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PG-003-001632 Seat No. _____

B. Sc. (Sem. VI) (CBCS) Examination

July - 2018

MB - 602 : Molecular Biology & Genetic Engineering

(New Course)

Faculty Code : 003
Subject Code : 001632

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

Instructions : (1) Figures on right side indicate marks.
(2) Draw the figures wherever necessary.
(3) Write answers of all the questions in main answer sheet.

1 Answer the following questions : **20**

(1) Define cistron.
(2) What is back cross ?
(3) What is replicon ?
(4) DNA polymerase III is made of _____ subunits.
(5) What is non reciprocal recombination ?
(6) What is the role of calcium in artificial transformation ?
(7) What is abortive transduction ?
(8) Give full form of IPTG.
(9) What is the role of sigma factor in transcription?
(10) What are isoaccepting tRNA ?
(11) What are riboswitches ?
(12) What are antisense RNA ?
(13) What is the physical basis of mutational hotspots ?
(14) Thymine dimmers are directly repaired with the help of visible light by process known as _____

(15) If second mutation occurs at the same position as the original mutation and restores wild type then it is _____

(16) Give any one example of chemical mutagens

(17) What is plasmid curing?

(18) Give full form of YAC and BAC

(19) What is the role of protein disulphide isomerase ?

(20) What is directed evolution ?

2 (A) Answer the following : (Any **Three**) **6**

(1) Prokaryotic RNA are polycistronic. Explain

(2) Discuss monohybrid cross.

(3) Give types and levels of gene regulation.

(4) What is electroporation?

(5) What is phenotypic and phenomic lag ?

(6) Discuss role of Restriction endonuclease in genetic manipulation.

(B) Answer the following : (Any **Three**) **9**

(1) Enlist various models of DNA replication and discuss theta model.

(2) Discuss the structure of Ribosome.

(3) Discuss post translational modification.

(4) Briefly discuss specialized transduction.

(5) Why and how Ames test is performed ?

(6) Discuss method of detection of recombinant molecules.

(C) Write short notes on : (Any **Two**) **10**

(1) DNA Replication.

(2) The Arabinose Operon.

(3) Conjugation in Gram positive bacteria.

(4) SOS and Mismatch DNA repair.

(5) Molecular chaperons.

3 (A) Answer the following : (Any **Three**) **6**

(1) What is dihybrid cross ?

(2) Give levels of gene expression.

(3) What is post transcriptional control?

(4) Draw diagram showing conjugation between HFr and F cells

(5) What is reversion?

(6) Write two applications of genetic engineering.

(B) Answer the following : (Any **Three**) **9**

(1) Discuss cis-trans complementation test

(2) Write characteristics of Genetic code.

(3) Discuss initiation of transcription.

(4) What is artificial induced competence?

(5) What is fluctuation analysis?

(C) Write short notes on : (Any **Two**) **10**

(1) Site directed mutagenesis.

(2) Biochemical basis of mutation

(3) Transposable genetic element.

(4) Lac Operon.

(5) DNA as genetic material.
