

STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI 600 086
(For candidates admitted from the academic year 2006-2007 & thereafter)
SUBJECT CODE: BI/PC/GT35
M. Sc. DEGREE EXAMINATION, NOVEMBER 2008
BIOINFORMATICS
THIRD SEMESTER

COURSE : CORE
PAPER : GENOMICS, TRANSCRIPTOMICS AND METABOLOMICS
TIME : 1½ HOURS **MAX. MARKS: 50**

SECTION – A

ANSWER ALL THE QUESTIONS:

(12x1=12)

I. CHOOSE THE CORRECT ANSWER:

1. Which of these statements about pseudogenes is correct?
 - a) A conventional pseudogene is a gene that has been inactivated because of mutations in the nucleotide sequence.
 - b) Pseudogenes are also called evolutionary relics
 - c) Human globin gene cluster has pseudogenes
 - d) All of the above
2. The map unit used in Genetic linkage maps is
 - a) Morgan
 - b) Kb
 - c) Bases
 - d) centi Morgan
3. Example(s) of DNA markers
 - a) RFLP
 - b) SSLP
 - c) SNP
 - d) All of the above
4. An organized view of the transcriptome through EST clustering is provided by this database
 - a) PDB
 - b) Swiss Prot
 - c) UniGene
 - d) dbSNP
5. Which of the following types of genes are not known in any mitochondrial genome
 - a) tRNA genes
 - b) Respiratory chain genes
 - c) rRNA genes
 - d) Glycolysis genes

6. Which of these databases contain metabolic pathway information?
 - a) KEGG
 - b) WIT
 - c) EMP
 - d) All of the above
7. This is an internal molecule in the cell involved in signal transduction and is called the second messenger.
 - a) ATP
 - b) GTP
 - c) cAMP
 - d) ADP
8. The draft genome of Human genome was released in 2001 by
 - a) Celera Genomics
 - b) DOE
 - c) Both a and b
 - d) 454 Life Sciences
9. A technique which allows for direct visualization of a marker on a chromosome is
 - a) FISH
 - b) STS mapping
 - c) EST mapping
 - d) cytometry

II. WRITE IN ONE OR TWO SENTENCE:

10. C – value Paradox
11. Housekeeping genes
12. t_m RNA

SECTION – B

ANSWER ANY THREE QUESTIONS IN 300 WORDS EACH. ALL QUESTIONS CARRY EQUAL MARKS : (Draw Diagrams wherever necessary) (3x6=18)

13. Discuss an experimental technique for finding a gene's location.
14. What is pharmacogenomics? Discuss its impact on individualized therapies.
15. Briefly discuss an application of metabolomics.
16. What are the different markers used for genetic mapping?
17. List different model organisms. What is the ideal model organism for studies on human disease? What is synteny?
18. Describe the physical structure of a prokaryotic genome.

SECTION –C

ANSWER THE FOLLOWING QUESTIONS IN 800 WORDS EACH. ALL QUESTIONS CARRY EQUAL MARKS: (Draw Diagrams wherever necessary)

(2x10=20)

19. Describe Serial Analysis of Gene Expression. What is the advantage of this technique over other global expression profiling methods? What kind of data is generated through a SAGE experiment?

(OR)

What are physical maps? What are Sequence Tagged Sites (STS)? Explain STS mapping.

20. What is gene inactivation? Discuss an experimental method for gene inactivation. Can gene inactivation aid in assigning functions to genes? Justify your answer.

(OR)

Briefly explain

- a) Human Transcriptome analysis and its application in cancer.
- b) Simple Sequence Length Polymorphisms.
