PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2022
(Third Semester)

Branch – **ZOOLOGY**

MOLECULAR BIOLOGY

Time: Three Hours Maximum: 50 Marks

SECTION-A (5 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks (5 x 1 = 5)

1. Which of the following enzyme adds complementary bases during replication?
   (i) Helicase (ii) Polymerase
   (iii) Synthesase (iv) Replicase

2. Identify the product of transcription.
   (i) DNA (ii) Ribosome
   (iii) Protein (iv) RNA

3. Choose the any one of the following is incorrect about genetic code.
   (i) Degeneracy (ii) Universality
   (iii) Ambiguity (iv) Non-overlapping

4. Find the following one contains a group of genes that are transcribed together, but are under the control of a single regulatory region.
   (i) Recon (ii) Operon
   (iii) Cistron (iv) Muton

5. How many types of histone molecules are found in nature?
   (i) 3 (ii) 4
   (iii) 5 (iv) 6

SECTION - B (15 Marks)
Answer **ALL** Questions
ALL Questions Carry **EQUAL** Marks (5 x 3 = 15)

6. a) Classify the different forms of DNA.
   OR
   b) Explain the semiconservative method of DNA replication in prokaryotes.

7. a) Analyze the role of promoters in transcription process of prokaryotes.
   OR
   b) Describe the Rho-dependent termination process of transcription in prokaryotes.

8. a) Narrate the structure of ribosomes.
   OR
   b) Summarize the termination of polypeptide chain in translation process of prokaryotes.

Cont...

9. a) Explain the Operon concept.

OR

b) Bring out the attenuator control in trp operon.

10. a) How are histones involved in gene expression in eukaryotes?

OR

b) State the role of promoter in eukaryotic gene expression.

SECTION -C (30 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** Marks (5 x 6 = 30)

11. a) Highlight the structure of doble helix DNA.

OR

b) Distinguish between DNA Polymerases and DNA Ligase.

12. a) Elucidate the structure of prokaryotic RNA polymerase.

OR

b) Point out the post transcriptional modifications of RNA in prokaryotes.

13. a) Justify the characteristics of genetic code.

OR

b) Enumerate the post translational modifications in prokaryotes.

14. a) Discuss the Lac operon hypothesis.

OR

b) Assume the tryptophan's role in negative control of trp operon.

15. a) Discover the mechanism of m-RNA splicing.

OR

b) Analyze the hormonal control of gene expression.

Z-Z-Z

END