

(6 pages)

Reg. No. :

Code No. : 7192

Sub. Code : PZOM 42

M.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2019.

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. Crossing over occurs during
 - (a) Zygotene
 - (b) Leptotene
 - (c) Pachytene
 - (d) Diplotene
2. Which among the following has the XO sex chromosomal make-up?
 - (a) *Drosophila*
 - (b) Newts
 - (c) Dragon fly
 - (d) Chimpanzee

3. The start codon in genetic code is
 - (a) UUU
 - (b) UAU
 - (c) UGA
 - (d) AUG
4. Hormone Responsive Elements are seen in
 - (a) DNA
 - (b) Receptors
 - (c) RNA
 - (d) mRNA
5. The nucleotide bases of DNA were identified by
 - (a) Watson and Crick
 - (b) Rosalind Franklin
 - (c) Linus Pauling
 - (d) Albrecht Kossel
6. Which among the following is most potent in causing mutations?
 - (a) UV rays
 - (b) Microwaves
 - (c) Gamma rays
 - (d) Infra-red rays
7. A characteristic that shows Mendelian type of inheritance in humans is
 - (a) Mosaicism
 - (b) Brachydactyly
 - (c) Mitochondrial defects
 - (d) Edwards syndrome



8. The unit of genetic distance is
 (a) Mendelian unit (b) Kilobase
 (c) CentiMorgans (d) Kilobase pair
9. Amniocentesis can be used for diagnosing
 (a) Down syndrome
 (b) Alopecia
 (c) Creutzfeldt-Jakob disease
 (d) Hansen's disease
10. The disease which can be treated by gene therapy is
 (a) Severe combined immunodeficiency
 (b) Turner syndrome
 (c) Alzheimer's disease
 (d) Hyperglycaemia

PART B — (5 × 5 = 25 marks)

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

Each answer should not exceed 250 words.

11. (a) State Mendel's laws of inheritance.
 Or
 (b) Distinguish between (i) Locus; (ii) Allele;
 (iii) Genotype (iv) Phenotype

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12. (a) What are split genes? What is the co-relationship between split genes and beta thalassemia?

Or

- (b) Explain wobble hypothesis. What is a wobble base pair?

13. (a) Write a short note on extra-chromosomal inheritance.

Or

- (b) Highlight the peculiar nature on the genetics of shell coiling in molluscs.

14. (a) What are the advantages and disadvantages of in-breeding?

Or

- (b) What is founder effect? What is its significance?

15. (a) How is euthenics different from eugenics?

Or

- (b) Citing a suitable example, write a short essay on gene therapy.

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PART C — (5 × 8 = 40 marks)

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

Each answer should not exceed 600 words.

16. (a) Discuss the chromosome theory of linkage.

Or

- (b) Discuss the characteristic features of X-linked diseases in human beings?

17. (a) Draw the replication fork and describe the processes involved in the replication of DNA.

Or

- (b) Describe the events in transcription.

18. (a) What is heritability? How it is estimated?

Or

- (b) What are the possible mechanisms by which DNA is damaged?

19. (a) Discuss how sex linked inheritances affect human population and demographic profiles.

Or

- (b) Write an essay on the concept of Hardy-Weinberg equilibrium.

20. (a) What is DNA fingerprinting? What are its applications?

Or

- (b) Give an account of Mendelian traits in humans. Cite any two examples to illustrate your answer.
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