

**BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI**  
**(MID SEMESTER EXAMINATION SP/2025)**

**CLASS: BTECH**  
**BRANCH: BIOTECHNOLOGY**

**SEMESTER : VI**  
**SESSION : SP/2025**

**SUBJECT: BE403 PLANT & AGRICULTURAL BIOTECHNOLOGY**  
**TIME: 02 Hours**

**FULL MARKS: 25**

**INSTRUCTIONS:**

1. The question paper contains 5 questions each of 5 marks and total 25 marks.
  2. Attempt all questions.
  3. The missing data, if any, may be assumed suitably.
  4. Tables/Data handbook/Graph paper etc., if applicable, will be supplied to the candidates
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		CO	BL
Q.1(a)	Define the terms “Cellular totipotency” and “dedifferentiation”.	[2]	1 1
Q.1(b)	Compare the phytohormones Auxins and Cytokinins in terms of their function. Give one example of each.	[3]	2 4
Q.2(a)	List the components of MS media highlighting the importance of adding vitamins to the culture media.	[2]	1 1
Q.2(b)	Calculate the volume of IBA stock solution (0.1mg/ml) required to prepare 200 ml of MS media supplemented with IBA 2.5 mg/L.	[3]	3 3,4
Q.3(a)	Compare organogenesis with embryogenesis.	[2]	2 4
Q.3(b)	Draw the different stages of embryo development and mention the suitable stage to select for synseed production.	[3]	3,4 3
Q.4(a)	How will you sterilize the glasswares & instruments used in plant tissue culture lab?	[2]	2 2
Q.4(b)	Define the term “Somaclonal Variation”. Is it advantageous or disadvantageous? Justify.	[3]	3,4 1
Q.5(a)	How do you check the viability of cells in cell suspension culture?	[2]	2 1
Q.5(b)	“Cell suspension culture can be used for production of plant secondary metabolites”. Comment upon the statement. List the names of two secondary metabolites produced in cell culture.	[3]	3,4 3

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