

**BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI  
(END SEMESTER EXAMINATION)**

**CLASS: Msc.**

**BRANCH: BIOTECHNOLOGY**

**SEMESTER :II**

**SESSION :**

**SP/22**

**SUBJECT: BT425 Plant Biotechnology**

**TIME: 2 Hours**

**FULL MARKS:**

**50**

**INSTRUCTIONS:**

1. The question paper contains 5 questions each of 10 marks and total 50 marks.
  2. Attempt all questions.
  3. The missing data, if any, may be assumed suitably.
  4. Before attempting the question paper, be sure that you have got the correct question paper.
  5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
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- Q.1(a) What is cellular totipotency? Discuss about the design and layout of plant tissue culture room facility. [2+3]  
CO1,PO1,2
- Q.1(b) Analyze the advantages and limitations of plant tissue culture. [5]  
CO2, PO1,2
- Q.2(a) What is morphogenesis? Differentiate between direct and indirect embryogenesis. [2+3]  
CO2, PO 4
- Q.2(b) How are artificial seeds produced? Draw the necessary diagram. What type of explants would you choose to prepare the artificial seeds, explain? CO3,PO2, 3 [5]
- Q.3(a) What are Somatic hybrids and Cybrids. Give an outline of the protocol for hybrid selection through Biochemical methods. CO2, PO2,3 [2+3]
- Q.3(b) What is protoplast culture? Describe the methods for protoplast culture. Discuss the cost effective method of protoplast isolation. CO3,PO2,3,4 [5]
- Q.4(a) What are molecular markers? What are the different types of molecular markers? Explain any one of them. CO2,PO2 [1+2+2]
- Q.4(b) Comment upon DNA Microarray technique. CO3,PO2 [5]
- Q.5(a) What is Molecular Pharming? Justify "Plants are considered as the suitable expression vectors for transgenic development for production of biopharmaceuticals". CO4,PO2,3,4 [2+3]
- Q.5(b) Discuss the social and ethical issues that arose after release of GMOs. What are suicidal seeds? CO4, PO3,4,5 [5]

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