

This question paper contains 4 printed pages.

5151

Your Roll No.

B.Sc. Programme / III

B.

Paper— BIO-301

**CELL MOLECULAR BIOLOGY AND
DEVELOPMENTAL BIOLOGY**

(Admissions of 2008 onwards)

Time : 3 hours

Maximum Marks : 75

*(Write your Roll No. on the top immediately
on receipt of this question paper.)*

Attempt Sections A and B in separate answer sheets.

SECTION A (Botany)

Attempt all questions.

1. Attempt any *two* of the following:

- (a) Give an account of the structure and function of phloem elements in plants. 5
- (b) Describe any *two* methods used to overcome incompatibility in plants. 5
- (c) What is polyembryony? What are its applications? 5

2. Differentiate between (any *four*) the following:

- (a) Apical and lateral meristems

Turn over

- (b) Heartwood and sapwood
- (c) Nuclear and cellular endosperm
- (d) Anatroous and orthotropous ovule
- (e) Endothecium and endothelium. 2½×4=10

SECTION B (Zoology)

*Attempt four questions in all, including:
Question No. 1 which is compulsory.*

1. (a) Define the following:
 - (i) Polycistronic *m*-RNA
 - (ii) Okazaki fragments
 - (iii) Transamination
 - (iv) Oogenesis. 4
- (b) Differentiate between the following:
 - (i) Discoblastula and coeloblastula
 - (ii) Transketolase and transaldolase
 - (iii) Microtubules and microfilaments
 - (iv) Primary and secondary cell wall. 6
- (c) Give the location of:
 - (i) Uric acid oxidase
 - (ii) Acid phosphatase. 2

- (d) Expand the following:
- (i) SRP
 - (ii) SSB
 - (iii) TPP
 - (iv) NOR. 4
- (e) Discuss the semiautonomous nature of chloroplast and mitochondria. 3
2. What is oxidative phosphorylation? Describe the mechanism of generation of ATP in mitochondria. 12
3. (a) Define spermiogenesis. Elaborate the process of spermiogenesis with suitable diagrams. 6
- (b) Describe different types of cleavage under the influence of yolk. 4
- (c) Write a note on metamorphic changes in amphibians. 2
4. (a) Diagrammatically explain the mechanism of protein synthesis. 6
- (b) Discuss the mechanism of lac operon in gene regulation. 3
- (c) Name different stages of cell cycle and mention important events of each stage. 3

5. Write short notes on any *three* of the following:

(i) Enzyme Inhibition

(ii) Watson and Crick model of DNA

(iii) *t*-RNA

(iv) Ageing

(v) Urea cycle (only diagram).

4,4,4