OLD

2015

Part-I 3-Tier

BIOTECHNOLOGY

PAPER—I

(Honours)

Full Marks : 90

Time : 4 Hours

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Illustrate the answers wherever necessary.

Answer *all* questions.

Group—A

Answer any *two* questions from the following. 2×15

1. (a) Give a detail account of the lamin proteins associated with nucleus. 4

(b) Describe the nuclear pore structure with a suitable and labeled diagramme. 6

(c) How DNA is packaged within an eukaryotic nucleus ? 5

2. (a) Illustrate four functional classes of animal cell junctions mentioning their respective roles. 8

(b) What are cadherins? Briefly mention their role. 4

(c) Briefly highlight the basic physical structure of a plant cell wall and its chemical components. 3

3. (a) What is nutrient reference values? Define dietary fibers and state their roles in nuttition. 4

(b) Describe sequentially different parts of GI tract in human. 6

(c) State briefly about mucosa, submucosa, muscularis externa, adventia and serosa. 5

4. (a) Give a comprehensive account of the morphological, physiological, biochemical and ecological changes during morphogenesis of amphibians. 8

(b) How does simple metamorphosis differ from complete metamorphosis in insects? State the different stages of metamorphosis in them. 4

(c) Comment on the physiological process of ecdysis. 3

Group—B

Answer any *five* questions from the following. 5×8

5. Give a brief account of structure and functions of actin filaments. 8

6. Describe, in brief, the different steps of protein targeting. 8

7. Illustrate the regulations of cell cycle at its different stages. 8

8. Write a note on the transport system in higher plants mentioning the respective roles of its different tissue components. 8

9. Mention the roles of any four kinds of plant growth regulators. 8

10. Define 'Richness', 'Shanon index' and 'Simpson index' in species diversity. 8

11. Comment on the role of *Drosophila melanogaster* as a model in genetics. 8

12. Briefly discuss the pattern development in early embryogenesis in plants. 8

Group—C

Answer any *five* questions from the following. 4×5

13. Briefly discuss the active membrane transport. 4

14. Give a brief account of the structure and functions of Golgi apparatus. 4

15. What is G protein? Why is it named so? State its functions. 4

16. What is antioncogene? How does it act? 4

17. Illustrate the secondary growth in higher plants. 4

18. Enlist the different parts and general characteristics of blood vascular system of human. 4

19. Give an account, in brief, on the role of gene expression in development. 4

20. Write a note on the sex determination mechanism in mammals. 4

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