

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION MAY 2022
(Fourth Semester)

Branch – APPLIED MICROBIOLOGY

**PRINCIPLES OF GENETIC ENGINEERING &
APPLIED BIOTECHNOLOGY**

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer ALL questions

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

- 1 Gene cloning is a process where
(i) Gene is cloned in an animal
(ii) Fragments of DNA are transferred from one organism to another
(iii) Fragments of DNA cloned in the same organism using carrier
(iv) DNA is cloned in plants
- 2 Which of the following is a plasmid?
(i) pBR322 (ii) BamHI
(iii) Sall (iv) EcoRI
- 3 Molecular scissor is
(i) Peptidase (ii) Urease
(iii) Restriction endonuclease (iv) Helicase
- 4 Analyzing gene expression is useful to detect
(i) Viral infections in cells (ii) Susceptibility to cancer
(iii) Resistance to Penicillin (iv) All of above
- 5 A sequencing gel is a..... Gel.
(i) Toxic (ii) Highly-polymerized
(iii) High resolution (iv) Low resolution
- 6 Molecular markers are used to construct
(i) Chromosome maps (ii) Cytogenetic Maps
(iii) Physical Maps (iv) All of these
- 7 Who is known as the father of tissue culture?
(i) Bonner (ii) Laibach
(iii) Haberlandt (iv) Gau theret
- 8 Transgenic animals have.....
(i) Foreign Protein (ii) Foreign gene
(iii) Foreign lipid (iv) Foreign amino acid
- 9 Name the organism whose first genetic map was made?
(i) Rat (ii) Arabidopsis
(iii) Fly (iv) Drosophila
- 10 Somatic cell therapy include
(i) Ex-vivo therapy (ii) In-vivo therapy
(iii) Antisense therapy (iv) All of these

Cont...

SECTION - B (25 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks (5 x 5 = 25)

- 11 a Define Restriction enzyme. Explain and its types.
OR
b Explain the features of a phagemids.
- 12 a Give an account on the Northern blotting techniques.
OR
b Give details about the DNA finger printing and its application in forensics.
- 13 a Write a note on preparation of YAC Library.
OR
b Write short notes on whole genome shotgun sequencing.
- 14 a Give an account on the insert resistance in plants.
OR
b What is in-vitro fertilization? Give their significance.
- 15 a Write the significance uses of Microarray.
OR
b Comment on genetic linkage of human genome technology.

SECTION -C (40 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks (5 x 8 = 40)

- 16 a Briefly explain about the selection of recombinant DNA delivery system.
OR
b Describe the identifying genes in complex genomes by direct selection of cDNA.
- 17 a Explain the over expression of recombinant protein and their applications.
OR
b Describe the gene expression system of *B.subtilis*.
- 18 a Describe in detail the polymerase chain reaction and its applications.
OR
b Detail account on the DNA genome sequencing by Maxam Gilbert method.
- 19 a Elaborately discuss the biopolymers production by genetic engineering fields.
OR
b Detail account on the plant tissue culture.
- 20 a Write an account on the gene therapy and its importance.
OR
b Discuss about the different gene expression system and reporters.