Third Year B. Sc. (Sem. V) (CBCS)
(W.E.F. 2016) Examination
October / November - 2018
MB - 503 : Molecular Biology & Bio-Engineering

Faculty Code : 003
Subject Code : 1015011

Time : $2\frac{1}{2}$ Hours]   [Total Marks : **70**

1   (a)   Answer objective type questions :   4

        (1)   What is co-dominance ?

        (2)   What are Okazaki fragments ?

        (3)   Write contribution of T.H. Morgan in the field of genetics.

        (4)   Write role of topoisomerase in DNA replication.

    (b)   Answer in brief : (any **1**)   2

        (1)   Write Mendelian laws of inheritance.

        (2)   What is gene structure and architecture ?

    (c)   Answer in detail : (any **1**)   3

        (1)   Explain complementation test.

        (2)   Describe prokaryotic DNA polymerase III.

    (d)   Answer in detail : (any **1**)   5

        (1)   Describe in detail process of DNA replication in bacteria.

        (2)   Explain experiments proving DNA as universal genetic material.

2 (a) Answer Objective types questions : 4

    (1) What is Sigma factor ?

    (2) TATA box, CAAT box, GC box are parts of _____ .

    (3) What are stop codons ?

    (4) Enlist the levels of regulation of gene expression.

  (b) Answer in brief : (any **1**) 2

    (1) Write any two post-translation modifications.

    (2) What is RNA splicing ?

  (c) Answer in detail : (any **1**) 3

    (1) Explain genetic codes.

    (2) Describe RNA editing.

  (d) Answer in detail : (any **1**) 5

    (1) Explain in detail process of transcription in prokaryotes.

    (2) Write a note on genetic regulation of lactose utilization in E.coli.

3 (a) Answer Objective type questions : 4

    (1) What is illegitimate recombination ?

    (2) Who discovered transposable DNA elements ?

    (3) What is transduction ?

    (4) What are episomes ?

  (b) Answer in brief : (any **1**) 2

    (1) Write structure of IS1 element.

    (2) Lederberg and Tatum experiment for conjugation in brief.

(c) Answer in detail : (any **1**)   3

    (1) Explain generalized transduction.

    (2) Describe homologous recombination.

(d) Answer in detail : (any **1**)   5

    (1) Write a note on conjugation

    (2) Describe in detail natural transformation.

4 (a) Answer Objective type questions :   4

    (1) Give examples of chemical mutagen.

    (2) What is mutation ?

    (3) What are conditional mutants ?

    (4) What is AP site ?

(b) Answer in brief : (any **1**)   2

    (1) What is transition and transversion ?

    (2) What is photo reactivation ?

(c) Answer in detail : (any **1**)   3

    (1) Explain Ames test.

    (2) Explain types of mutagen,.

(d) Answer in detail : (any **1**)   5

    (1) Explain in detail types of mutation.

    (2) Explain : Base excision and mismatch repair mechanism.

5 (a) Answer Objective type questions : 4

   (1) Give two examples of hybrid vectors.

   (2) Write role of polynucleotide kinase in genetic engineering.

   (3) What is shuttle vector ?

   (4) Write full forms of SV40 and HSP.

   (b) Answer in brief : (any **1**) 2

   (1) What are molecular chaperons ?

   (2) What is site directed mutagenesis ?

   (c) Answer in detail : (any **1**) 3

   (1) Explain colony hybridization.

   (2) Describe role of Ti plasmid in genetic engineering.

   (d) Answer in detail : (any **1**) 5

   (1) Write detailed note on Aims and applications of genetic engineering.

   (2) Describe in detail Plasmid Vector.

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