STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI 600 086
(For candidates admitted during the academic year 2011 – 12)

SUBJECT CODE: 11BT/MC/ML64

B. Sc. DEGREE EXAMINATION, APRIL 2014
BRANCH V (a) – PLANT BIOLOGY AND PLANT BIOTECHNOLOGY
SIXTH SEMESTER

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

SECTION A

ANSWER ALL QUESTIONS

I CHOOSE THE CORRECT ANSWER **(5 x 1 = 5 Marks)**

1. Which one of the following is not a nucleoprotein?
   a. H2A b. H2B c. H4 d. H1

2. The enzymatic activity of RNA molecule itself is called as ---
   a. RNAase b. Ribozyme c. Restriction nuclease d. Ligase

3. The key enzyme for protein synthesis is –
   a. Amino acyl tRNA synthetase b. Protease
   c. Protein kinase d. Peptidase

4. Shine Delgarno sequence indicates ---------- of protein synthesis.
   a. Activation b. Initiation c. Elongation d. Termination

5. Signal molecule that secretes and sends signals from neuron to neuron is –
   a. Acetyl choline b. Seratonin c. Histamine d. All

II FILL IN THE BLANKS **(5 x 1 = 5 Marks)**

6. The haploid DNA content in an individual is described as ----------.
7. The factor that is involved in termination of transcription is ----------.
8. UAA, UAG and UGA are ---------- codons.
9. Hairpin loop – attenuator helps in ---------- of transcription.
10. Discontinuous synthesis of DNA gives rise to ---------- fragments.

II State whether the following statements are true or false. **(4 x 1 = 4 Marks)**

11. The unstable form of RNA is rRNA.
12. mRNA processing normally takes place in cytoplasm.
13. AGU codes for methionine.
14. Lactose acts as an inducer.

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IV Match the following. **(4 x 1 = 4 Marks)**

15. Harshy and Chase	a. Genetic code
16. T.H. Morgan	b. DNA
17. Jacob and Monad	c. Signaling
18. cAMP	d. Gene regulation

V Write short notes on any SIX each in about 50 words. **(6 x 3 = 18 Marks)**

19. Nucleoside and nucleotide
20. Sigma factors
21. TATA box
22. Polycistrons
23. Deletions
24. Chargaff's rule
25. Splicing
26. Wobble hypothesis
27. Genetic imprinting

SECTION B

ANSWER ANY FOUR OF THE FOLLOWING QUESTIONS; EACH ANSWER SHOULD NOT EXCEED 200 WORDS. **(4 x 6 =24 Marks)**

28. Comment on the MAP Kinase pathway.
29. Bring out various post transcriptional modifications.
30. Enumerate with short notes on the properties of genetic code.
31. Briefly explain the gene regulation at transcriptional level.
32. Write short notes on cell signaling molecules and receptors.
33. Explain the molecular organization of DNA.

SECTION C

ANSWER ANY TWO FOLLOWING QUESTIONS IN ABOUT 1000 WORDS EACH. DRAW DIAGRAMS / FLOWCHARTS WHEREVER NECESSARY. (2 x20 = 40 Marks)

34. Illustrate and explain the molecular mechanism of mutations.

35. Describe in detail the events that take place during transcription.

36. Explain the process of translation in prokaryotic cells.

37. How does gene regulation take place in prokaryotes?

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