

B. Sc. DEGREE EXAMINATION, APRIL 2016
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)

- In Chargaff's rule for base composition in DNA the base A is equal to
a. Thymine b. Guanine c. Cytosine d. Uracil
- An unpaired CCA sequence at 3' end is found in
a. mRNA b. tRNA c. rRNA d. RNA i
- In eukaryotes the 60S larger subunit is made up of these rRNAs
a. 23S & 5S b. 28S, 5.8S & 5S c. 30S & 16S d. 30S & 5S
- In Lac operon the regulator gene I codes for
a. Promoter b. Operator c. Inducer d. Repressor
- The trp attenuator is a terminator site rich in the sequence
a. AT b. GC c. AA d. GG

II FILL IN THE BLANKS

(5 x 1 = 5 Marks)

- The pentose sugar in DNA lacks the oxygen on the carbon at the ----- position.
- The -----are modified to become mRNAs.
- Stop codons are also called as----- codons
- Genes with a common function are grouped together in units called -----
- binds to the membrane receptor in the MAPK pathway.

III State whether the following statements are true or false.

(4 x 1 = 4 Marks)

- Insertion mutation does not alter the reading frame.
- Pribnow box in prokaryotes is the same as Hogness box in eukaryotes.
- Cell surface receptors bind to an external ligand molecule.
- Trp operon is an inducible operon.

IV Match the following.

(4 x 1 = 4 Marks)

- Methyl guanosine - polycistronic mRNA
- Methionine - mRNA
- lac operon - DNA
- nucleotides - tRNA

V Write short notes on any SIX each in about 50 words.

(6 x 3 = 18 Marks)

19. Deletion
20. Super helical DNA
21. Initiation factors
22. Leader sequence
23. Pribnow box
24. Spliceosome
25. Transmembrane receptor
26. Ara C protein
27. Signal peptide

SECTION B

ANSWER ANY FOUR OF THE FOLLOWING QUESTIONS; EACH ANSWER SHOULD NOT EXCEED 200 WORDS.

(4 x 6 =24 Marks)

28. Explain the secondary structure of the tRNA.
29. Describe post transcriptional modification of the mRNA
30. With schematic diagram explain the gene regulation in ara operon
31. Discuss the characteristics of the Genetic code
32. Write notes on the functions of cell surface receptors.
33. Describe the Watson and Crick Model of DNA.

SECTION C

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

34. Give a detailed account of prokaryotic gene regulation using Lac operon model.
35. Explain in detail the mechanism of translation.
36. Give an account of transcription of prokaryotic genes.
37. Discuss elaborately the the MAP Kinase pathway.
