JW-003-001518 Seat No. _____

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

**October - 2019**

## BT-502 : Genetics & Molecular Biology

*(Old Course)*

**Faculty Code : 003**

**Subject Code : 001518**

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

**Instructions :**

(1) Answer for all must be written in your answer sheet.

(2) Figures on the right indicate full marks.

**1** Attempt all : **20**

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

(2) In case of incomplete dominance dominant allele do not expresses completely. True or False ?

(3) Test cross involves self-crossing between $F_1$ individual. True or False ?

(4) Recessive allele expresses only in absence of _____ allele.

(5) Which symbol is utilized to express recessive allele in hardy Weinberg law ?

(6) Cytoplasmic inheritance is solely inherited by mother. True or False ?_____.

(7) Who discovered base-pair rule inside DNA ?

(8) Which protein is involved in nucleosome formation ?

(9) Name enzyme to unwind DNA duplex.

(10) How many types of DNA polymerases are present in eukaryotes ?

(11) Give full form of DNA.

(12) Which process involves sexual contact during gene transfer.

(13) Where TATA box is located in prokaryotes ?

(14) Which base is modified in mRNA after transcription in Eukaryotes ?

(15) Write start codon.

(16) Who discovered restriction endonuclease ?

(17) What size of desired gene can be cloned using a pUC as vector ?

(18) Lao operon is regulated by attenuation, True or False ?

(19) What is used as inducer for lactose degrading enzyme ?

(20) Give full form of YAC.

**2** (a) Explain following questions : (any three) **6**

(1) Explain central dogma.

(2) Define allele, and multiple allele.

(3) What is replication ? Which mode of replication is used by most living cells ?

(4) Explain structure of promoter region in prokaryotes.

(5) Explain Inducible gene, repressible gene and housekeeping gene.

(6) Explain linkers.

(b) Attempt following questions : (any three) **9**

(1) Write a note on allelic interactions.

(2) What is DNA ? Explain alternative forms of DNA.

(3) Explain Direct DNA repair mechanism.

(4) Explain structure of transposable element and mechanism of transposition.

(5) Write a note on types of RNA.

(6) Explain shot gun method.

(c) Attempt following questions : (any two) 10

(1) Explain Mendel's Laws of inheritance.

(2) Write a note on chromosomal aberration.

(3) Explain conjugation and transduction.

(4) What is operon ? Write a note on Trp operon.

(5) Write a note on application of genetic engineering.

**3** (a) Explain following questions : (any three) **6**

(1) What is cistron ? Explain it.

(2) Explain genetic drift.

(3) Explain gene recombination.

(4) What is transcription ? What is post transcription modification ?

(5) Explain DNA ligase enzyme.

(6) What is blue white screening ?

(b) Attempt following questions : (any three) **9**

(1) Explain Epistatic interaction.

(2) What is Genomic organization ? Explain nucleosome formation.

(3) Explain DNA polymerases in prokaryotes.

(4) Explain post translational modification.

(5) Explain joining of DNA.

(6) Write a note on nucleic acid hybridization.

(c) Attempt following questions : (any two) **10**

(1) Explain sex determination in detail.

(2) Explain cytoplasmic inheritance in detail.

(3) Write a note on AC-Ds and P-element.

(4) Explain transcription in prokaryotes.

(5) What is cloning vector ? Explain it.

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