18BTP07

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION MAY 2022
(Second Semester)

Branch – **BIOTECHNOLOGY**

RECOMBINANT DNA TECHNOLOGY

Time: Three Hours Maximum: 50 Marks

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

1. When was the first recombinant DNA molecule synthesized?
   (i) 1962 (ii) 1972
   (iii) 1982 (iv) 1992

2. Identify the reasons for which plasmids are used as cloning vectors.
   (i) Can be multiplied in culture.
   (ii) Self-replication in bacterial cells
   (iii) Can be multiplied in laboratories with the help of enzymes
   (iv) Replicate freely outside bacterial cells

3. What is DNA library?
   (i) A DNA fragment inserted into vector genessequenced
   (ii) A general collection of all thus far
   (iii) All DNA fragments identified with a probe
   (iv) A collection of DNA fragments that make the entire genome of particle

4. Which of the following is not used in PCR/ Thermal cycler?
   (i) Site specific mutagenesis
   (ii) to generate double stranded DNA for DNA sequencing
   (iii) to generate copies of microsatellites mRNAfor DNA fingerprinting
   (iv) to generate cDNA from

5. Which of the following have been developed by mutation?
   (i) Knol Knol variety of caster (ii) Aruna variety pf barley
   (iii) Erectiferum variety of cabbage (iv) Reimei variety of rice

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

6. a) Discuss about polynucleotide kinase.
   (OR)
   b) Explain the uses of adapters and linkers.

7. a) The Artificial plasmids are widely used as vectors in molecular cloning. - Justify
   (OR)
   b) Analyze the applications of bacterial Artificial chromosomes.

8. a) Construct the Genomic DNA library with suitable example.
   (OR)
   b) Describe the codon usage with respect to translation process.

9. a) Review the applications of RT-PCR in Corona virus diagnosis.
   (OR)

Cont...

b) Explain the application of PCR in forensic science.

10. a) Analyze the ligase chain reaction.

(OR)

b) Discuss about Gene editing techniques.

SECTION -C (30 Marks)

Answer **ALL** questions

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

11. a) Differentiate the DNA methyltransferases and DNA methylation.

(OR)

b) Evaluate the ligases and ligation strategies.

12. a) Explicate the features of the Yeast vector.

(OR)

b) Elucidate the Structure, properties and types of Plasmid.

13. a) Differentiate the Genomic and cDNA library.

(OR)

b) Construct the process of protein extraction and purification.

14. a) Categorize the Real Time and Reverse Transcriptase PCR.

(OR)

b) Elucidate the types of PCR and its techniques.

15. a) Enumerate the PCR based method for site –directed mutagenesis.

(OR)

b) Criticize the CRISPR/Caspase as a genome editing tool.

Z-Z-Z END