



RO-003-001518

Seat No. _____

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

February - 2019

BT-502 : Genetics & Molecular Biology

Faculty Code : 003

Subject Code : 001518

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

[Total Marks : 70

- Instructions :** (1) Figures in the right indicate marks.
(2) Draw the figure wherever necessary.
(3) Write answers in main answer sheet.

1 Objective questions : (Each carry one mark) 20

- (1) _____ coined the term 'Gene' that acts as hereditary units.
- (2) The principle of independent segregation is frequently referred to as Mendel's second law. TRUE/FALSE.
- (3) Suppose that the distance between the gene $A - B = 12, B - C = 7$ and $A - C = 5$, determine the correct order of genes.
- (4) Man has 23 pairs of chromosomes and _____ linkage groups.
- (5) In H W Law, Binomial equation $P^2 + 2pq + q^2 = 1$. What p^2 represents ?
- (6) The infective symbiont sigma virus in drosophila is the example of Extra Nuclear Inheritance by Endosymbionts. TRUE/FALSE.
- (7) _____ and _____ discovered the genetic recombination in bacteria from two different strains through the process of conjugation.

- (8) C-value is reported in unit _____
- (9) If base is Adenine, Nucleoside is Adenosine and Nucleotide is _____
- (10) In DNA packaging the 10nm fibre of nucleosomes gets coiled upon its is to form _____ nm wide helix.
- (11) 3' to 5' exonuclease activity of DNA polymerases enzyme is also known as _____ activity.
- (12) _____ discovered transposable elements in maize.
- (13) Synthesis of cDNA is carried out by enzyme _____
- (14) If G is at the third position in the codon, according to wobble hypothesis _____ will be anticodon.
- (15) Polypeptides are synthesized in the carboxyl to amino direction. TRUE/FALSE.
- (16) _____ is the start aodon.
- (17) _____ is the hybrid vector derived from plasmids containing cos site of λ - phage.
- (18) Out of three class of restriction endonuclease enzyme which class/type is preferred for gene cloning purpose?
- (19) Southern blotting is an immunodetection method working on the principle of Ag-Ab reaction. TRUE/FALSE.
- (20) The plane of cutting is _____, if EcoR1 enzyme is used to cut the DNA at restriction site.

2 (A) Write any **three** out of six :

6

- (1) What is recon and muton ?
- (2) What is lethal gene ?
- (3) Define: C-value.
- (4) What is central dogma of life ?
- (5) What is Homologous Recombination ?
- (6) Define: Replication.

- (B) Write any **three** out of six : **9**
- (1) Describe : Multiple allele.
 - (2) Write a note on Non allelic gene interaction.
 - (3) Explain Alternative forms of DNA.
 - (4) Explain HW Law of equilibrium.
 - (5) Write a note on semi conservative mode of DNA replication.
 - (6) Explain Hfr conjugation.
- (C) Write any **two** out of five : **10**
- (1) Write a detailed note on chromosomal alteration.
 - (2) Give detailed description about Mendelian inheritance.
 - (3) Explain Non mendelian inheritance.
 - (4) Write a detailed note on the structure of DNA.
 - (5) Explain prokaryotic replication.
- 3** (A) Write any **three** out of six : **6**
- (1) What is Transposable elements ?
 - (2) What is Wobble hypothesis ?
 - (3) What is Operon ?
 - (4) Define : Transcription.
 - (5) What is Plasmid ?
 - (6) What is rDNA technology ?
- (B) Write any **three** out of six : **9**
- (1) Explain : Transformation.
 - (2) Explain : Splicing mechanism.
 - (3) Write the characteristics of genetic code.
 - (4) Explain G-capping.
 - (5) Explain : Linkers and Adaptors.
 - (6) Differentiate between types of restriction enzyme.

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

- (1) Write a detailed note on: Transduction.
 - (2) Explain Lac operon.
 - (3) Explain Eukaryotic translation.
 - (4) Explain Plasmid as a cloning vector.
 - (5) Write a detailed note on Applications of Genetic Engineering.
-