STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI 600 086
(For candidates admitted during the academic year 2015 – 2016 & thereafter)

SUBJECT CODE: 15BT/MC/CM54

B. Sc. DEGREE EXAMINATION, NOVEMBER 2018
BRANCH V (a) – PLANT BIOLOGY AND PLANT BIOTECHNOLOGY
FIFTH SEMESTER

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

SECTION – A

ANSWER ALL QUESTIONS (18 x 1=18 marks)

I. CHOOSE THE CORRECT ANSWER: (5 X 1 = 5 marks)

1. Lysosomes are present in large numbers in cells that carry out
   a. phosphorylation b. glycosylation c. respiration d. phagocytosis
2. The ribosomes present in eukaryotic cells consists of _____ subunits
   a. 60s+40s b. 50s + 30s c. 60s +30s d. 50s+40s
3. The thickness of cell membrane is
   a. 35nm b. 75nm c. $35A^{o}$ d.$75A^{o}$
4. Which of the following is known as start codon?
   a. UAG b. AUG c. AAG d. ACG
5. _____ made inside the nucleus of a cell, associates with proteins to form ribosomes.
   a. mRNA b. rRNA c. tRNA d. All the above

II. FILL IN THE BLANKS: (5 x 1 = 5 marks)

6. Rough endoplasmic reticulum is characterized by the presense of _____.
7. The diameter of the DNA helix is_____.
8. _____ chromosomes can be seen in the oocytes of amphibians.
9. tRNA molecule is_____ shaped.
10. The intervening regions in the gene are known as_____.

III. TRUE OR FALSE: (4 x 1 = 4 marks)

11. Organelle DNA is seen in Chloroplast.
12. Z DNA is left-handed.
13. The process of transcription is catalyzed by DNA polymerase.
14. DNA synthesis takes place during the G2 phase of the cell cycle.

IV. MATCH THE FOLLOWING: (4 x 1 = 4 marks)

15. Plasma membrane	-	metaphase
16. F1 Particles	-	Jacob & Monod
17. Karyotyping	-	cristae
18. Operon	-	lipoprotein

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V. ANSWER ANY SIX QUESTIONS:
Each answer should not exceed 50 words. (6x3=18 marks)

19. Grana
20. peroxisomes
21. Chargaff's rule
22. photoreactivation.
23. What are histones and non-histones
24. Polyadenylation
25. Start codon
26. NOR
27. Distinguish between metacentric and submetacentric chromosomes.

SECTION B

ANSWER ANY FOUR QUESTIONS. EACH ANSWER SHOULD NOT EXCEED 200 WORDS. DRAW DIAGRAMS WHEREVER NECESSARY. (4x6=24 marks)

28. Describe the structure of endoplasmic reticulum.
29. Explain the structure of Golgi apparatus and add a note on its function.
30. Write notes on the stages of prophase I of meiosis.
31. Explain the replication of DNA as per the semi-conservative model.
32. Write notes on RNA, its types and their significance.
33. Highlight the important stages during the translation of mRNA.

SECTION C

ANSWER ANY TWO QUESTIONS.EACH ANSWER SHOULD NOT EXCEED 1000 WORDS. DRAW DIAGRAMS WHEREVER NECESSARY. (2x20=40 marks)

34. Explain in detail about the structure of Mitochondria, its origin and function.
35. Discuss in detail about the structure of giant chromosomes.
36. Describe the process of transcription and add a note on post transcription modification of mRNA.
37. Explain the regulation of gene using the model of a lac operon.

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