

CHAPTER - 1 HEREDITY & EVOLUTION**LCHOOSE THE CORRECT ANSWER**

(16 X 1 = 16)

1. Mendel observed 7 pairs of contrasting characters in *Pisum sativum*. Which one of the following is not a part of that?
i) Tall and dwarf ii) Yellow and green seed colour iii) Terminal and axial flower iv) Smooth and rough stem
2. Primitive man evolved in _____. i) Africa ii) America iii) Australia iv) India
3. Which of the following is inheritable? i) an altered gene in sperm ii) an altered gene in liver cells iii) an altered gene in skin cells iv) an altered gene in udder cells
4. The theory of Natural Selection was proposed by _____.
i) Charles Darwin ii) Hugo de Vries iii) Gregor Johann Mendel iv) Jean Baptise Lamarck
5. Somatic gene therapy causes _____.
i) changes in sperm ii) changes in progeny iii) changes in body cell iv) changes in ovum
6. In a pea plant, the yellow colour of the seed dominates over the green colour. The genetic make up of the green colour of the seed can be shown as _____. i) GG ii) Gg iii) Yy iv) yy
7. Some people can roll their tongue and this is a genetically controlled auto-somal dominant character. [Roller = RR / Rr; Non-roller = rr] A child who can roll the tongue has one brother who is a non-roller and two sisters who are rollers. If both the parents are rollers, the genotypes of their parents would be _____.
i) RR x RR ii) Rr x Rr iii) RR x rr iv) rr x rr
8. Hydra, a multi-cellular invertebrate of phylum cnidaria (coelenterata) can give rise to new offspring by various methods. Choose the method by which the offspring are produced with significant variations.
i) budding ii) regeneration iii) sexual reproduction iv) asexual reproduction
9. The following are the events in the formation of the first cloned animal – the sheep Dolly.
a) Removal of haploid nucleus from the ovum. b) Implantation of ovum with diploid nucleus into the surrogate mother.
c) Collection of udder cell from the sheep. d) Injection of diploid nucleus of udder cell into the enucleated ovum.
e) Development of a young clone.
The correct sequential order of these events is _____. i) abcde ii) cabed iii) cadbe iv) edcba
10. The following are statements about stem cells:
a) There are unspecialised / undifferentiated cells. b) They can be transformed into any type of body cell.
c) They can multiply rapidly to form a large number of similar types of cells. d) They cannot transform into cardiac cells or nerve cells. e) They are obtained from reproductive progeny only. The correct statements are _____:
i) a,b,c only ii) c,d,e only iii) a,c,e only iv) b,c,e only
11. In persons suffering from insulin-dependent diabetes, the cells of pancreas are degenerated.
i) Alpha ii) Beta iii) Gamma iv) Delta
12. Identical twins are born as a result of fertilization between _____.
i) two eggs and two sperms ii) two eggs and one sperm iii) one egg and one sperm iv) one egg and two sperms
13. Identify the incorrect statement about identical twins.
i) developed from a single zygote ii) always of the same sex iii) look alike in many aspects iv) differ in their blood groups
14. The correct statement about Neanderthal man is:
i) the first human like hominid ii) started agriculture iii) ate meat and walked erectly iv) buried the dead
15. The inheritance of characteristics through generation is called "heredity". In Mendel's *Pisum sativum* plant, the genetic material present is _____. i) DNA ii) RNA iii) Protein iv) Cytoplasm
16. The Genotypic ratio of the monohybrid ratio is _____. i) 1:3:1 ii) 3:1 iii) 1:2:1 iv) 2:1
- II. WRITE SHORT ANSWER FOR THE FOLLOWING QUESTIONS.** (17 X 2 = 34)
17. The inheritable characters vary in different species and within the same species. Name the variation in the following cases.
i) The dentition in the rabbit and the elephant are not the same. This is called as _____ variation.
ii) The eye colour among the human beings are varied as blue, black, brown, green, etc. This is called as _____ variation.
18. Sexually reproducing organisms produce offspring with marked, significant and visible variation. Asexually reproducing offspring show minor variations. i) Do you agree with the above statements?
ii) Among the following organisms point out the asexually reproducing organism. (Cockroach, Euglena, Earthworm and Bird)
19. Fill in the blanks by choosing a suitable one from the list given. (allele, variation, speciation, gene, allelomorphs)
i) _____ are the factors which form the physical basis of inheritance.
ii) _____ are the expressions of contrasting pair of alleles. iii) _____ is the alternate forms of the same gene.
20. A change that affects the body cell is not inherited. However, a change in the gamete is inherited. The effects of radiation at Hiroshima have been affecting generations. Analyze the above statements and give your interpretation.
21. What are variations? Mention their types.
22. What do you mean by phenotype and genotype of an individual? Explain.
23. What are monoclonal antibodies? Mention its use.
24. What is a clone? In what way is the cloning technique useful in the field of veterinary science?
25. In dogs, the barking trait is dominant over the silent trait. Using Punnett Square, work out the possible puppies born to two barking parents with genotype (Rr).
26. In Dr. Ian Wilmut's cloning experiment, did the new born 'Dolly' resemble the udder cell donor Dorset white sheep or the surrogate mother sheep? Give reasons.
27. The excessive use of pesticides has only resulted in the occurrence of more resistant varieties of pests rather than their complete eradication. How can you link this with Darwin's theory of Natural Selection and Evolution?
28. i) Why did Wilmut select the udder cell? ii) Define the terms haploid and diploid.
29. Match the following by identifying the pair : (medicines, fuel, microbes, metabolism, organic acids)
i) vaccine ii) natural gas iii) citric acid iv) monoclonal antibodies v) vitamins
30. Name the different species of mankind in chronological order from primitive to modern man.
31. Find out who I am?
i) I am an enzyme and I cut DNA at specific sites. ii) I am the paste enzyme that joins segments of DNA.
32. State whether **true or false**. Correct the statements that are false.
i) Heredity give the organisms an individuality of their own.
ii) Lamarck postulated the use and disuse theory.
33. Mention the two principles of theory of Natural Selection.