LOYOLA COLLEGE (AUTONOMOUS) CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – **PLANT BIOLOGY AND PLANT BIOTECHNOLOGY**

FIFTH SEMESTER – **NOVEMBER 2024**

UPB 5501 – PLANT PHYSIOLOGY

Date: 07-11-2024 Dept. No. Max. : 100 Marks

Time: 09:00 am-12:00 pm

	SECTION A - K1 (CO1)	
	Answer ALL the Questions	**(10 x 1 = 10)**
1.	**Fill in the blanks**	
a)	The passage of water through plasmodesmata is called ————-.	
b)	Mottled chlorosis is caused by the deficiency of ————-.	
c)	Carboxylation in barley plants takes place in the presence of the enzyme————.	
d)	Ubiquinone is a ———— carrier.	
e)	————is a potent dicot weed killer.	
2.	**State whether the following statements are TRUE or FALSE**	
a)	Cells become flaccid during exosmosis.	
b)	Magnesium causes premature leaf fall in plants.	
c)	Dimorphic chloroplasts are found in sugarcane.	
d)	Glycolysis results in the net gain of two ATP molecules.	
e)	Vernalin is an inhibitor of flowering.	
	SECTION A - K2 (CO1)	
	Answer ALL the Questions	**(10 x 1 = 10)**
3.	**Choose the correct answer**	
a)	Movement of solutes molecules from a region of higher concentration to a lower concentration is a.Osmosis b. Guttation c. imbibition d. diffusion	
b)	The essential mineral which is an important constituent of nucleic acids and coenzymes is a.nitrogen b.phosphorus c. calcium d.magnesium	
c)	Which of the following is not a CAM plant a.Agave b.Cacti c.Sugarcane d.Aloe	
d)	An example of heterotrophic nitrogen fixers is a.*Rhizobium* b. *Azospirillum* c. *Nostoc* d. *Anabaena*	
e)	*Suaeda fruticosa* shows resistance to a.cold b. heat c. salt d. frost	
4.	**Answer the following, each in about 50 words**	
a)	Relate imbibition and osmosis.	
b)	Define Donnan's potential equilibrium.	
c)	Comment on Red Drop effect.	
d)	Define gluconeogenesis.	
e)	Mention the types of photoperiodism.	
	SECTION B - K3 (CO2)	
	Answer any TWO of the following in 500 words	**(2 x 10 = 20)**

	Draw diagrams / flowcharts wherever necessary
5.	Explain the mechanisms of water absorption by plant roots.
6.	Explain the translocation of solutes in plants.
7.	Identify the role of the various photosynthetic pigments.
8.	Describe Glycolysis. Add a note on energy budget.
	SECTION C – K4 (CO3)
	Answer any TWO of the following in 500 words (2 x 10 = 20) **Draw diagrams / flowcharts wherever necessary**
9.	Explain the laws of thermodynamics and relate its physiological applications.
10.	Elaborate on the functions of the essential macroelements in plants.
11.	Explain the energy budget of Kreb's cycle.
12.	Comment on stress hormone and fruit ripening hormone
	SECTION D – K5 (CO4)
	Answer any ONE of the following in 1000 words (1 x 20 = 20) **Draw diagrams / flowcharts wherever necessary**
13.	a. Differentiate Transpiration and Guttation (5) b. Elaborate on the different theories of opening and closing of stomata. 15)
14.	Elaborate on C3 cycle and compare it with the C4 cycle of photosynthesis
	SECTION E – K6 (CO5)
	Answer any ONE of the following in 1000 words (1 x 20 = 20) **Draw diagrams / flowcharts wherever necessary**
15.	Describe in detail about the physiology of nitrogen fixation.
16.	Discuss the physiological role, mode of action and bioassay of Auxins.

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