

EDUCOM ACADEMY

Important Questions

Chapter 9

Heredity and Evolution

HOTS: (High Order Thinking Skill) Questions with Answers:

1. How one is change adopted to perform different functions? Give one example.

Ans. In evolution, one change occurred initially is used to perform other functions. For example, feathers were evolved for warmth, later they were adapted for flight.

2. What happened when Mendel crossed two traits of a character in a pea plants?

Ans. Only dominant trait appeared in F1.

3. Who provided experimental evidence to support theory of origin of life from inanimate matter?

Ans. Miller and Urey

4. Why are asexually reproducing organisms capable of showing hereditary features?

Ans. Asexual reproduction tends to preserve the similarities among all the individuals belonging to a give line of descent. Therefore, asexually reproducing organisms are capable of showing hereditary features.

5. If the sperm bearing Y-chromosome fertilizes the egg, the child bom will not be entirely like his father. Why is it so?

Ans. It is so because the other sex chromosome, ie the X-chromosome will also have its effects and other autosomes of the egg will also show their characteristics.

6. A normal pea plant bearing colored flowers suddenly start producing white flowers. What could be the possible cause?

Ans. The appearance of white flowers is due to mutation.

7. Mention any two recessive traits of garden pea.

Ans. Dwarf (height of plant), wrinkled seed

8. Write the characteristics on the basis of which duck-biled platypus is considered as a link between reptiles and mammals.

Ans. The characteristic resembling reptiles is laying of eggs and the characteristics resembling mammals is presence of mammary glands.

9. Why are the small number of surviving tigers a cause of worry from the point of view of genetics?

Ans. As the population of tigers is decreasing, there is loss of genes from the gene pool and there can't be recombinations and variations, thus no evolution.

10. What is called phylogenetic system of classification?

Ans. Classification based on evolutionary relationships of organisms.

11. Is it true that when a new species is emerged, the old species is eliminated, why?

Ans. No, it is not true that when a new species is emerged, the old species is eliminated. Because when there is a change in any species, the change is only in a part or a few members of the species population. If the newly generated species after genetic change is better in any way, it will get more opportunity to survive and if the genetic change is against the environment, it will die. Thus, unchanged members of other species may also remain and tend to live in changed environment.

12. What will be the percentage of ab gametes produced by AaBb parent?

Ans. 25 percent

13. Mendel crossed a pure white recessive pea plant with a dominant pure red flowered plant. What will be the first generation of hybrids?

Ans. All red

14. In evolutionary terms, which among-bacteria, spider, fish and chimpanzee have a "better" body design? Why or why not?

Ans. Chimpanzee have the better body design as compared to others given. They are better adapted for locomotion, communication and thinking.

15. What is an off spring?

Ans. In sexual reproduction organisms raised are as a result of crossing over and exchange of gene segments and are known as offspring.

16. Why are traits acquired during life-time of an individual not inherited?

Ans. Traits acquired during life-time of an individual not inherited because change in non-reproductive tissue or somatic cells cannot be passed on to the DNA of germ cells. Thus, the acquired trait will die with the death of the individual. It is therefore nonheritable and cannot be passed on to its progeny.

17. Name the chemicals which were essential for origin of life.

Ans. Proteins and nucleic acid

18. Why males are called heterogametic?

Ans. Because they have dissimilar sex chromosomes.

19. What is the percentage possibility a couple of having daughters?

Ans. 50 percent

20. Name 2 organisms in which sex determination is regulated by environmental factors?

Ans. Turtle, lizard

21. What are inherited traits? Give one example.

Ans. The characteristics which are transmitted from parents to their offsprings are called inherited traits. E.g. free and attached earlobes.

22. When Mendel crossed a Tall plant with a dwarf plant, no medium height plants were obtained in F₁ generation. Why?

Ans. Because dominant genes express themselves and suppress the effect of recessive genes. So no medium sized plants were obtained.

23. The gene type of green stemmed tomato plants is denoted as GG and that of purple stemmed tomato plants as gg when these two are crossed.

i. What colour of stem would you expect in F₁ progeny?

ii. Give the percentage of purple stemmed plants if F₁ are self pollinated. progeny?

iii. In what ratio would you find the gene types GG and Gg in the F₂

Ans. i. Colour of F₁ progeny- Green

ii. Percentage of purple stemmed plants in F₂ generation 25% or 1/4.

iii. Ratio of genotypes GG and Gg 1:2

24. The human hand, cat paw and horse foot when studied in detail show the same structure of bones and point towards a common origin.

i. What do you conclude from this?

ii. What is the term given to such structures?

Ans. They have a common ancestry (i) Homologous organs

25. What are the causes of variations in clones?

Ans. i. inaccuracies during DNA copying

ii. Effect of environment termed acquired variation.

iii. Mutations are sudden stable changes which are discontinuous inheritable as produced due to changes in genetic make-up.

26. How do we know how old a fossil is?

Ans. There are two methods:

i. Relative method when we dig into the earth, the fossils we find closer to the surface are more recent than the fossils we find in deeper layers.

ii. By detecting the ratios of different isotopes of the same element in the fossil material.

27. Only variation that confer and advantage to an individual organism will survive in a population. Do you agree with this statement? Why or why not?

Ans. We agree with the statement. All the variation do not have an equal chance of surviving in the environment in which they find themselves. The chances of surviving depend on the nature of variation. Different individuals have different kind of advantages. A bacterium that can withstand heat will survive better in heat wave.



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