

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)
MSc DEGREE EXAMINATION MAY 2025
(Second Semester)

Branch - BOTANY

PLANT PHYSIOLOGY AND 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	Which process describes the movement of water from the soil into the plant? (i) Evaporation (ii) Absorption (iii) Condensation (iv) Respiration	K1	CO1
	2	In which type of nastic movement do plant leaves fold or curl in response to a sudden change in temperature? (i) Seismonastic (ii) Nyctinastic (iii) Hydronastic (iv) Thermonastic	K2	CO1
2	3	Which pigment is involved in capturing light energy and passing it to Photosystem I? (i) Xanthophyll (ii) Chlorophyll b (iii) Chlorophyll a (iv) Beta-carotene	K1	CO2
	4	Which component of the light-dependent reactions is responsible for generating ATP through photophosphorylation? (i) ATP synthase (ii) RuBisCO (iii) NADP+ reductase (iv) Chlorophyll a	K2	CO2
3	5	Which molecule is used as the starting substrate in Glycolysis? (i) Glucose (ii) Acetyl-CoA (iii) Citrate (iv) Ribose	K1	CO3
	6	Which of the following is not a direct product of the Krebs cycle? (i) NADH (ii) FADH ₂ (iii) ATP (or GTP) (iv) Glucose	K2	CO3
4	7	Which type of bond is primarily responsible for holding the two strands of DNA together? (i) Ionic bond (ii) Covalent bond (iii) Hydrogen bond (iv) Metallic bond	K1	CO4
	8	What is entropy a measure of? (i) The total energy of a system (ii) The disorder or randomness in a system (iii) The temperature of a system (iv) The pressure of a system	K2	CO4
5	9	Where does an enzyme typically bind to its substrate? (i) At the allosteric site (ii) At the catalytic site (iii) At the active site (iv) At the regulatory site	K1	CO5
	10	Which model best describes the way an enzyme interacts with its substrate, emphasizing the flexibility of the enzyme's active site? (i) Lock and Key Model (ii) Induced Fit Model (iii) Michaelis-Menten Model (iv) Allosteric Model	K2	CO5

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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.	Explain the mechanism of phloem transport.	K4	CO1
		(OR)		
	11.b.	Analyze the role of the biological clock in plants.		
2	12.a.	Compare the C3 and C4 cycles.	K5	CO2
		(OR)		
	12.b.	Evaluate the Cyclic photophosphorylation.		
3	13.a.	Explain the electron transport system.	K3	CO3
		(OR)		
	13.b.	Explain how abiotic stress influence plant physiological processes.		
4	14.a.	List out the scope and importance of biochemistry in plants.	K4	CO4
		(OR)		
	14.b.	List out the structure, properties and functions of carbohydrate.		
5	15.a.	Classify the different properties of enzymes.	K3	CO5
		(OR)		
	15.b.	Explain the mechanism of enzyme action, inhibition and activation.		

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	Explain the mechanisms of stomata opening and closing with a suitable diagrams.	K4	CO1
2	17	Analyze the role of the Krebs's cycle in cellular respiration.	K4	CO2
3	18	Explain the steps involved in the TCA cycle.	K5	CO3
4	19	Classify proteins based on their structural and functional properties, and provide examples of each category.	K4	CO4
5	20	Explain the steps involved in the isolation and purification of an enzyme.	K5	CO5

Z-Z-Z END