(6 pages) **Reg. No. :** .....

Code No. : 6911 **Sub. Code : PZOM 42**

M.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2021.

Fourth Semester

Zoology – Core

GENETICS

(For those who joined in July 2017 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. The crossing over occurs in the homologous chromosomes only during the ————————. stages

   (a) four stranded

   (b) tetrad

   (c) both (a) and (b)

   (d) two stranded

2. Two allelic genes are located on

(a) the same chromosome

(b) two homologous chromosomes

(c) two non-homologous chromosomes

(d) any two chromosomes

3. How many consensus sequences for splicing are found in an exon?

(a) 1 (b) 2

(c) 3 (d) 0

4. Semi conservative replication of DNA was first demonstrated in

(a) *Drosophila melanogaster*

(b) *Salmonella typhi*

(c) *Streptococcus pneumonae*

(d) *Escherichia coli*

5. Gene mutation is otherwise known as

(a) Point mutation

(b) Chromosomal mutation

(c) Nonsense mutation

(d) Duplicate mutation

6. The Kappa particles are transmitted through the

(a) hyaloplasm (b) nucleoplasm

(c) cytoplasm (d) protoplasm

7. Genetic diversity indicates

(a) large gene pool

(b) small gene pool

(c) moderate gene pool

(d) no gene pool

8. Equilibrium distribution of genotypes for a sex linked trait, where p+q=1, is given by

(a) $p + q = 1$ (b) $p^2 + 2pq + q^3$

(c) both (a) and (b) (d) $p^2 + q^2$

9. Twins having no variability in their traits are called

(a) dizygotic twins

(b) identical twins

(c) both (a) and (b)

(d) fraternal twins

10. The movement that is aimed at improving the genetic composition of the human race is called

(a) euphenics

(b) eugenics

(c) mutation

(d) abnormalities

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Write short notes on polygenic inheritance.

Or

(b) List out the Mendelian principles with suitable examples.

12. (a) Describe the chemical composition of genes.

Or

(b) Discuss about the different types of transposable elements.

13. (a) Write short notes on DNA damage.

Or

(b) Describe the shell coiling with neat diagram.

14. (a) How do you calculate the gene frequency? Explain with suitable examples.

Or

(b) Write short notes on gene pool

15. (a) What is aminocentosis? Explain.

Or

(b) Write a note on genetic counselling.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Describe the mechanism of crossing over with suitable examples.

Or

(b) Give an account on sex determination with suitable illustrations.

17. (a) Discuss the regulation of gene action with example.

Or

(b) Describe the semi conservative model of DNA replication in *E.coli.*

18. (a) With the help of an illustration explain the method of inbreeding.

Or

(b) Explain the classification of gene mutation.

19. (a) Write the applications of Hardy-Weinberg law for calculating gene frequencies in Population.

Or

(b) How do you calculate the gene frequencies for sex linked genes? Explain.

20. (a) What is eugenics? Explain different types of eugenics.

Or

(b) Discuss briefly on chromosomal abnormalities.

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