STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI –600 086
(For candidates admitted from the academic year 2008-09 & thereafter)

SUBJECT CODE: BI/PC/MB25

M. Sc. DEGREE EXAMINATION, APRIL 2010
BIOINFORMATICS
SECOND SEMESTER

COURSE : CORE
PAPER : MOLECULAR BIOLOGY
TIME : 3 HOURS **MAX. MARKS: 100**

SECTION – A

ANSWER ALL QUESTIONS **(20 X 1=20)**

Fill in the blanks

1. In DNA the strands are coiled about one another to form a _____.
2. The _____ in the structure of a DNA proves that the two strands are complementary to each other.
3. The mRNA molecules form a complex with the proteins in the nucleus to form a _____.
4. The removal of introns and forming the final mRNA molecule by joining the exons is called _____.
5. The first class of transcription factors required for basal transcription is known as _____.
6. _____ consists of 30 amino acid residues, four of which co-ordinate a single Zn^{2+} ion.
7. _____ is a way by which a cell can produce vast quantities of specific gene products.
8. The specific protein that inhibits transcription of a specific gene is called _____.
9. The extra chromosomal genetic material capable of autonomous replication in cells is called _____.
10. A _____ is a bacterial parasite.
11. In the gap phases (G1 & G2) of the eukaryotic cycle _____ and _____ accumulate continuously.
12. DNA sequences which are transcriptionally inactive and do not contribute to any phenotypic trait are called _____.
13. A chromosome is said to be _____ if the centromere is in the middle.
14. The circular double stranded DNA present in mitochondria is called _____.
15. AUG and GUG are codons used for _____.
16. The phenomenon of repeated immunization of an animal with the same antigen thus producing antibodies having high affinity for the antigen is called _____.
17. In the DNA the protein linkers and the base together are called _____.

18. Define genetic code.
19. List out the stages in meiosis.
20. Define transcription.

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SECTION – B

ANSWER ANY FOUR QUESTIONS. EACH ANSWER SHOULD NOT EXCEED 500 WORDS. All ANSWERS CARRY EQUAL MARKS. DRAW DIAGRAMS WHEREVER NECESSARY (4 X 10 = 40)

21. With a neat diagram explain the structure of DNA.
22. Explain the role of regulatory proteins.
23. Give an account on genetic regulation.
24. Write a note on heat-shock genes.
25. Explain cell-cycle regulation.
26. Explain post translational regulation in prokaryotes.
27. Explain coding sequence.

SECTION – C

ANSWER ANY TWO QUESTIONS. EACH ANSWER SHOULD NOT EXCEED1200 WORDS. All ANSWERS CARRY EQUAL MARKS. DRAW DIAGRAMS WHEREVER NECESSARY (2 X 20 = 40)

28. Differentiate and illustrate the steps in mitosis and meiosis.
29. Give a detail account on the organization and function of mitochondrion genome.
30. Write a detail note on DNA replication and transfer of genetic information.
31. Write short notes on:
    a) Steroid hormone receptors.
    b) Mechanism regulating rRNA genes.

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