TOTAL PAGES: 2

18BTU12

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2022
(Third Semester)

Branch – **BIOTECHNOLOGY**

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. How many hydrogen bonds are required to form bonding between adenine and thymine?
   (i) 3 (ii) 1
   (iii) 2 (iv) Not fixed

2. Telomerase is not related to ----------
   (i) Maintenance (ii) Chromosome degradation
   (iii) Division (iv) Replication

3. Which type of DNA is connected by a holiday junction?
   (i) Homologous DNA duplex (ii) Heteroduplex DNA
   (iii) Mutated DNA (iv) Asymmetric DNA

4. The stem of the hairpin loop of RNA consists mostly of ----------
   (i) A,T (ii) G,C
   (iii) A,G (iv) C,T

5. In the mRNA, which of the following terminal end is capped by 7-methyl guanosine triphosphate cap
   (i) 2' end (ii) 4' end
   (iii) 5' end (iv) 7'end

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

6. a) "DNA is a genetic material" – explain.
   OR
   b) Give a note on various forms of DNA.

7 a) Write short note on DNA Polymerases of Eukaryotes.
   OR
   b) Discuss about the replication of SS DNA.

8 a) Give a short note on role of SOS repair system.
   OR
   b) Explain the importance of DNA repair mechanism.

9. a) Define Promoter. What is the importance of promoters in gene expression?
   OR
   b) Explain the 'lac' operon.

Cont...

10 a) Write note on Wobble hypothesis?

OR

b) Write a short note on 5'capping in eukaryotic mRNA.

SECTION -C (30 Marks)

Answer **ALL** questions

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

11 a) Describe the features of Watson & Crick model of DNA.

OR

b) Write short notes on Reverse transcription and C-Value paradox.

12 a) What is DNA replication? and explain the process of replication in eukaryotes.

OR

b) Write an account on rolling circle replication.

13 a) Explain any one DNA repair mechanism.

OR

b) Describe mismatch DNA repair mechanism.

14 a) Discuss the process of RNA editing by gRNA.

OR

b) Describe the gene regulation in eukaryotes.

15 a) Explain post-translational modifications in eukaryotes.

OR

b) Describe the general properties of genetic code.

Z-Z-Z END