is the index of specific heats, P is pressure and is density. Since helium has a much lower density, it would have a higher speed.

QUESTION 12

What is the end product for the following set of reactions:

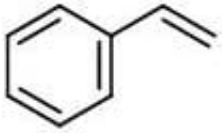


A.

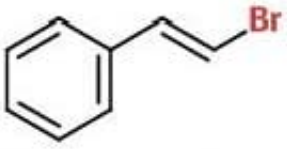


B.

C.



D.



E. None of the above

A. Option A

B. Option B

C. Option C

D. Option D

E. Option E

Correct Answer: C

The correct answer is C for all the following reactions. Answer choice A illustrates the product after the first reaction. Answer choice B illustrates the product after the second reaction, and finally C shows the product for the last reaction.