

LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034



M.Sc. DEGREE EXAMINATION – BIOTECHNOLOGY

FIRST SEMESTER – NOVEMBER 2019

PBT 1501/16/17/18PBT1MC01– CELL AND DEVELOPMENTAL BIOLOGY

Date: 30-10-2019

Dept. No.

Max. : 100 Marks

Time: 01:00-04:00

PART – A

Answer ALL the Questions

I. Choose the correct answer

(5 x 1 = 5 Marks)

1. Microscopy technique which captures live cells is
a) SEM b) TEM c) Phase contrast d) AFM
2. An example of autoinducer molecule is
a) BHL b) AHL c) DHL d) BHEL
3. The function of gastrulation is to form
a) Multiple cell layer b) Single cell layer
c) Double cell layer d) Mosaic layer
4. Which among the following, corresponds to a male in *Drosophila*?
a) 0.33 b) 0.5 c) 1.0 d) 1.5
5. Vegetative shoot apex is
a) Broad b) Flat c) Conical d) Narrow

II. State whether the following are true or false.

(5x1=5 Marks)

6. Rough endoplasmic reticulum is associated with lipid synthesis.
7. Translation factor is an important parameter for cell signalling.
8. Committed stem cells can produce pluripotent stem cells.
9. Specification of dorsal ventral polarity is dictated by the product of dorsal gene.
10. Phellogen is an apical meristem.

III. Complete the following

(5 x 1= 5 Marks)

11. _____ make up the cytoskeleton of most eukaryotic cells.
12. Insulin receptor is an example of _____ receptor.
13. Spermatogenesis is induced by _____.
14. _____ forms as a result of cortical rotation in amphibia embryo.
15. Endosperm provides nourishment to _____.

IV. Answer the following, each within 50 words

(5 x 1 = 5 Marks)

16. Define autophagy.
17. What are amplifier proteins?
18. Where are cytoplasmic determinants located?
19. What is cellular blastoderm?
20. Mention the different stages of dicot embryo.

PART B

Answer the following, each within 500 words.

(5 x 8 = 40 marks)

Draw diagrams wherever necessary

21. (a) Describe the salient features of the fluid mosaic model.

OR

- (b) Cytoskeleton is the driving force behind functioning of cell. Substantiate the statement.

22. (a) Give a note on the MAPK pathway.

OR

- (b) What are cell junctions? Explain the types of cell junctions.

23. (a) Explain the role of bicoid and nanos in early embryogenesis.

OR

- (b) Write a brief note on imprinting.

24. (a) Explain vulva induction in *C. elegans*.

OR

- (b) Illustrate the role of segmentation genes in *Drosophila melanogaster*.

25. (a) Describe the structure and functions of a shoot apical meristem.

OR

- (b) Write brief notes on dicot embryo development.

PART – C

Answer any TWO of the following, each within 1500 words.

(2 x 20 = 40 Marks)

Draw diagrams wherever necessary.

26. Describe the structure of cell cycle and its regulation in eukaryotes
27. With the help of a diagram discuss the JAK STAT pathway and its role in cell signaling.
28. Give a detailed account on oogenesis.
29. Write an account on the flower development in angiosperms.
