

This question paper contains 4 printed pages.

4648

Your Roll No.

B.Sc. Prog. / III

AS

**BIO-301 : CELL MOLECULAR BIOLOGY &
DEVELOPMENT BIOLOGY**

Time : 3 hours

Maximum Marks : 75

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

Answer Sections A and B on separate answer-books.

SECTION A

Marks : 20

(Botany)

Attempt any two questions.

1. Write two important differences between any *five* of the following :

- (i) Apical and lateral meristem
- (ii) Exine and intine
- (iii) Monosporic and bisporic embryo sac development
- (iv) Cellular and helobial endosperm
- (v) GSI and SSI
- (vi) True and false polyembryony.

10

P. T. O.

2. Give reasons to justify the following statements (any four) :
- (i) The companion cell and sieve cell are structurally and functionally related.
 - (ii) Apomixis has potential application for use in crop improvement.
 - (iii) Zygote is a highly polarized isolated cell.
 - (iv) MGU functions as a polarized fertilization unit.
 - (v) Secondary growth adds girth to stem and roots in dicot plants. 10
3. (a) Draw a well labelled diagram of the longitudinal section of a pistil showing pollen germination and differentiate between dry and wet stigmas. 5
- (b) Give characteristics of wind pollinated flowers. 5

SECTION B

Marks : 55

(Zoology)

Attempt four questions in all, including Question No. 4 which is compulsory.

4. (a) Define the following :
- (i) Operon
 - (ii) Central Dogma
 - (iii) Emboly

- (iv) z-DNA. 4
- (b) Distinguish between the following :
- (i) K_m and V_{max}
- (ii) Cilia and Flagella
- (iii) Nucleotides and Nucleosides 6
- (c) Explain any *two* of the following :
- (i) Ketogenic amino acids
- (ii) Meroblastic cleavage
- (iii) Oxidative phosphorylation
- (iv) Biogenetic law. 2,2
- (d) Expand the following :
- (i) ETC
- (ii) FAD
- (iii) TCA
- (iv) SER
- (v) cAMP. 5
5. (a) Explain the structure of mammalian sperm. 5
- (b) Discuss the various events as the sperm approaches the egg for fertilisation. 7
6. (a) Describe the breakdown of glucose to pyruvate with the help of a flow diagram. 8

- (b) Describe briefly the structural organisation of proteins. 4
7. (a) Give the sequence of events during DNA replication in eukaryotes with suitable diagram. 9
- (b) Describe the role of different types of RNAs. 3
8. Write short notes on any *three* of the following :
- (i) Parthenogenesis
 - (ii) Types of placenta
 - (iii) Genetic code
 - (iv) Functions of plasma membrane. 4,4,4