

B.Sc. (Honours) Examination, 2017
Semester- VI
Botany
Course: BBC-62 (Core)
(Molecular Biology & Genetic Engineering)

Time: 3 Hours

Full Marks: 40

Questions are of value as indicated in the margin

1. Answer **any eight** of the following: 1x8=8
- i) Why are *lac* genes induced in the presence of lactose?
 - ii) Name two genetically modified foods.
 - iii) Define 'genetic code'?
 - iv) What are the two types of transcription termination methods in bacteria?
 - v) State the importance of Shine-Dalgarno sequence in protein synthesis.
 - vi) What is an anticodon?
 - vii) State one difference between *E. coli* and human cells with respect to nucleotide excision repair.
 - viii) What is RFLP?
 - ix) State the role of ligase in DNA repair
 - x) What is the antisense RNA?
 - xi) State two important properties of a plasmid vector.
 - xii) Name two chemical tools used in recombinant DNA technology.

Group-A

(Molecular Biology)

Answer **any two** questions

2. What is thymine dimer? Which wavelength of light does cause formation of thymine dimer in DNA? Describe the role of Uvr proteins in the removal of thymine dimer from UV-irradiated DNA in bacteria. 2+1+5=8
3. What is a genome? What are the principal components of human genome? When was the human genome project completed? What were the goals of the human genome project? 2+2+1+3=8
4. What is the exact role of a promoter in gene expression? What are meant by consensus sequences of bacterial promoters? Describe the composition of RNA polymerase subunits of prokaryotes. 2+2+4=8

Group-B

(Genetic Engineering)

Answer **any two** questions

5. What are restriction enzymes? What are palindromic nucleotide sequences? What role do restriction enzymes play in bacteria? State two practical applications of restriction enzymes. 2+2+2+2=8
 6. What is meant by recombinant DNA (rDNA)? Briefly describe the procedure of generating rDNA with the aid of suitable illustrations. 2+6=8
 7. What is cDNA? Is cDNA single or double stranded? What is reverse transcription? Point out three differences between cDNA and genomic DNA library. 2+1+2+3=8
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