* P A Q - 0 0 3 - 1 0 1 5 0 3 4 - 1 5 0 - 4 *

**PAQ-003-1015034** Seat No. _____

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

**October / November - 2018**

## BT - 502 : Genetics & Molecular Biology

**Faculty Code : 003**

**Subject Code : 1015034**

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

**1** (a) Attempt following questions : **4**

(1) Gene as unit of recombination is known as _____.

(2) When both alleles express their character completely, phenomenon is known as _____.

(3) Cross between $F_1$ hybrid with either of parents is known as _____.

(4) Mendel's which law couldn't be applicable for Linked gene ?

(b) Answer in brief : (any **one** out of two) **2**

(1) What is chromosomal aberration ? Which type of aberration involves changes in number of chromosomes ?

(2) Explain Mendel's law of dominance.

(c) Answer in detail : (any **one** out of two) **3**

(1) Explain Genic balance theory for sex determination.

(2) Explain Multiple allele.

(d) Write a note on : (any **one** cut of two) **5**

(1) Explain supplementary and complementary interaction with suitable example.

(2) Write a note on linkage Map.

**2** (a) Attempt following questions : **4**

(1) Which symbol is utilized to expresses dominant allele in hardy Weinberg law ?

(2) Reciprocal cross is same in case of cytoplasmic inheritance. True or false ?

(3) If C % in DNA is 12% then what would be % of A in DNA ?

(4) How many nucleosomes will he present in a genome size with 1,00,000bp ?

(b) Answer in brief : (any **one** out of two) **2**

(1) What is C value ? What do you mean by C value paradox ?

(2) Explain central Dogma.

(c) Answer in detail : (any **one** out of two) **3**

(1) Explain Hardy Weinberg Law of equilibrium.

(2) Explain DNA double helix structure.

(d) Write a note on : (any **one** out of two) **5**

(1) Explain direct evidences on DNA as genetic material.

(2) Explain Cytoplasmic inheritance.

**3** (a) Attempt following questions : **4**

(1) Name enzyme which maintain topological structure of DNA.

(2) Which is main DNA polymerizing enzyme in prokaryotes ?

(3) Who discovered transposable element ?

(4) Which proteins are involved in activation of competence in bacteria ?

(b) Answer in brief : (any **one** out of two) **2**

(1) Explain preventative DNA repair mechanism.

(2) Explain semi-conservative mode of DNA replication.

(c) Answer in detail : (any **one** out of two) **3**

(1) Explain Transformation.

(2) Explain difference between initiation of replication in prokaryotes and Eukaryotes.

(d) Write a note on : (any **one** out of two) **5**

(1) Explain retrotransposon and retroposon.

(2) Explain enzymes involved DNA replication.

**4** (a) Attempt following questions : **4**

(1) Binding region for RNA polymerase to start transcription is known as _____.

(2) Which RNA is involved in splicing mechanism ?

(3) Write any one stop codon.

(4) Who discovered operon concept.

(b) Answer in brief : (any **one** out of two) **2**

(1) Explain splicing mechanism.

(2) Explain RNA polymerase structure and function in Prokaryotes.

(c) Answer in detail : (any **one** out of two) **3**

(1) Explain post translational modifications.

(2) Explain prokaryotic transcription.

(d) Write a note on : (any **one** out of two) **5**

(1) Explain Translation in prokaryotes.

(2) Write a note on Lac operon.

**5** (a) Attempt following questions : **4**

(1) Recognition site for E. CoRl is _____.

(2) Using pUC as cloning vector while method can be used for screening of recombinants ?

(3) Presenthetic oligonucleotide with recognition sequence for restriction endonuclease is known as _____.

(4) Which enzyme is known as molecular knives ?

(b) Answer in brief : (any **one** out of two) **2**

(1) Explain shot gun method.

(2) Explain YAC as cloning vector.

(c) Answer in detail : (any **one** out of two) **3**

(1) Write a note on joining of DNA.

(2) Explain nucleic acid hybridization.

(d) Write a note on : (any **one** out of two) **5**

(1) Explain Screening methods to identify recombinants.

(2) Explain steps of genetic engineering of insulin gene using plasmid as cloning vector inside *E.coli* as host.

---