# STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI 600 086 (For candidates admitted from the academic year 2011 – 12 and thereafter)

SUBJECT CODE: 11BI/PC/GP34

# M. Sc. DEGREE EXAMINATION, NOVEMBER 2015 **BIOINFORMATICS** THIRD SEMESTER

**COURSE** : CORE

: GENOMICS AND PROTEOMICS **PAPER** 

TIME MAX. MARKS: 50 : 11/2 **HOURS** 

### SECTION - A

#### **ANSWER ALL THE QUESTIONS:** (20x1=20)Choose the best answer

1. Which one of the following types of mutation is most likely to lead to premature termination of translation?

A. Insertion of a single base into DNA

B. Deletion of three bases from DNA

C. Deletion of an entire gene

D. Single base change in a promoter

2. A cDNA library contains clones representing which of the following?

A. mRNA

B. Genomic DNA

C. Introns

D. Repeated DNA sequences

3. Which of the following repeated sequences includes an open reading frame for reverse transcriptase?

A. SINE

B. LINE

C. Segmental duplication

D. DNA transposon

4. Which bacterial genome was the first to be completely sequenced?

A. E. coli

B. S. pneumonia

C. H. influenza

D. M. tuberculosis

5. The minimum set of genes required for life is approximately

A. 50-100

B. 250-350

C. 400-500

D. 1000-1500

6. Small solid supports onto which are spotted hundreds of thousands of tiny drops of DNA that can be used to screen gene expression.

A. DNA Microarray B. Cloning

C. Southern Blotting D. Western Blotting

7. The genetic code is

A. is a triplet code C. is used in the process of transcription B. consists of 62 codons

D. specifies 25 amino acids

8. DNA

A. is a positively charged molecule at neutral pH

B. is always double-stranded

C. has a diameter of around 2 µm

D. is stabilized by base stacking

- 9. Margaret Dayhoff developed first Protein Database called
  - A. SWISSPROT B. PDB
  - C. Atlas of Protein Sequence and Structure D. Protein Sequence Databank
- 10. Proteomics is the study of
  - A. Set of Proteins B. Set of proteins in a specific region of a cell
  - C. Entire set of expressed proteins in the cell D. None of these

## Answer in a line or two

- 11. Protein modification
- 12. ORF
- 13. Gene Annotation
- 14. EST
- 15. Model Organism
- 16. KEGG
- 17. SAGE
- 18. HPLC
- 19. Molecular Clocks
- 20. Restriction Endonuclease

## SECTION - B

# ANSWER ANY THREE QUESTIONS IN 300 WORDS EACH. ALL QUESTIONS CARRY EQUAL MARKS: (Draw Diagrams wherever necessary) (3x10=30)

- 21. Briefly explain the concept of Molecular Evolution
- 22. Explain how to analyze the function of a gene and how to understand the proteins coded by an unknown gene.
- 23. Explain Phylogenetic analysis. Explain any one method involved.
- 24. Explain different protein digestion techniques. Explain Y2H.
- 25. Write a note on Protein Interaction Networks.

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