

PSG COLLEGE OF ARTS & SCIENCE  
(AUTONOMOUS)

MSc DEGREE EXAMINATION DECEMBER 2022  
(Third Semester)

Branch – BIOTECHNOLOGY

PLANT BIOTECHNOLOGY

Time: Three Hours

Maximum: 50 Marks

SECTION-A (5 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(5 x 1 = 5)

- 1 Who explained the wobble hypothesis?  
(i) Nirenberg (ii) Charles Darwin  
(iii) Samuel Weiss (iv) Watson and Crick
- 2 Somatic hybridization is achieved through -----  
(i) Recombinant DNA technology (ii) Protoplast fusion  
(iii) Grafting (iv) Conjugation
- 3 Which of these is a secondary metabolite?  
(i) Keratin (ii) Monoterpenes  
(iii) Myosin (iv) Triacylglycerols
- 4 The process of expression of foreign genes in a plant is called -----.  
(i) Transgenesis (ii) Gene expression  
(iii) Cell hybridization (iv) Genetic transformation
- 5 RNA contains repeating units of -----.  
(i) Deoxyribonucleosides (ii) Ribonucleotides  
(iii) Ribonucleosides (iv) Deoxyribonucleotides

SECTION - B (15 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks

(5 x 3 = 15)

- 6 a Illustrate the structure of chloroplast DNA.  
OR  
b State the significance of cytoplasmic male sterility.
- 7 a Discuss the role of hormones in plant tissue culture.  
OR  
b Why does plants need hardening?
- 8 a Explain the importance of secondary metabolites in medicine.  
OR  
b How are synthetic seeds produced?
- 9 a Distinguish between gene silencing and gene knockout.  
OR  
b State the consequences of glyphosate based herbicides.
- 10 a Analyze the steps of RNA interference.  
OR  
b How plantibodies are produced?

Cont...

**SECTION -C (30 Marks)**

Answer ALL questions

ALL questions carry EQUAL Marks

(5 x 6 = 30)

- 11 a Analyze the steps of protein synthesis.  
OR  
b Elucidate the molecular mechanism of nitrogen fixation.
- 12 a Assess the criteria for establishing plant tissue culture laboratory.  
OR  
b Determine the protoplast isolation by enzymatic method.
- 13 a Predict the intermediates involved with terpenoid pathway.  
OR  
b Classify the scale up process in bioreactor.
- 14 a Interpret the marker genes for selection of transformants.  
OR  
b Criticize the use of *Agrobacterium sp.*, mediated gene transfer technique.
- 15 a Evaluate the DNA barcoding in plants.  
OR  
b Categorize plant molecular markers used in biotechnology.

Z-Z-Z

END