

B.Sc. DEGREE EXAMINATION - NOVEMBER 2017
BRANCH VI A – ADVANCED ZOOLOGY & BIOTECHNOLOGY
FIFTH SEMESTER

COURSE : MAJOR CORE

PAPER : GENETICS

TIME : 3 HOURS

MAX. MARKS: 100

SECTION – A

ANSWER ALL THE QUESTIONS

(10 x 3 = 30)

1. Define: a) Genotype b) Codominance c) Test Cross
2. Fill in the blanks
 - a) A _____ individual has different alleles for a particular phenotypic trait.
 - b) Coat colour in mice is an example for _____ epistasis.
 - c) Male *Drosophila* exhibits _____ linkage.
3. State True or False
 - a) Y-linked genes are transmitted directly from the father to the son.
 - b) Barr body is found in all the cells in a human female.
 - c) Codominance is a non allelic interaction.
4. One parent is of Blood type A and the other is B. Give the genotype of the parents if they produced children of the following blood types in the following ratios:
 - a) All AB
 - b) $\frac{1}{2}$ AB & $\frac{1}{2}$ A
 - c) $\frac{1}{4}$ AB, $\frac{1}{4}$ A, $\frac{1}{4}$ B, $\frac{1}{4}$ O
5. Match the following
 - a) Sex limited genes - Color blindness
 - b) Sex influenced genes - Pattern baldness in man
 - c) Sex linked genes - Plumage pattern in birds
6. Choose the right answer
 - i) There are ____ number of chromosomes in *Drosophila*.
 - a) 2 pairs b) 4 pairs c) 6 pairs d) 8 pairs
 - ii) A non aneuploidic condition among the following is:
 - a) Klinefelter's syndrome b) Down syndrome c) Albinism d) Edward's syndrome
 - iii) The ratio observed in complementary gene interaction is
 - a) 13:3 b) 9:3:4 c) 15:1 d) 9:7
7. What are the following:
 - a) Outbreeding b) Linkage c) Frame shift mutation
8. Give any three reasons why Mendel chose to work on pea plant.
9. Answer the following in a word:
 - a) Trisomy 18:
 - b) AB Blood group
 - c) Failure of homologous chromosomes to separate during cell division:
10. Define giving an example: a) Mutagen b) Incomplete dominance.

SECTION – B

ANSWER ANY FIVE QUESTIONS

(5 x 6=30)

11. What is multiple gene interaction? Explain with reference to skin color in man.
12. Discuss the significance of Rh factor in pregnancy.
13. Explain sex determination in human.
14. What is mutation? Describe transversion mutation with a suitable example.
15. Explain maternal inheritance in *Limnaea*.
16. Define Chromosomal aberrations. Enumerate the causes and clinical features of Cri-du-chat syndrome.
17. What is Genetic Counselling. Add a note on the procedure and its applications.

SECTION - C

ANSWER ANY TWO QUESTIONS

(2 x20=40)

18. Describe Mendel's monohybrid and Dihybrid cross and his conclusions.
19. Define Epistasis. Describe Dominant epistasis and Duplicate recessive epistasis with suitable examples.
20. State Hardy-Weinberg Law and discuss the factors affecting HW Equilibrium.
21. Illustrate the metabolic pathway of Phenylalanine in the form of a neat flowchart. Describe the cause and clinical features of PKU, Albinism and Alkaptonuria in this context.
