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Heredity And Evolution T2

10th Standard

Science

19 x 1 = 19

1) Which of the following statement is incorrect?

(a) For every hormone there is a gene (b) For every protein there is a gene

(c) For production of every enzyme there is a gene. (d) For every molecule of fat there is a gene.

2) In human males all the chromosomes are paired perfectly except one. This/these unpaired chromosome is/are.

(i) large chromosome
(ii) small chromosome
(iii) Y - chromosome
(iv) X - chromosome

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

3) A zygote which has an X - chromosome inherited from the father will develop into a

(a) boy (b) girl (c) X - chromosome does not determine the sex of a child (d) either boy or girl

4) New species may be formed if

(i) DNA undergoes significant changes in germ cells
(ii) chromosome number changes in the gamete
(iii) there is no change in the genetic material
(iv) mating does not take place

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

5) A basket of vegetables contains carrot, potato, radish and tomato. Which of them represent the correct homologous structures?

(a) Carrot and potato (b) Carrot and tomato (c) radish and carrot (d) radish and potato

6) From the list given below, select the character which can be acquired but not inherited

(a) colour of eye (b) colour of skin (c) size of body (d) nature of hair

7) Select the statements that describe characteristics of genes

(i) genes are specific sequence of bases in a DNA molecule
(ii) a gene does not code for proteins
(iii) in individuals of a given species, a specific gene located on a particular chromosome
(iv) each chromosome has only one gene.

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

8) The number of pair (s) of sex chromosomes in the zygote of humans is

(a) one (b) two (c) three (d) four

9) Some dinosaurs had feathers although they could not fly but birds have feathers that help them to fly. In the context of evolution this means that

(a) reptiles have evolved from birds (b) there is no evolutionary connection between reptiles and birds

(c) feathers are homologous structures in both the organisms (d) birds have evolved from reptiles.

10) Which of the following is a totally impossible outcome of Mendel's Experiment (cross breeding pure breed tall and short pea plants)

(a) 3 tall 1 short plant (b) 24 tall and 8 short plants (c) 8 tall and 0 short plants

(d) 4 tall plants and 1 medium-height plant.

11) Which one of the following is present in the nucleus?

(a) Gene (b) DNA (c) Chromosomes (d) All of these

12) What is the probability that a human progeny will be a boy

(a) 50% (b) 56% (c) 47.34% (d) It varies

13) There is an inbuilt tendency of variation during reproduction because of-
(i) Errors in DNA copying (ii) Sexual reproduction

(a) only (i) (b) only (ii) (c) both (i) and (ii) (d) none of them

14) If we breed a group of squirrels and surgically remove their tails, then amongst the progeny of these tailless squirrels

(a) All have no tail (b) All have a tail (c) Some of them have tails (d) Cannot be determined

15) Formation of 2 independent species due to genetic drift, geographical isolation, natural selection is specifically referred as-

(a) Evolution (b) Classification (c) Speciation (d) Reproduction

16) If A and B have n characteristics common while A and C have n/2 characteristics common, then which of the two organisms are more closely related?

(a) A and C (b) A and B (c) Characteristics need to be known (d) None of these

17) Analogous organs have

(a) Same structure, same function (b) Different structure, different function

(c) Same structure, different function (d) Same function, different structure

18) How can we know how old fossils are:

(a) Fossils found closer to surface are recent than those found much below

(b) Detecting ratios of isotopes (c) Studying its characteristics (d) All of these

19) Wild cabbage is being cultivated for thousands of years and humans have generated broccoli, cauliflower, kala etc. from it. This is an example of

(a) Natural selection (b) Genetic drift (c) Geographic isolation (d) Artificial selection

1 x 1 = 1

20) **Assertion:** Darwin's theory of evolution tells us how life evolved from simple to more complex forms.
Reason: Mendel's experiments give us the mechanism for the inheritance of traits from one generation to the next.

Codes

(a) If both assertion and reason are true and the reason is correct explanation of assertion.
(b) If both assertion and reason are true but reason is not a correct explanation of assertion.
(c) If assertion is true and reason is false.
(d) If both assertion and reason are false.

6 x 5 = 30

21) How are the areas of study - evolution and classification - interlinked?

22) Explain how sexual reproduction gives rise to more viable variations than asexual reproduction. How does this affect the evolution of those organisms that reproduce sexually?

23) A blue colour flower plant denoted by BB is crossbred with that of white colour flower plant denoted by bb.
(a) State the colour of flower you would expect in their F_1 generation plants.
(b) What must be the percentage of white flower plants in F_2 generation if flowers of F_1 plants are self-pollinated?
(c) State the expected ratio of the genotype BB and Bb in the F_2 progeny.

24) Define evolution. How does it occur? Describe how fossils provide us evidences in support of evolution.

25) What is meant by speciation? List four factors which could lead to speciation. Which of these cannot be a major factor in the speciation of a self-pollinating plant species. Give reason to justify your answer.

26) How do Mendel's experiments show that the
(a) traits may be dominant or recessive,
(b) traits are inherited independently.