

2015

ZOOLOGY

[ Honours ]

PAPER – II (New)

*Full Marks : 90*

*Time : 4 hours*

*The figures in the right hand margin indicate marks  
Candidates are required to give their answers in their  
own words as far as practicable*

*Illustrate the answers wherever necessary*

[ NEW SYLLABUS ]

GROUP – A

Answer any **two** of the following questions : 15 × 2

1. (a) What do you understand by SRY ? State the role of SRY in sex determination. What is xx male syndrome ? 2 + 2 + 1

- (b) State the molecular mechanism of sex determination in *Drosophila*. 10
2. (a) 'Lysosome are the cell waste disposal system' – Explain the statement. State the functions of lysosome. 2 + 2
- (b) Describe the fine structure and function of rough endoplasmic reticulum. 8
- (c) Distinguish between the peripheral and integral proteins of plasma membrane. 3
3. (a) Distinguish between adaptive radiation and adaptive convergence. Make an explanatory note on adaptive radiation of marsupials. 2 + 6
- (b) Explain with suitable diagram, the mechanism of crossing over based on Holliday model. 7
4. (a) Explain the mechanisms of acrosome reaction in any animal model with suitable diagram. 8
- (b) Describe the transplantation experiment with diagram conducted by Spemann and Mangold. 7

5. (a) What do you mean by Batesian and Mullerian mimicry ? 5
- (b) Mention the faunal characteristic of Oriental Realm. 5
- (c) Why C-dating is essential for geological time scale calculation ? 5
6. (a) What are some limitations of the biological species concept ? 4
- (b) Write short notes on subspecies and Linnean hierarchy. 4
- (c) What is Hardy-Weinberg principle ? What are forces that may alter genetic equilibrium of a stable population. 5
- (d) What do you mean by Founder effect ? 2

GROUP – B

Answer any **five** questions of the following : 8 × 5

7. (a) Write the possible genotypes and phenotypes associated with ABO blood group. 4

- (b) Distinguish between gene interaction and allelic interaction with suitable example. 4
8. (a) 'Sickle cell anaemia is a molecular defect' – Explain. 3
- (b) Distinguish between sickle cell anaemia and sickle cell trait. 2
- (c) What do you mean by cistron concept ? 3
9. Write an illustrative note on the packaging of DNA and associated nucleoproteins to form metaphase chromosome. 5 + 3
10. What do you mean by Typological species concept ? Mention the GC content techniques in taxonomy. 3 + 5
11. Justify the following statements with proper reasons (any two) : 4 × 2
- (a) All multiple alleles are not isoalleles.
- (b) One of the X chromosome in female is always 'silent' in mammals.

(c) Recombination between two linked genes never exceeds 50%.

12. Define extra embryonic membrane. Mention different extraembryonic membrane found in chick and mention their function.  $2 + 2 + 4$

13. Define vicariant allopatric speciation. What are isolating mechanism for sympatric speciation ?  $4 + 4$

14. Give a brief account of continental drift and its impact on the distribution of animals. 8

15. Write short notes on any two of the following :  $4 \times 2$

(i) Principles of zoological nomenclature

(ii) Primary organiser

(iii) Deciduate placenta

(iv) DNA hybridization.

16. Describe different stages of development of eye in click. 8

## GROUP – C

Answer any five questions of the following;  $4 \times 5$

17. What do you mean by Linnean hierarchy in classification of organism? 4
18. Mention the function of leydig cell. 4
19. A short DNA molecule contains 220 nucleotide pairs. (i) What is the length of DNA molecule  
(ii) Calculate the no. of spirals in the molecules. 2 + 2
20. Define g RNA and Sno RNA. 2 + 2
21. Distinguish between Histone and Non-histone protein. 2 + 2
22. Differentiate between coagulant and non-coagulant fixative with suitable example for each. 4
23. What are the roles of  $G_2$ ,  $M$  and  $G_1$  checkpoints in cell cycle. 4
24. Define lectotype and neotype. 4

25. What are somatopleure and splanchnopleure ? 2 + 2
26. Define Wallace and Weber line. 2 + 2
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