

PSG COLLEGE OF ARTS & SCIENCE  
(AUTONOMOUS)  
BSc DEGREE EXAMINATION DECEMBER 2023  
(Fifth Semester)  
Branch – ZOOLOGY

**BIOTECHNOLOGY – I**

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 is the first step in the polymerase chain reaction?  
(i) Denaturation (ii) Annealing  
(iii) Primer extension (iv) Renaturation
- 2 Which DNA is restricted to making a genomic library?  
(i) Plasmid DNA (ii) Mitochondrial DNA  
(iii) Chloroplast DNA (iv) Genomic DNA
- 3 Choose the membrane commonly used for northern blotting from the following.  
(i) Nitrocellulose (ii) Polyvinylidene fluoride  
(iii) Nylon (iv) Polyester
- 4 Which of the following step is not required for DNA sequencing?  
(i) Restriction digestion (ii) Electrophoresis  
(iii) Gene transfer (iv) Polymerase chain reaction
- 5 What kind of disease is mainly cured with the help of gene therapy?  
(i) Infectious (ii) Hereditary  
(iii) Physiological (iv) Acute

**SECTION - B (15 Marks)**

Answer ALL Questions

ALL Questions Carry EQUAL Marks

(5 x 3 = 15)

- 6 a Explain the convenient sticky and blunt-end ligation methods.  
OR  
b Describe the types of restriction enzymes involved in gene manipulation.
- 7 a Narrate the desirable properties of a cloning vector.  
OR  
b Summarize the essential features of yeast plasmid vector.
- 8 a Analyze the various strategies used in gene transfer methods.  
OR  
b Sketch the working components of western blotting method.
- 9 a Organize the methods used for gene cloning in animal cell with examples.  
OR  
b Describe the procedure and importance of chain termination sequencing.
- 10 a Analyze the production method of monoclonal antibodies.  
OR  
b Summarize the applications of gene therapy.

Cont...

**SECTION -C (30 Marks)**

Answer ALL questions

ALL questions carry EQUAL Marks

(5 x 6 = 30)

- 11 a Enumerate the different steps involved in PCR technique.  
OR  
b Classify the types of restriction endonucleases based on their recognition sequences.
- 12 a Discuss in detail about DNA library and its construction.  
OR  
b Compare and contrast the plasmids and bacteriophages.
- 13 a Highlight the steps involved in dot blotting method.  
OR  
b Summarize the screening and selection of rDNA clones.
- 14 a Elucidate the human peptide hormone gene.  
OR  
b Analyze the different genes used for vaccine development.
- 15 a Discuss briefly on principle and applications of DNA finger printing.  
OR  
b Summarize how DNA probes used for disease detection.

Z-Z-Z

END