



NAN-003-001632 Seat No. _____

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

March / April - 2017

MB-602 : Microbiology

(Molecular Biology & Genetic Engineering)

Faculty Code : 003

Subject Code : 001632

Time : 2½ Hours]

[Total Marks : 70

- Instructions :** (1) Numbers written on right indicate marks.
(2) Please write answers in correct order.
(3) Draw diagrams wherever necessary.

SECTION - I

1 Objective type questions : **20**

- (1) The form of inheritance studied in *Antirrhinum* spp in which the heterozygous state is, expressed as an intermediate trait is called _____.
- (2) What is Recon and Replicon ?
- (3) What is the genotypic ratio among F_2 generation individuals in Mendelian Dihybrid Cross experiment ?
- (4) What is Pleiotropism ?
- (5) Shine Dalgarno sequence is found on _____.
- (6) Which molecules are added as cap during post transcriptional modifications of mRNA ?
- (7) What is Diauxie ?
- (8) What are inteins and exteins ?
- (9) Define : Abortive Transduction.

(10) Consider the following :

- (i) Strand exchange
- (ii) Initiation
- (iii) Synapsis
- (iv) Branch migration

Arrange these steps in appropriate order as per Recombination process and re-write.

(11) What is R Plasmid and Cryptic Plasmid ?

(12) Who discovered Transposable genetic elements ? In which organism ?

(13) Define: Phonemic lag

(14) What is pseudo reversion ?

(15) Give examples of intercalating agents.

(16) What are AP sites?

Write true or false (17-20)

(17) CoCl_2 treatment is given to cell to develop competence factor.

(18) Cosmid is a hybrid vector which can carry 37-52 KB length of foreign DNA.

(19) pBR 322 has ori site of ColE1 plasmid and is 4361 BP long.

(20) To avoid recircularization of plasmid vector, S1 nuclease is used.

SECTION - II

2 (a) Write any **three** :

6

- (1) Define terms: Replisome, Okazaki fragments
- (2) Define terms : RNA editing, Attenuation
- (3) Define terms : Hfr strain, Isoschizomers
- (4) Define terms : Illegitimate recombination, Opines
- (5) Define terms : Photoreactivation, Chaperonins
- (6) Define terms : AraC, Gene Library

- (b) Write any **three** : **9**
- (1) Explain Co dominance and Incomplete dominance.
 - (2) Describe Semi Discontinuous nature of replication.
 - (3) Explain : Structure of tRNA.
 - (4) What is the role of a co-repressor ? Explain.
 - (5) Discuss Gene Cistron Non equivalence with examples.
 - (6) Explain Elongation of Translation in detail.
- (c) Write any **two** : **10**
- (1) Describe the Gene Concept in detail.
 - (2) Explain Transduction in detail.
 - (3) Discuss the properties of genetic code.
 - (4) Explain enzymes involved in DNA replication.
 - (5) Describe transcription and post transcriptional modifications.
- 3** (a) Write any **three** : **6**
- (1) Explain site specific recombination in brief.
 - (2) Explain the structure Tn3 with diagram.
 - (3) Explain significance of transformation in nature.
 - (4) What is Ames test ? Explain in brief.
 - (5) Explain genomic library.
 - (6) Write a brief note on Mismatch Repair.
- (b) Write any **three** : **9**
- (1) Describe various types of chemical mutagens.
 - (2) What are Ribosomes ?
 - (3) Explain Fluctuation analysis.
 - (4) What are high capacity vectors ? Give examples and explain in brief.
 - (5) Discuss various methods of the creation of recombinant vector.
 - (6) Explain : antigenic variation as a genetic mechanism.

(c) Write any **two** : **10**

- (1) Write a note on applications of genetic engineering.
 - (2) Explain Eukaryotic gene manipulation.
 - (3) Explain any three DNA repair mechanisms.
 - (4) Explain conjugation in bacteria.
 - (5) Discuss biochemical basis of mutations.
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