

M.Sc. Semester-I (C.B.C.S. Scheme) Examination

ZOOLOGY

(Genes and Differentiation)

Paper-IV

Time : Three Hours]

[Maximum Marks : 80

- Note :—** (1) All questions are compulsory.
(2) All questions carry equal marks.
(3) Illustrate your answers with suitable diagrams wherever necessary.

1. Describe cell differentiation.

OR

Describe the concept of organizer. 16

2. Give an account of the following :

- (a) Establishment of left-right body axis in mammals.
- (b) Anterior-posterior body axis formation in chick.
- (c) Dorsal-ventral body axis formation in *Drosophila*.
- (d) Anterior-posterior body axis formation in amphibia.

OR

- (e) Anterior-posterior body axis formation in *Drosophila*.
- (f) Homeobox concept in different phylogenetic groups.
- (g) Left-right body axis formation in amphibia.
- (h) Establishment of anterior-posterior body axis in mammals. 16

3. Give an account of the following :

- (i) Surgical methods of contraception.
- (j) Changing evolution through development modularity.
- (k) Physical barriers used in contraception.
- (l) Sperm antibody.

OR

- (m) Intrauterine Contraceptive Devices (IUCDS).
- (n) Gamete specific antigens.
- (o) Developmental constraints.
- (p) Hormonal methods of contraception. 16

4. Describe chromosomal and genetic basis of sex determination in *Drosophila*.

OR

Describe differentiation of gonads and secondary sex determination in mammals. 16

5. Give an account of the following :

- (q) Paroxysmal nocturnal hemoglobinuria.
- (r) Bone-marrow transplantation.
- (s) Hematopoietic stem cells.
- (t) Use of genetically modified stem cells in experimental gene therapies.

OR

- (u) Stem cells and diabetes.
- (v) Fanconi anemia.
- (w) Embryonic stem cells.
- (x) Stem cell markers. 16

