D 11235 (Pages : 2) Name.....

Reg. No.....

FIFTH SEMESTER B.Sc. DEGREE EXAMINATION, NOVEMBER 2016

(CUCBCSS—UG)

Biotechnology

BTY 5B 07—MOLECULAR BIOLOGY

Time : Three Hours Maximum : 80 Marks

Section A

Answer any **two** *out of four questions in about* 1,500 *words.*
Each question carries 10 *marks.*

1. What is genetic material ? Explain the experiments which prove DNA as the genetic material.
2. With suitable illustration explain the various steps involved in protein synthesis in eukaryotes.
3. Define Operon. Explain the negative and positive regulation of gene expression in prokaryotes using lac operon as an example.
4. Explain the types and architecture of eukaryotic chromosomes.

(2 × 10 = 20 marks)

Section B

Answer any **seven** *out of fourteen questions in about* 750 *words.*
Each question carries 5 *marks.*

5. Give an account of regulation of gene expression in eukaryotes.
6. Describe the post transcriptional modification of eukaryotic m-RNA.
7. What is genetic code ? Explain the important properties of genetic code.
8. Give an account on homologous recombination.
9. What are transposons ? Describe the mechanism of transposition in eukaryotes.
10. Describe the excision repair mechanism of DNA.
11. With suitable diagram describe the structure of *t*-RNA.
12. Describe Meselson and Stahl experiment on the mode of DNA replication.
13. Explain the physical and chemical features of Watson and Crick model of DNA.
14. Give an account on prokaryotic genome.
15. Give a short account on central dogma of modern biology.
16. Explain the different types of repetitive DNA sequences present in eukaryotic genome.

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17. Give an account on post-translational modification of proteins.

18. Explain the semi-discontinuous synthesis of DNA.

(7 × 5 = 35 marks)

Section C

Answer **all** *questions in about* 300 *words.*
Each question carries 3 *marks.*

19. Give the composition and structure of nucleosome.

20. Differentiate between introns and exons.

21. Differentiate between DNA and RNA.

22. Differentiate transition and transversion in DNA.

23. Differentiate between promoter and operator sequences.

(5 × 3 = 15 marks)

Section D

Answer **all** *questions in about* 200 *words.*
Each question carries 2 *marks.*

24. What is the role of DNA topoisomerase enzymes ?

25. What is replicon ?

26. What are psuedogenes ?

27. What is the role of recA protein ?

28. What is reverse transcription ?

(5 × 2 = 10 marks)