



HA-003-001518

Seat No. _____

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

May / June – 2017

Genetics & Molecular Biology : BT-502

Faculty Code : 003

Subject Code : 001518

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

[Total Marks : 70

- Instructions :** (1) Section-I covers compulsory one mark questions of 20 marks.
(2) Figures in the right indicate marks of the question.

SECTION - I

- 1 One mark objective Questions : **20**
- (1) Who coined the term 'Gene' in which year?
 - (2) _____ is the prevention of expression of gene by another non-allelic gene.
 - (3) Allele is _____.
 - (4) Name the marine euchiuroid worm which is studied extensively and is an excellent example of environmental determination of sexual phenotype.
 - (5) If a F_1 hybrid having the genotype Ab/aB produces 8% of cross over gametes AB and ab , then the distance between A and B is estimated to be _____.
 - (6) Who gave the Transforming principle in direct evidence to prove DNA as a genetic material?
 - (7) In case of nucleic acid, Nitrogenous base + Pentose sugar + Phosphate group = _____.

- (8) The only difference between Uracil and Thymine is the presence of _____ substituent at _____ position of carbon.
- (9) Fill in the box :

Base	Nucleoside	Nucleotide
Cytosine	?	Cytidylic acid

- (10) Which enzymes are used for the removal of RNA primers of eukaryotic Okazaki fragments?
- (11) In a type of direct DNA repair _____ enzyme is used for the reversal of base methylation.
- (12) By which experiment Bernard Davis in 1950 proved that physical contact of the cells is necessary for gene transfer?
- (13) In case of transcription _____ is loosely bound to core polymerase ($2\alpha, 1\beta, 1\beta'$) in prokaryotes and can be easily separated by physical means.
- (14) What is the other name of TATA box in Eukaryotes?
- (15) If GUG or UUG is the initiation codon occasionally, then the N-terminal amino acid of the nascent protein is _____.
- (16) True / False Justify it.
Inosine is a modified pyrimidine that is similar to guanine but lacks the amino group attached to the number 2 carbon in guanine.
- (17) What is BR in pBR322?
- (18) _____ is the hybrid vectors derived from plasmids containing cos site of λ phage.
- (19) What is the full form of IPTG?
- (20) Some Plasmids under certain condition integrate into the chromosomal DNA of the bacterium, such plasmids are called _____.

SECTION - II

- 2 (a) Write any three out of six : 6
- (1) Give the definition of pseudogenes.
 - (2) What is cistron?
 - (3) What is Linkage?
 - (4) Define chromosomal aberration.
 - (5) What is SV40?
 - (6) State Hardy-Weinberg Law of equilibrium.
- (b) Write any three out of six : 9
- (1) Explain Fine structure of gene.
 - (2) Explain C-value paradox.
 - (3) State Laws of heredity.
 - (4) Explain non-allelic gene interaction.
 - (5) Explain the basic form of DNA.
 - (6) Explain the concept of central dogma.
- (c) Write any two out of five : 10
- (1) Explain Mendelian Inheritance.
 - (2) Explain Uniparental Inheritance.
 - (3) Describe direct experimental evidences to prove DNA as a genetic material.
 - (4) Explain Prokaryotic replication.
 - (5) Explain DNA repair mechanisms.

SECTION - III

- 3** (a) Write any three out of six : **6**
- (1) Define Transduction.
 - (2) What is codon bias?
 - (3) What are transposable elements?
 - (4) Define Operon.
 - (5) What are vectors?
 - (6) What is r-DNA?
- (b) Write any three out of six: **9**
- (1) Explain direct DNA repair mechanism.
 - (2) Explain Transformation.
 - (3) Explain genetic code.
 - (4) Explain t-RNA.
 - (5) Explain Expression vector.
 - (6) Explain Linkers and Adaptors.
- (c) Write any two out of five : **10**
- (1) Explain the mechanisms of gene transfer.
 - (2) Describe Eukaryotic transcription.
 - (3) Explain Post translational modification.
 - (4) Explain cloning vectors.
 - (5) Describes the applications of Genetic engineering.
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