

(6 pages)

Reg. No. : .....

Code No. : 6431

Sub. Code : HZOM 33

M.Sc. (CBCS) DEGREE EXAMINATION,  
NOVEMBER 2014.

Third Semester

Zoology

GENETICS

(For those who joined in July 2012 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. The true Hb and gene

- (a) Polygene
- (b) Pleiotropic gene
- (c) Polymeric gene
- (d) related to multiple factor inheritance

2. An inborn errors of metabolism which eventually affects mental development is

- (a) Anaemia
- (b) Albinism
- (c) Bleeder's diseases
- (d) PKU

3. One of the short segments of RNA-primed DNA synthesized during replication of the lagging strand of the double helix.

- (a) operon model
- (b) okazaki fragment
- (c) primase
- (d) replisome

4. One of the three codons that made the position where translation of an mRNA should stop:

- (a) termination codon
- (b) triple codon
- (c) anticodon
- (d) codon

5. The bacterial transformation was discovered by

- (a) Leeuwen hock
- (b) Griffith
- (c) Solf henitsin
- (d) H.Korana

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6. The following will occur when bacterial genes are carried from a donor cell to a recipient cell by a bacteriophage.
- (a) conjugation (b) transduction  
(c) transformation (d) transversion
7. If gametes of genotype  $a_1$  have greater success in fertilization than gametes of genotype  $a_2$ , the frequency of  $a_1$  in the population should increase as  $a_2$  decrease.
- (a) migration pressure (b) meiotic drive  
(c) mutation (d) none of these
8. The gene frequencies in a population can be changed in the introduction of new individuals with new genotypes.
- (a) meiotic drive (b) mutation  
(c) migration (d) genetic drift
9. XXX females have \_\_\_\_\_ barr bodies.
- (a) 3 (b) 2  
(c) 4 (d) 1
10. Banding techniques which is specific for centrosome, constitutive heterochromatin and terminal ends of all the chromosomes is
- (a) C-banding (b) G-banding  
(c) Q-banding (d) T-banding

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b), each answer should not exceed 250 words.

11. (a) Explain the structural variation in chromosome morphology.

Or

- (b) Write an essay on the deviation from Mendel's dihybrid phenotypic ratio.

12. (a) What are the functions of core enzyme and the holoenzyme in vivo?

Or

- (b) Discuss on variable hypothesis.

13. (a) Discuss about simple transposons and complex transposons.

Or

- (b) What are plasmids and how are they classified? Give a brief account on replication, transfer and recombination of plasmids.

14. (a) Describe the significance of heterozygotes in the process of evolution.

Or



- (b) What is "genetic load"? Discuss in relation to evolution.

15. (a) Write detailed account on normal human karyotype with the explanation to different groups?

Or

- (b) What is amniocentesis? Explain

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b), each answer should not exceed 600 words.

16. (a) Give an account on the variation in chromosome morphology.

Or

- (b) Discuss in detail on the Autosomal and Sex chromosomal abnormalities in human.

17. (a) Explain in detail on "operon concept".

Or

- (b) Discuss about Wobble hypothesis.

18. (a) Differentiate Simple transposons and Complex transposons.

Or

- (b) Write a detailed account on plasmids and mention its significance to the field of genetics.

19. (a) How are meiotic drive and migration pressure shift gene frequencies in population out of Hardy Weinberg equilibrium?

Or

- (b) Explain in detail the classical hypothesis and balance hypothesis regarding the genetic structure of the population.

20. (a) Discuss about different structural and numerical chromosomal aberrations.

Or

- (b) Write a note on the following:

- (i) G-banding techniques and its significance in medical field
- (ii) Uses of amniocentesis
- (iii) Barr-body

