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22BCU626N

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION MAY 2026
(Sixth Semester)

Branch – **BIOCHEMISTRY**

PLANT BIOCHEMISTRY

Time: Three Hours Maximum: 75 Marks

SECTION-A (10 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks (10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	What is the main function of carotenoids in photosynthesis? (i) Light absorption (ii) Carbon dioxide fixation (iii) ATP synthesis (iv) Protection from photooxidation	K1	CO1
	2	Identify the primary electron acceptor in Photosystem II. (i) Plastocyanin (ii) Ferridoxin (iii) Plastoquinone (iv) Cytochrome b6f complex	K1	CO1
2	3	Label the enzyme that is responsible for Carbon dioxide fixation in C4 plants. (i) PEP carboxylase (ii) RuBisCO (iii) Aldolase (iv) Triose phosphate isomerase	K1	CO1
	4	Which organelle is invoved in the initial step of photorespiration? (i) Mitochondria (ii) Golgi apparatus (iii) Peroxisome (iv) Chloroplast	K1	CO1
3	5	Name the enzyme which is essential for nitrogen-fixing bacteria to convert atmospheric nitrogen into ammonia. (i) Nitrogenase (ii) Ammonia lyase (iii) Nitrite reductase (iv) Nitrate reductase	K1	CO2
	6	Which form of sulphur is primarily absorbed by plants from the soil? (i) Elemental sulphur (ii) Sulphate (iii) Sulphite (iv) Sulphide	K1	CO2
4	7	Where are cytokinins primarily synthesized in plants? (i) Roots (ii) Shoot apical meristem (iii) Leaves (iv) Flowers	K1	CO3
	8	Select the gaseous hormone that promotes fruit ripening and the triple response in seedlings. (i) Auxin (ii) Ethylene (iii) Cytokinin (iv) Gibberellins	K1	CO3
5	9	Identify the gas which is essential for the germination of seeds. (i) Carbon dioxide (ii) Nitrogen (iii) Oxygen (iv) Hydrogen	K1	CO3
	10	Which of the following is considered a biotic stress factor? (i) Pathogen attack (ii) High salinity (iii) Drought (iv) Extreme temperature	K1	CO3

Cont...

SECTION - B (35 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** Marks (5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	Show the Emerson enhancement effect and its importance in photosynthetic efficiency.	K2	CO1
		(OR)		
	11.b.	Illustrate the photosynthetic electron transport chain in chloroplasts.		
2	12.a.	Describe the C4 pathway of carbon fixation with a labeled diagram.	K3	CO1
		(OR)		
	12.b.	Interpret the mechanism of starch degradation during seed germination.		
3	13.a.	Summarize the structure, function and mechanism of action of nitrate reductase in nitrogen assimilation.	K2	CO2
		(OR)		
	13.b.	Infer on the nutrient role of sulphur in plants. Add a note on symptoms of sulphur deficiency.		
4	14.a.	Explain the mechanism of auxin action at the cellular level.	K2	CO3
		(OR)		
	14.b.	Outline the biosynthesis and functions of ethylene in plants.		
5	15.a.	Analyze the physiological and biochemical changes that occur during seed germination.	K4	CO3
		(OR)		
	15.b.	Explicate the senescence process in the life cycle of plants and its ecological significance.		

SECTION -C (30 Marks)

Answer **ANY THREE** questions

ALL questions carry **EQUAL** Marks (3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	Elucidate the structural features and functional significance of Photosystem I and Photosystem II.	K5	CO1
2	17	Analyze the phases of photosynthetic carbon reduction cylce with a neat labeled diagram.	K4	CO1
3	18	Write a detailed account of sulphur assimilation and its regulation in plants.	K3	CO2
4	19	Explain the biosynthesis and physiological applications of gibberellins in plants.	K5	CO3
5	20	Describe photomorphogenesis in plants and discuss how light intensity, color and duration influenze their plant growth and development.	K4	CO3

Z-Z-Z END