LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – MATHEMATICS & PHYSICS

THIRD SEMESTER – APRIL 2016

PB 3208 - BIOINFORMATICS - I

Date: 04-05-2016   Dept. No. [   ]   Max. : 100 Marks
Time: 09:00-12:00

Part –A   **(20 marks)**

Answer the following, each within 50 words only   **(10x2=20 marks)**

1. Write any two functions of endoplasmic reticulum.
2. Define Chargaff's rule.
3. Define database.
4. What is protein synthesis?
5. Define a domain.
6. What is BLAST?
7. Differentiate local and global alignment.
8. What are the predominant secondary structures of proteins?
9. What is repeat masker?
10. Name any two protein structure databases.

Part B

Answer the following, each within <u>500 words.</u> Draw diagrams wherever necessary.

(5x7=35 marks)

11. a) Explain the structure of chromosome.
            OR
    b) Write short note on primary and tertiary structure of protein.

12. a) Write short note on swiss-prot.
            OR
    b) Explain NCBI.

13. a) Explain OMIM database.
            OR
    b) Write about: i) Local alignment ii) Multiple Sequence alignment.

14. a) Employ an online software to study the physical properties of protein and DNA.
            OR
    b) What are restriction enzymes? Add an account on predicting the restriction sites of DNA.

15. a) Explain secondary structure prediction method in proteins.
            OR
    b) Expand BLAST and write about any three types of BLAST.

Part C

Answer any three of the following, each within 1200 words. Draw diagrams wherever necessary.

(3x15=45 marks)

16. Explain the structure and functions of RNA. Mention its types.
17. Describe the two projects completed by HGP and mention its goals and applications.
18. Explain the different sequence alignment algorithms.
19. Elaborate the steps involved in gene finding.
20. Write in detail about protein visualization tools.

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