

Chapter 9: Heredity and Evolution

1. The sequence of gradual changes which takes place in the primitive organisms over millions of years in which new species are produced is known as

- (a) Evolution
- (b) Heredity
- (c) Generation
- (d) Inheritance

Answer. (a) Evolution

Explanation: Evolution is a series of gradual changes in an organism, wherein in the end, the organism is evolved and advanced.

2. If a normal cell of human body contains 46 pairs of chromosomes then the numbers of chromosomes in a sex cell of a human being is most likely to be:

- (a) 60
- (b) 23
- (c) 22
- (d) 40

Answer. (b) 23

Explanation: The sex gametes are always haploid. They have 23 chromosomes.

3. In the human blood grouping, the four basic blood types are type A, type B, type AB, and type O. They are:

- (a) Simple dominant and recessive traits
- (b) Co-dominant traits
- (c) Recessive traits
- (d) Inherited traits

Ans: (b) Co-dominant traits

Explanation: A co-dominant trait is the one in which neither allele is dominant or recessive and both are expressed equally.

4. A pregnant woman has an equal chance of her baby being blood group A or blood group AB. Which one of the following shows the possible genotypes of the woman and the father of her child?

(a) $I^A I^A$ and $I^B I^O$

(b) $I^A I^B$ and $I^B I^O$

(c) $I^A I^O$ and $I^B I^O$

(d) $I^O I^B$ and $I^A I^O$

Answer. (a) $I^A I^A$ and $I^B I^O$

Explanation:

I^B

I^O

I^A

$I^A I^B$ means AB

$I^A I^O$ means A

I^A

$I^A I^B$ means AB

$I^A I^O$ means A

Ratio of AB: A = 1:1. Hence, first answer is correct.

5. What will be the number of chromosomes present in each gamete produced by the plants if the palisade cells of a species of plant contain 28 chromosomes in all?

(a) 56

(b) 28

(c) 14

(d) 4

Answer. (c) 14

Explanation: Gamete cells are always haploid.

6. The following results were obtained by a scientist who crossed the F1 generation of pure-breeding parents for round and wrinkled seeds.

Dominants trait

Recessive trait

No. of F2 offspring

Round seeds

Wrinkled seeds

7524

From these results, it can be concluded that the actual number of round seeds he obtained was:

(a) 1881

(b) 22572

(c) 2508

(d) 5643

Answer. (d) 5643

Explanation: The actual number of seeds obtained were 5643.

7. A cross between a tall plant (TT) and short plant (tt) resulted in progeny that were all tall plants as:

- (a) Tallness is the dominant trait
- (b) Shortness is the dominant trait
- (c) Tallness is the recessive trait
- (d) Height of plant is not governed by gene t or t

Answer. (a) Tallness is the dominant trait

Explanation: The best traits are always superior. For instance, tallness and round seeds are dominant traits.

8. In peas, a pure tall plant (TT) is crossed with a pure short plant (tt). The ratio of pure tall plants to pure short plants in F₂ generation will be:

- (a) 1 : 3
- (b) 3 : 1
- (c) 1 : 1
- (d) 2 : 1

Answer. (c) 1 : 1

Explanation: The ratio of TT and tt plants of F₂ generation will be the same.

9. In human males, all the chromosomes are paired perfectly except one. These unpaired chromosomes are:

- (i) Large chromosome
- (ii) Small chromosome
- (iii) Y chromosome
- (iv) X chromosome

- (a) (i) and (ii)
- (b) (iii) and (ii)
- (c) (iii) and (iv)
- (d) (ii) and (iv)

Answer. (c) (iii) and (iv)

Explanation: X and Y are sex chromosomes.

10. Which of the following determines the sex of a child?

- (a) The length of the mother's pregnancy
- (b) The length of time between ovulation and copulation
- (c) The presence of an X chromosome in an ovum
- (d) The presence of a Y chromosome in a sperm

Answer. (d) The presence of a Y chromosome in a sperm

Explanation: The male sex chromosome is the deciding factor for the gender of the child. If the X part fertilizes with the ovum, girl is born. If Y fertilizes, then a boy is born.

11. Which is the one characteristic of the parents that can be inherited by their children?

- (a) Deep scar on chin
- (b) Snub nose
- (c) Technique of swimming
- (d) Cut nose

Answer. (b) Snub nose

Explanation: A dominant inherent character can only be inherited by the children.

12. What could be the reason for the fossil of an organism to be found in the deeper layers of the earth?

- (a) The extinction of organism has occurred few years back
- (b) The extinction of organism has occurred thousands of years ago
- (c) The position of fossil in the layers of earth is not related to its time of extinction
- (d) Time of extinction cannot be determined.

Answer. (b) The extinction of organism has occurred thousands of years ago

Explanation: The deeper the fossil is embedded in the earth, the more likely it is to be very old.

13. What is the ancient name for all human beings?

- (a) Monkey
- (b) Chimpanzee
- (c) Homo sapiens
- (d) Invertebrates

Answer. (c) Homo sapiens

Explanation: The scientific name of human is Homo sapiens.

14. The organs present in two organisms indicate that they are derived from the same ancestor are:

- (a) Analogous Organs
- (b) Respiratory Organs
- (c) Sense organs
- (d) Homologous Organs

Answer. (d) Homologous Organs

Explanation: The structures which are similar in their morphology, anatomy, and embryology but dissimilar in their functions are homologous organs.

15. Which of the following pair of organ is not homologous?

(a) Forelimbs in humans and lizard

(b) Forelimbs in lizard and frog

(c) Wings in butterfly and bat

(d) None of these

Answer. (c) Wings in butterfly and bat

Explanation: Wings of a bat and a butterfly are considered as analogous organs.