

OCTOBER 2011

P/ID 40229/PBTJ

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Time : Three hours

Maximum : 100 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

All questions carry equal marks.

Each answer should not exceed 50 words.

Write short notes on :

1. Density gradient.
2. Chargaff's Rule.
3. Plasmids.
4. DNA helicase.
5. Splicing.
6. Start Codon and Stop Codon.
7. Operon concept.
8. Shuttle vector.
9. Crown gall disease.
10. Glyphosate.

PART B — (5 × 6 = 30 marks)

Answer ALL questions.

All questions carry equal marks.

Each answer should not exceed 250 words.

11. (a) Write the basic principles and applications of UV-VIS spectroscopy.

Or

- (b) Write the general principles of centrifugation.

12. (a) Give an account of the denaturation and renaturation kinetics of DNA.

Or

- (b) Describe the structure of tRNA molecule.

13. (a) Discuss the various types of restriction enzymes.

Or

- (b) Outline the mechanism of DNA methylation.

14. (a) Analyze the various components and enzymes involved in transcription.

Or

- (b) Highlight the importance of reverse transcriptase (RT).

15. (a) Enumerate the salient features of the Genetic Code.

Or

- (b) What are cosmids? How are they used as efficient genetic vectors?

PART C — (5 × 10 = 50 marks)

Answer ALL questions.

All questions carry equal marks.

Each answer should not exceed 500 words.

16. (a) Describe the principle, procedures involved and applications of SDS-PAGE.

Or

- (b) Explain the post translational processing mechanism with illustrations.

17. (a) Explain the replication of DNA with special reference to the enzymes involved.

Or

- (b) With the help of an operon model, explain the regulation of gene expression in prokaryotes.

18. (a) Describe the basic protocol for the construction of genomic library.

Or

- (b) Give an account of the principle, procedures and types of PCR.

19. (a) Outline any two methods of direct gene transfer in plants.

Or

- (b) How does *Agrobacterium* help in gene transformation of plants?

20. (a) Design a genetic engineering protocol to develop pest- resistance in crop plants.

Or

- (b) Explain the procedures involved in patenting of biological material.
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