



HCM-003-001518 Seat No. _____

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

October - 2017

BT - 502 : Genetics & Molecular Biology

Faculty Code : 003

Subject Code : 001518

Time : $2\frac{1}{2}$ Hours]

[Total Marks : 70

- Instructions :** (1) Question-1 covers compulsory one mark question of 20 marks.
- (2) Figures on the right indicate marks of the question.

- 1 One mark objective Questions : 20
- (1) Skin colour in mice is governed by multiple alleles. TRUE / FALSE.
- (2) In Epistasis inhibiting gene is called _____.
- (3) Mendels law of independent assortment is applied only to those genes which are located on separate chromosome. TRUE / FALSE.
- (4) If the chromosomal aberration in number is represented as $2n-1$ then it is known as _____.
- (5) In prokaryotes, extra nuclear inheritance is performed by plasmids and _____.
- (6) The diameter of Basic form of DNA is _____ nm.
- (7) _____ enzyme helps to relax the supercoiling by nicking one or both strands of DNA.

- (8) In 1958, _____ and _____ proved the semi-conservative mode of DNA replication.
- (9) The flexibility of DNA to accomplish simultaneous replication of leading and lagging strand in single direction is exploited by the _____ model.
- (10) Barbara McClintock discovered the first transposable elements in a study of _____ plant.
- (11) _____ factor is loosely bound to core polymerase and forms prokaryotic RNA Polymerase.
- (12) If GUG is the initiation codon, the N terminal amino acid of nascent proteins is _____ amino acid.
- (13) _____ are the sites of translation.
- (14) In lac operon, lac Z encodes _____.
- (15) Restriction enzymes of different organisms that recognise the identical sequence to cut the DNA are called _____.
- (16) Full form of BR in pBR322 is _____.
- (17) _____ are the hybrid vectors derived from plasmids containing cos site of Lambada phage.
- (18) In 1975, Screening of recombinants by colony hybridisation method was devised by _____ and _____.
- (19) _____ discovered the "Transforming Principle" in 1928, which gave the idea that genetic material is nucleic acid.
- (20) In DNA if base is uracil then nucleoside is _____.

- 2** (A) Write any three out of **six** : **6**
- (1) Define : Gene and Allele.
 - (2) Define : Cistron and Muton.
 - (3) What is Pseudoallele ?
 - (4) What is Linkage ?
 - (5) What is C value paradox ?
 - (6) What is Epistasis ?
- (B) Write any three out of **six** : **9**
- (1) Explain Hardy Weinberg law.
 - (2) Explain the fine structure of gene.
 - (3) Explain genetic polymorphism.
 - (4) Explain C value paradox.
 - (5) Draw and describe the basic form of DNA.
 - (6) Explain the enzymes involved in DNA replication.
- (C) Write any two out **five** : **10**
- (1) Explain laws of heredity.
 - (2) Explain extra chromosomal inheritance in Eukaryotes.
 - (3) Explain Elongation of replication in Eukaryotes.
 - (4) Explain non allelic gene interaction.
 - (5) Explain chromosomal aberration.
- 3** (A) Write any three out of **six** : **6**
- (1) Define : Transposable elements.
 - (2) What is gene recombination ?
 - (3) Define : transcription and translation.
 - (4) What is r-DNA technology ?
 - (5) Define : vectors.
 - (6) What is operon ?

(B) Write any three out of **six** : **9**

- (1) Explain conjugation.
- (2) Explain the types of RNA.
- (3) Explain linkers and adaptors.
- (4) Explain blue white screening method.
- (5) Explain Post translational modification.
- (6) Explain YACs.

(C) Write any two out of **five** : **10**

- (1) Explain process of transcription in prokaryotes.
 - (2) Explain lac operon.
 - (3) Write a short note on DNA repair mechanism.
 - (4) Write the applications of genetic engineering.
 - (5) Explain plasmids as a cloning vectors.
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