

PSG COLLEGE OF ARTS & SCIENCE  
(AUTONOMOUS)

BSc DEGREE EXAMINATION MAY 2022  
(Third Semester)

Branch – **BIOCHEMISTRY**

**MOLECULAR BIOLOGY**

Time: Three Hours

Maximum: 75 Marks

**SECTION-A (10 Marks)**

Answer ALL questions

ALL questions carry EQUAL marks (10 x 1 = 10)

- Name the enzyme catalyzed the synthesis of DNA.  
(i) DNA Polymerase (ii) DNA Gyrase  
(iii) DNA Ligase (iv) DNA Helicase
- Find the role of DNA helicase in replication machinery.  
(i) Ligation (ii) Unwinding  
(iii) Chain Elongation (iv) Excision of Primer
- Identify the inhibitors of transcription.  
(i) Actinomycin D (ii) Streptomycin  
(iii) Puromycin (iv) Tetracyclin
- Select the RNA polymerase which makes a tRNA.  
(i) RNA Polymerase I (ii) RNA Polymerase II  
(iii) RNA Polymerase III (iv) RNA Polymerase IV
- Tick the divalent ion in tightening process of ribosome's.  
(i)  $Mg^{2+}$  (ii)  $Zn^{2+}$  (iii)  $Ca^{2+}$  (iv)  $Fe^{2+}$
- Choose the initiation codon.  
(i) AUG (ii) CUG (iii) UUA (iv) UAA
- How many number of structural genes in Trp Operon.  
(i) 7 (ii) 3 (iii) 5 (iv) 4
- Find out the chemical which inducing the depurination process.  
(i) Methylethane Sulphonate (ii) Nitrosoguanidine  
(iii) Ethylethenesulphonate (iv) All of these
- Which of the following is the non-composite transposans?  
(i) Tn5 (ii) Tn10 (iii) Tn3 (iv) Tn9
- Find the element cause the hybrid dys genesis.  
(i) Non-composite Transposans (ii) LINE  
(iii) p-element (iv) AC element

**SECTION - B (35 Marks)**

Answer ALL Questions

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

11. a) Explain the process of bacterial transduction.

(OR)

b) Narrate the mechanism of rolling circle model of Replication.

12. a). Simplify the mRNA processing with capping and tailing Process.

(OR)

b) Describe the steps involved in prokaryotic transcription.

Cont...

13. a) Summarise the initiation steps of protein translation.

(OR)

b) Compare the composition of prokaryotic and eukaryotic ribosomes.

14. a) Discuss the structure and mechanism of Tryptophan Operon.

(OR)

b) Outline the Excision Repair Mechanism.

15. a) Comment on the Composite transposons.

(OR)

b) Enumerate the types of gene mutation.

**SECTION - C (30 Marks)**

Answer any **THREE** Questions

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

16. Justify the DNA replication is semi conservative with Meselson and Stahl Experiment.

17. Construct the role of eukaryotic RNA polymerase in transcription.

18. Highlight the Post translational modifications of proteins.

19. Compile the prokaryotic gene regulation by Lac Operon model.

20. Elaborate the mechanism of Non-composite transposons .

Z-Z-Z

END