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

SUBJECT CODE: BT/MC/ML64

B. Sc. DEGREE EXAMINATION, APRIL 2012
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. STATE WHETHERE THE FOLLOWING STATEMENT ARE TRUE OR FALSE (5 x1 = 5)

1. DNA polymerase can initiate *de novo* synthesis of DNA without a primer
2. During DNA replication, lagging strand synthesizes continuously unlike the leading strand.
3. Thymine dimers block DNA replication.
4. DNA bases have maximum absorption in the UV range.
5. Direction of polymerization during DNA replication is always from 3'to 5'.

II. MATCH THE FOLLOWING (6 x1 =6)

6.	Benzer	Repair enzyme
7.	ara operon	Triplet
8.	Photolyase	Joining enzyme
9.	Helicase	Cistron
10.	Ligase	Positive control
11.	Genetic code	Uwinding enzyme

III. FILL IN THE BLANKS (7 x1 =7)

12. DNA is synthesized in series of short fragments called _____ _____.
13. Two pyrimidine bases of RNA are _____ and _____.
14. Alteration in a single base pair affecting the function of one gene is called _____
15. Silent and nontranslational regions of mRNA are called _____ and _____.

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V. ANSWER ANY SIX OF THE FOLLOWING, EACH IN ABOUT 50 WORDS. (6x3=18)

16 Central dogma of life
17 Denaturation
18 Polyadenylation
19 Operon
20 Chargaff's rule
21 Photoreactivation
22 Structure of tRNA
23 Triplet codon
24 Super helical DNA

SECTION B

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

25 Explain the Structure of tRNA.
26 Write brief notes on Deletions and Insertions. Support your answer with suitable examples.
27 Mention the salient features of Transposons.
28 Highlight the importance of Processing of mRNA in Eukaryotes.
29 With a well labeled diagram, explain the Semiconservative mode of DNA replication.
30 Discuss the characteristics of genetic code in protein synthesis.

SECTION C

ANSWER ANY TWO OF THE FOLLOWING, EACH ANSWER SHOULD NOT EXCEED 1000 WORDS. (2 x20 = 40)

31 Discuss the importance of gene regulation using lac operon as the model system.
32 Define Transcription. Explain the process in Prokaryotes.
33 Explain the double helical structure of DNA. Add a note on the various forms of DNA in a cell.
34 Write an essay on the mechanism of protein synthesis.

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