

B.Sc. Semester - 3 (NEP-2020) Examination**OCT/NOV-2025****BIT: Metabolism and Plant Tissue Culture (Major-6)****Time: 2:00 Hours****Marks:50****Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate marks.

Que.1	1)	Explain the process of glycolysis and discuss the fate of pyruvate under aerobic and anaerobic conditions.	(05)
	2)	Describe the structure and steps of the TCA cycle with its energy yield.	(05)
OR			
Que.1	1)	Explain the process and regulation of gluconeogenesis in plants.	(05)
	2)	Describe the electron transport chain and oxidative phosphorylation.	(05)
Que.2	1)	Write an account on transamination, decarboxylation, and deamination reactions in amino acid metabolism.	(05)
	2)	Outline the urea cycle and discuss its biological significance.	(05)
OR			
Que.2	1)	Explain the steps and enzymes involved in the biosynthesis of nucleic acids.	(05)
	2)	Describe the process of photosynthesis with emphasis on photophosphorylation.	(05)
Que.3	1)	Describe the molecular structure of cell membranes and fluid mosaic model.	(05)
	2)	Explain active and passive transport mechanisms in biological systems.	(05)
OR			
Que.3	1)	Discuss the steps involved in signal transduction through G-protein.	(05)
	2)	Write short notes on hormonal signalling mechanisms in plants.	(05)
Que.4	1)	Explain the concept of totipotency and its importance in plant biotechnology.	(05)
	2)	Explain the use of auxins and cytokinins in callus induction and shoot/root differentiation.	(05)
OR			
Que.4	1)	Write short notes on plant growth regulators used in tissue culture.	(05)
	2)	Describe the preparation and composition of plant tissue culture media with examples.	(05)
Que.5	1)	Compare carbohydrate and lipid metabolism in terms of energy yield and intermediates.	(05)
	2)	Write a note on regulation of metabolic pathways.	(05)
OR			
Que.5	1)	Discuss various applications of plant tissue culture in pharmaceutical and agricultural industries.	(05)
	2)	Explain how signal transduction regulates plant growth and development.	(05)
