

2017

ZOOLOGY

[Honours]

PAPER – II

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

GROUP – A

Answer two questions from the following : 15 × 2

- 1. (a) Briefly describe the steps of cell fractionation technique. What is equilibrium density gradient ?**

8 + 2

(Turn Over)

- (b) What is nucleosome and linker DNA ? 1 + 1
- (c) Mention the role of histone and non-histone proteins in chromosomal organisation. What is chromatin ? (2 + 1)
2. (a) What is the cause of sickle cell anaemia. How the concept of one gene one polypeptide can be derived from it. 2 + 4
- (b) What is Bombay Phenotype ? 4
- (c) Elaborate the role of Y chromosome in sex determination of man. 3
- (d) What is gene frequency and genotype frequency. 2
3. In *Drosophila* a cross was made between females expressing the three X linked recessive traits scute(sc) bristle, Sable body(s) and vermilion eyes(v) and wild type males. In the F₁, all the females are wild type whereas all males were mutant. The cross was carried to F₂ and 1000

(3)

offsprings were counted with the results shown below

sc	s	v	314
+	+	+	280
+	s	v	150
sc	+	+	156
sc	+	v	46
+	s	+	30
sc	s	+	10
+	+	v	14

- (a) Determine the genotypes of Parents and F_1 . 3
- (b) Determine the gene order 6
- (c) Calculate coefficient of coincidence. 2
- (d) Distinguish between complete linkage and incomplete linkage. 4
4. (a) What do you mean by organiser? Explain the concept with suitable experiment. 2 + 5
- (b) What is epiboly and emboly. 2 + 2

(4)

- (c) Write short notes on : 2 + 2
- (i) Nieukoop centre
- (ii) Gray crescent.
5. (a) Explain Hardy Weinberg Equilibrium. 3
- (b) Write short note on genetic Drift. 3
- (c) What is α , β and γ taxonomy ? 6
- (d) What is meant by species problem ? State the concept of phenon. 1 + 2

GROUP – B

Answer five questions from the following : 8 × 5

6. (a) Write a short note on the mechanism of continental drift and its role in distributions of placental mammal. 6
- (b) What is vital dye and fate map ? 2
7. (a) Distinguish between Sandwich model and unit membrane model. 4

- (b) What are syntype and holotype. 2 + 2
8. (a) Briefly describe the polymorphism of lysosome with diagram. 7
- (b) What is zymogen? 1
9. (a) What do you mean by centrolecithal and telolecithal egg? Give suitable examples. 3
- (b) Describe the process of acrosome reaction in sea urchin. 5
10. (a) Give a brief account of development of eye in chick. 6
- (b) Mention the significance of mimicry. 2
11. Describe the different kinds of barriers and state their impact on distribution of animals. 8
12. (a) What are holoblastic and mesoblastic cleavage? 2
- (b) Discuss the reptilian affinities of birds. 6

13. Write a short notes on : 4 + 4
- (i) Population bottleneck
 - (ii) DNA hybridization in.
14. (a) Name the primary inducer in birds. 1
- (b) Describe the extra embryonic membranes of chick. 7

GROUP – C

Answer five questions from the following : 4 × 5

15. Mention two physical and two chemical properties of DNA. 2 + 2
16. Draw a typical mammalian sperm and label its parts. 4
17. Mention the role of Chordin and noggin. 2 + 2
18. What are discoidal and diffused placenta ? 2 + 2
19. What is biological species concept ? Discuss the limitations of this concept. 1 + 3

20. (a) Distinguish between superfemale and intersex in *Drosophila*. 2
- (b) Explain what do you mean by area opeca and area pellucida. 2
21. Write down the faunal characteristics of oriental realm. 4
22. Write a brief note on Urey Miller's Experiment and mention its role. 4
23. Mention the basic principles of binomial nomenclature. 4
-