



RO-003-1015034

Seat No. _____

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

February - 2019

BT - 502 : Genetics and Molecular Biology

Faculty Code : 003

Subject Code : 1015034

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 (A) Objective type questions : 4
- (1) _____ coined the term 'Gene' that acts as hereditary units.
- (2) The principle of independent segregation is frequently referred to as Mendel's first 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.
- (B) Answer in brief : (Any **One** out of Two) 2
- (1) What is cistron and recon?
- (2) What is pseudogene and Allele?
- (C) Answer in detail : (Any **One** out of Two) 3
- (1) Explain multiple allele with example.
- (2) Explain Epistasis.

- (D) Write a note on : (Any **One** out of Two) 5
- (1) Write a note on chromosomal Abberation.
 - (2) Write a note on mendelian Inheritance.
- 2 (A) Objective type questions : 4
- (1) In H W Law, Binomial equation $P^2 + 2pq + q^2 = 1$.
What p^2 represents?
 - (2) The infective symbiont sigma virus in drosophila is the example of Extra Nuclear Inheritance by Endosymbionts. TRUE/FALSE.
 - (3) The transforming principle was given by _____.
 - (4) Z form of DNA is the most stable form of DNA. TRUE/FALSE.
- (B) Answer in brief : (Any **One** out of Two) 2
- (1) What is C-value?
 - (2) What is central dogma of life?
- (C) Answer in detail : (Any **One** out of Two) 3
- (1) Explain alternative forms of DNA.
 - (2) State and elaborate Hardy Weinberg Law of equilibrium.
- (D) Write a note on : (Any **One** out of Two) 5
- (1) Explain Extranuclear Inheritance in Eukaryotes.
 - (2) Explain and draw the basic form of DNA.
- 3 (A) Objective type questions : 4
- (1) _____ enzyme is the primary replicative enzyme.
 - (2) 5' to 3' exonuclease activity is also known as proof reading activity. TRUE/FALSE.
 - (3) _____ discovered transposable elements in maize.
 - (4) The photoreactivation process directly reverses the damage by the action of enzyme_____.

- (B) Answer in brief : (Any **One** out of Two) **2**
- (1) What is recombination?
 - (2) What is transposone and transposition?
- (C) Answer in detail : (Any **One** out of Two) **3**
- (1) Explain Meselson and Stahl experiment.
 - (2) Explain Conjugation.
- (D) Write a note on : (Any **One** out of Two) **5**
- (1) Write a note on Prokaryotic replication.
 - (2) Write a note on Transduction.
- 4 (A) Objective type questions : **4**
- (1) Synthesis of cDNA is carried out by enzyme _____.
 - (2) If G is at the third position in the codon, according to wobble hypothesis _____ will be anticodon.
 - (3) Lac Z gene codes for _____
 - (4) _____ is the start codon.
- (B) Answer in brief : (Any **One** out of Two) **2**
- (1) What is wobble hypothesis?
 - (2) Define : (a) Operon, (b) Constitutive gene.
- (C) Answer in detail : (Any **One** out of Two) **3**
- (1) Explain characteristics of genetic code.
 - (2) Explain G capping and Polyadenylation.
- (D) Write a note on : (Any **One** out of Two) **5**
- (1) Write a note on Lac operon.
 - (2) Write a note on Eukaryotic transcription.

- 5 (A) Objective type questions : 4
- (1) _____ is the hybrid vector derived from plasmids containing cos site of λ -phage.
 - (2) Out of three class of restriction endonuclease enzyme which class/type is preferred for gene cloning purpose?
 - (3) Southern blotting is an immunodetection method working on the principle of Ag Ab reaction. TRUE/ FALSE.
 - (4) The plane of cutting is _____ ,if EcoR1 enzyme is used to cut the DNA at restriction site.
- (B) Answer in brief : (Any One out of Two) 2
- (1) What is plasmid?
 - (2) What is cloning?
- (C) Answer in detail : (Any **One** out of Two) 3
- (1) Explain linkers and adaptors.
 - (2) Explain steps of rDNA technology.
- (D) Write a note on : (Any **One** out of Two) 5
- (1) Write plasmid as a cloning vector.
 - (2) Write a note on application of genetic engineering.
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