



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.Sc. DEGREE EXAMINATION – BIOTECHNOLOGY

FIRST SEMESTER – NOVEMBER 2016

16PBT1MC01 - CELL AND DEVELOPMENTAL BIOLOGY

Date: 02-11-2016
Time: 01:00-04:00

Dept. No.

Max. : 100 Marks

PART – A

Answer ALL the Questions

I. Choose the correct answer

(5 x 1 = 5 Marks)

1. Thylakoid membrane is present in which organelle of a eukaryotic cell?
a) Lysosome b) Golgi body c) Chloroplast d) Mitochondria
2. Diacyl Glycerol (DAG) is an example of _____.
a) Primary messenger b) Steroid c) Ligand d) Second Messenger
3. Which organ has the regeneration potential in humans?
a) Liver b) Heart c) Lungs d) Thymus
4. Among the given ratios, which ratio corresponds to a metafemalae?
a) 0.33 b) 1.33 c) 0.66 d) 0.5
5. Which of the following is used to break dormancy?
a) Auxins b) Cytokinin c) Gibberellins d) Remorsins

II. State whether the following are true or false

(5 x 1 = 5 Marks)

6. The size of microfilament is 10 nm.
7. JAK – STAT pathway is involved in EPO signaling.
8. Imprinting is a heritable phenomenon.
9. Sxl gene is only expressed in females.
10. Hypophysis is the precursor for shoots.

III. Complete the following

(5 x 1 = 5 Marks)

11. The acid required for differentiation of cells is _____.
12. Collagen is a major part of _____.
13. Number of ovum in a human female is decided by _____.
14. _____ gives rise to root caps.
15. The first genes transcribed in a *Drosophila* embryo are _____.

IV. Answer the following, each within 50 words

(5 x 1 = 5 Marks)

16. Define resolving power and what is the resolving power of human eye?
17. What are integrins?
18. Define potency.
19. What are energids?
20. Mention the role of the second sperm entering the ovule in double fertilization.

PART – B

Answer the following, each within 500 words; Draw diagrams wherever necessary. (5×8 = 40 Marks)

21. (a) Explain apoptosis with diagrams.

OR

(b) Explain lysosome formation and its functions.

22. (a) Explain Ras MAPK pathway (Insulin receptor signaling) with diagrams.

OR

(b) Write a note on gap junctions.

23. (a) Discuss cell fate and cell lineages with diagrams.

OR

(b) Describe the development of embryonic sac.

24. (a) Elucidate the molecular basis of anterior –posterior polarity in *Drosophila*.

OR

(b) Explain Hox code hypothesis.

25. (a) Write notes on i) Dormancy ii) shoot apical meristem

OR

(b) Explain Hammerling's experiment in *Acetabularia*.

PART – C

Answer any TWO of the following, each within 1500 words. Draw diagrams wherever necessary.

(2×20 = 40 Marks)

26. Explain in detail bacterial chemotaxis and quorum sensing with diagrams.

27. Schematically describe Oogenesis and Spermatogenesis in humans.

28. Describe the cellular movements associated with gastrulation in *Drosophila* embryo.

29. Elaborate on gamete production, pollination and fertilization in Angiosperms.
