



Date: 25-10-2018  
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. The following vitamins have a destabilizing effect on lysosomal membrane except  
a) Vit A                      b) Vit B                      c) Vit D                      d) Vit E
2. Activation of adenylyl cyclase leads to synthesis of which of the following?  
a) DAG                      b) IP3 c) cAMP                      d)Grb2
3. The first phase in sexual reproduction of an organism  
a) Spermatogenesis      b) Oogenesis                      c) Gametogenesis d) Spermiogenesis
4. Which of the following corresponds to *Drosophila* male?  
a) 1                      b) 1.5 c) 0.33                      d) 0.67
5. In vascular plants, growth occurs through activity of  
a) Meristems                      b) Collenchyma                      c) Sclerenchyma                      d) Pith

**II. State whether the following are true or false.**

**(5x1=5 Marks)**

6. Lysosomes are acidic due to influx of protons.
7. Gap junctions allow exchange of ions small molecules between cells.
8. Fertilization of frog's eggs does not require penetration of sperms.
9. Anterior region of the ova has bicoid proteins
10. Egg apparatus consists of synergids and polar nuclei.

**III. Complete the following**

**(5 x 1= 5 Marks)**

11. The microvilli of intestinal epithelium are made up of \_\_\_\_\_.
12. \_\_\_\_\_ are calcium dependent cell adhesion molecules that are expressed during differentiation.
13. Human embryo remains enclosed in a sac called \_\_\_\_\_.
14. *Drosophila* ovum undergoes \_\_\_\_\_ cleavage
15. Regeneration characteristic of algae was showed by \_\_\_\_\_.

**IV. Answer the following within 50 words**

**(5 x 1 = 5 Marks)**

16. Define ferroptosis.
17. Give an example for MAP kinase.
18. Write a note on cleavage.
19. What is a cellular blastoderm?
20. Name the floral whorls and their constituent units.

**PART B**

**Answer the following each within 500 words.**

**(5 x 8 = 40 marks)**

**Draw diagrams wherever necessary.**

21. (a) Discuss the biological significance of actin filaments and microtubules.

OR

(b) Illustrate the mechanism of secretory pathway.

22. (a) Explain the structure and action of nuclear receptors.

OR

(b) Comment on quorum sensing in bacteria.

23. (a) Describe the process of genomic imprinting.

OR

(b) Narrate the steps in embryo sac development.

24. (a) Describe vulva development in *C.elegans*.

OR

(b) Evaluate the significance of SRY gene in sex determination in humans.

25) (a) Write a note on Hammerling's experiment.

OR

(b) Highlight the role of WUSHEL in shoot development.

**PART – C**

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

**(2 x 20 = 40 Marks)**

**Draw diagrams wherever necessary.**

25. Describe the stages of cell cycle, variations in duration and structure of cell cycle.

26. Explain in detail about the insulin receptor and its signaling pathway.

27. Explain cleavage and dorsal ventral patterning in *Drosophila*.

28. Discuss the process of gametogenesis in humans.

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