

**PSG COLLEGE OF ARTS & SCIENCE**  
(AUTONOMOUS)

**MSc DEGREE EXAMINATION MAY 2019**  
(Second Semester)

**Branch - BIOCHEMISTRY**

**MOLECULAR GENETICS**

Time: Three Hours

Maximum: 75 Marks

**SECTION-A (10 Marks)**

Answer **ALL** questions

**ALL** questions carry **EQUAL** marks (10x1 = 10)

- 1 Which of the following function is not performed by transposase?
  - (i) Restriction of the IS element
  - (ii) Integration of the transposon
  - (iii) Formation of the RNA intermediate
  - (iv) Restriction of the host genome
- 2 When was the first method of site-directed mutagenesis developed?
  - (i) 1940
  - (ii) 1970
  - (iii) 1980
  - (iv) 1950
- 3 Where is Extra nuclear inheritance commonly occur?
  - (i) Nucleus
  - (ii) Cytoplasmic organelles
  - (iii) Ribosomes
  - (iv) Cell membrane
- 4 Which of the following process occurs between DNA molecules of very similar sequences?
  - (i) Homologous genetic recombination
  - (ii) Site specific recombination
  - (iii) Non-homologous recombination
  - (iv) Replicative recombination
- 5 The lac repressor has which of the following DNA-binding motif?
  - (i) Helix-turn-helix
  - (ii) Zinc finger
  - (iii) Homeodomain
  - (iv) Leucine zipper
- 6 Indicate the types of DNA that interact with sequence specific DNA binding proteins.
  - (i) B-DNA
  - (ii) A-DNA
  - (iii) Z-DNA
  - (iv) C-DNA
- 7 What causes the brain cell damage in HD patients?
  - (i) A lack of oxygen
  - (ii) Poor nerve development
  - (iii) An abnormal protein
  - (iv) None of the above
- 8 Chemicals which are released at the synaptic junction are called
  - (i) Hormones
  - (ii) Neurotransmitter
  - (iii) Cerebrospinal fluid
  - (iv) Lymph
- 9 Find the genetic material of HIV virus (not the provirus) is
  - (i) DNA
  - (ii) RNA
  - (iii) Both (i) & (ii)
  - (iv) None of the above
- 10 Which components of the HIV virion attach to the CD4 target cell initially?
  - (i) gp 120, p 24
  - (ii) gp 120, gp 41
  - (iii) p 24, p 17
  - (iv) p 51, gp 41

**Cont...**

»

**SECTION - B (35 Marks)**

Answer **ALL** Questions

**ALL** Questions Carry **EQUAL** Marks (5 x 7 = 35)

- 11 a What is the C value paradox and how is it explained?  
OR  
b Discuss about bacterial transposons.
- 12 a Illustrate the mitochondrial genome.  
OR  
b Analyse the Endosymbiont theory.
- 13 a Sketch the structure of Zinc finger motif and write the functions briefly.  
OR  
b State the structure and functions of RNA binding motif.
- 14 a Evaluate the structure and functions of Steroid receptor.  
OR  
b Explain the role of c-jun in Brain function.
- 15 a Determine the method for viruses get in to the cell.  
OR  
b Enumerate the three kinds of sub viral agents.

**SECTION - C (30 Marks)**

Answer any **THREE** Questions

**ALL** Questions Carry **EQUAL** Marks (3 x 10 = 30)

- 16 Classify the three types of multigene families with suitable example.
- 17 Analyse the classes of Cytoplasmic inheritance.
- 18 Evaluate the protein motif binding sites in DNA and their specificity.
- 19 Explain the role of serum response factor in Brain development and function.
- 20 Elucidate the molecular biology of HIV & AIDS.

Z-Z-Z

END