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(Pages : 2)

Reg. No.....

Name.....

**B.Sc. DEGREE (C.B.C.S.S.) EXAMINATION, APRIL 2016**

**Fourth Semester**

Core Course 14—BIOPHYSICS AND BIOINFORMATICS

(For B.Sc. Biotechnology)

[2013 Admission onwards]

Time : Three Hours

Maximum Marks : 80

**Part A (Short Answer Questions)**

*Answer all questions.  
Each question carries 1 mark.*

1. What is a colloid ?
2. Define Chaperon.
3. What is a database ?
4. What is DNA polymorphism ?
5. Differentiate exergonic and endergonic reactions.
6. Define enthalpy and entropy.
7. What are Motifs ?
8. What is half life ?
9. Define Blosum.
10. Write notes on swiss prot.

(10 × 1 = 10)

**Part B (Brief Answer Questions)**

*Answer any **eight** questions.  
Each question carries 2 marks.*

11. What is osmosis ? How it differ from diffusion ?
12. What is the principle of scintillation counter ?
13. What are the characters of ( $\alpha$ ) alpha helix ?
14. Write notes on EMBL nucleotide sequence database.
15. Write notes on the interactive forces in protein tertiary structures.
16. Differentiate between Local and Global alignment.
17. What is IR ? What are its applications ?

Turn over

18. How radiation is used in carbon dating ?
19. Write briefly on the tools used for phylogenetic analysis.
20. Write notes on different sequence formats.
21. What are the applications of absorption spectroscopy ?
22. Write a note on van der Waals forces.

(8 × 2 = 16)

### Part C (Short Essay Questions)

*Answer any six questions.  
Each question carries 4 marks.*

23. What is the significance of Ramachandran plot in Homology modelling ?
24. Explain Second Law of Thermodynamics.
25. Write notes on secondary structure of proteins.
26. What are disadvantages of IR ?
27. Differentiate B-form and Z-form of DNA.
28. What are domains ? Describe its role.
29. List out the application of radiations in clinical diagnosis.
30. What are the various nucleic acid databases ? Give examples. Explain the application of each.
31. Differentiate osmosis and reverse osmosis.

(6 × 4 = 24)

### Part D (Essay Questions)

*Answer any two questions.  
Each question carries 15 marks.*

32. What is multiple sequence alignment ? Explain the steps for doing clustial W.
33. Write an essay on different forms of DNA.
34. What are colloids ? Enumerate the properties of different types of colloids. Add a note on their importance.
35. Write an essay on phylogenetic analysis tools.

(2 × 15 = 30)