Class test (LS1201)

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Each question carries one mark.

1. Alternative form of a gene
a. Epistatic genes
b. Alleles
c. Pleiotropic genes
d. Non-allelic genes

2. An organism with two identical alleles of a gene in a cell is called?
a. homozygous
b. heterozygous.
c. Hybrid.
d. Dominant

3. Normally, genes do not occur in pairs in
a. Somatic cell
b. Gametes
c. Fertilized egg
d. Zygote

4. An extra finger in man occurs rarely. It is due to a dominant gene. Suppose one parent is normal, and the other parent has an extra finger but is heterozygous for the trait. What is the probability that their child will be normal?

a. 25%
b. 50%
c. 75%
d. 100%

5. Meiosis cell division results in four cells that have:
a. n chromosomes and are genetically identical.
b. n chromosomes and are genetically different.
c. 2n chromosomes and are genetically identical.
d. 2n chromosomes and are genetically different.

6. Which blood type would not be possible for children of a type AB mother and a type A father? (1)

a. O.
b. A.
c. B.
d. AB.

7. What is the difference between monohybrid and dihybrid cross? (1)

a. A monohybrid cross involves a single parent, whereas a dihybrid cross involves two parents.
b. A monohybrid cross produces a single progeny, whereas a dihybrid cross produces two progeny.
c. A monohybrid cross involves heterozygous organisms for a single character, whereas a dihybrid cross involves heterozygous organisms for two characters.
d. A monohybrid cross results in a 9:3:3:1 ratio whereas a dihybrid cross gives a 3:1 ratio

8. In foxes silver- black coat color is governed by a recessive allele b and red color by its dominant allele B. Determine the phenotypic and genotypic ratio when a carrier red fox is mated with silver-black? (1)

9. Achondroplastic dwarfism is autosomal dominant, and red-green color blindness is X-linked recessive trait. A male dwarf (achondroplastic) with normal vision marries a color-blind woman of normal height. The man's father was six-feet tall (normal height), and both the woman's parents were of normal height. What is the probability that the daughter of the male dwarf with normal vision and a colourblind woman with normal height will be colour-blind dwarfs? How many of their sons would be color-blind and of normal height? (4.0)

10. The relationship of the I and H genes affects the expression of the ABO blood type in the following ways: genotype HH; AB or Hh; AB produces blood type AB while genotype hh, AB produces blood type O (Bombay blood group). What will be the possible blood group distribution in the progeny if Hh; AB individual marries a hh;AB individual? Please use a punnet square to show your results (4 marks).

11. Two students are employing the Chi square test for the same set of data (Dihybrid cross) and get a Chi square value of 9.81. While the 1st student rejects the null hypothesis citing the p=0.05 (maximal possible deviation permitted is 7.8) value is much less than 9.81, while the second student accepts the Null hypothesis using p=0.01 (maximal possible deviation permitted is 11.34). Which of the analysis above may result in a flawed conclusion and why? (4.0 marks)