

19. (a) Brief note on organization of shoot and root apical meristem.

Or

- (b) Make a note on transition to flowering in *Arabidopsis*.
20. (a) What is plasticity and what does it mean for learning and development?

Or

- (b) Explain the importance of evolution development.

SECTION C — ($3 \times 10 = 30$)

Answer any THREE questions.

21. Write a detailed note on the cell adhesion and roles of different adhesion molecules.
22. What is Fertilization? Give an account on physical factors involved in fertilization.
23. Detail account on the process of eye lens induction and differentiation.
24. Give a detail account on floral meristems and floral development of *Arabidopsis*.
25. Give an account on different development stages of animals?

S.No. 6136

P 22 BTE 1 B

(For candidates admitted from 2022–2023 onwards)

M.Sc. DEGREE EXAMINATION, NOVEMBER 2023.

Biotechnology — Elective

DEVELOPMENTAL BIOLOGY

Time : Three hours

Maximum : 75 marks

SECTION A — (20 marks)

Answer ALL questions.

- I. (A) Choose the correct answer: ($5 \times 1 = 5$)
1. Maintenance of the golgi complex in the cell on healthy condition depends on the presence of
- (a) Mitochondrion (b) Centrosome
- (c) Nucleus (d) Ribosome
2. What is the term signifying the capacity of a cell to do its allotted work?
- (a) Potency (b) Specification
- (c) Competence (d) Determination

3. In vertebrates, sex is determined by
 - (a) Chromosomal factors
 - (b) Environmental influences
 - (c) Nutritional status and chromosomal factors
 - (d) Both (a) and (b)
4. Which of the divisions are associated with elongation and increase in width of shoot respectively?
 - (a) Anticlinal, periclinal
 - (b) Periclinal, anticlinal
 - (c) Both anticlinal
 - (d) Both periclinal
5. Which one of the following human chromosomes is the centromere approximately median?

(a) 12	(b) 14
(c) 21	(d) 16

(B) Fill in the blanks: (5 × 1 = 5)
6. _____ provides shape to the cell as well as protection to cytoplasmic organnells,
7. Cells at tip of the wound including skin cover are _____
8. Since hen's egg is covered by a calcareous shell, it is called _____ egg.

9. The root apical meristem is protected as it passes through the soil by an outer region of living _____ cells called the root cap.
10. The normal human karyotype has _____ chromosomes
- II. Descriptive type questions: (5 × 2 = 10)
11. Cell lineages.
12. Morula.
13. Neurons.
14. Antirrhinum.
15. Polyphenisms.

SECTION B — (5 × 5 = 25)

Answer ALL questions, choosing either (a) or (b).

16. (a) Write about the potency concept of organism development.
Or
(b) Write down the principle of genomic equivalence.
17. (a) Explain- how does symmetry occur in nature.
Or
(b) Give a short note on types of eggs:
18. (a) Write a short note on the vulva development.
Or
(b) Explain the special feature of dictyostelium.