LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

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

FIFTH SEMESTER – **APRIL 2024**

UPB 5501 – PLANT PHYSIOLOGY

Date: 02-04-2024 Dept. No. Max. : 100 Marks

Time: 09:00 AM - 12:00 NOON

	SECTION A - K1 (CO1)	
	Answer ALL the Questions -	**(10 x 1 = 10)**
1.	**Fill in the blanks**	
a)	Action spectrum of transpiration is ……..	
b)	…… is the process of conversion of ammonia into nitrates by *Nitrosomonas.*	
c)	…… is the product of aerobic respiration.	
d)	The plant hormone …… is involved in drought and frost resistance of plants.	
e)	…… is the product of aerobic respiration.	
2.	**True or False**	
a)	Carrier protein help in active absorption of ions.	
b)	Gravitational water is the water available for plants in soil.	
c)	NH_3 is the first stable product of nitrogen fixation.	
d)	Long day plants flowers under the photoperiods less than the critical day.	
e)	In photorespiration, glycine passes from mitochondria to peroxisomes.	
	SECTION A - K2 (CO1)	
	Answer ALL the Questions	**(10 x 1 = 10)**
3.	**Choose the correct answer**	
a)	Endosmosis occurs when the plant cell is placed in (a) Hypotonic solution (b) Isotonic solution (c) Hypertonic solution (d) Strong solution	
b)	Which of the following is an anti-transpirant? (a) PAN (b) AUG (c) IAA (d) PMA	
c)	Which is the source of electron in non-cyclic photophosphorylation? (a) Sunlight (b) Antennae (c) CO_2 (d) H_2O	
d)	Which of the following exhibits the greatest rate of respiration? (a) Growing shoot apex (b) Germinating seeds (c) Root tip (d) Leaf bud	
e)	The sub-apical elongation in plants is induced by (a) Auxins (b) Gibberellins (c) Cytokinin (d) Ethylene	
4.	**Answer the following**	
a)	Comment on guttation.	
b)	Define Kranz anatomy.	
c)	Distinguish between hydroponics and aeroponics.	
d)	Comment on gluconeogenesis.	
e)	Mention the importance of vernalization.	
	SECTION B - K3 (CO2)	
Answer any TWO of the following each in about 500 words.		**(2 x 10 = 20)**
5.	Explain the laws of thermodynamics and its physiological applications.	
6.	Illustrate the absorption and translocation of solutes.	
7.	Prepare and present CAM pathway.	

8.	Demonstrate nitrogen assimilation and recycling.	
SECTION C – K4 (CO3)		
Answer any TWO of the following each in about 500 words.		**(2 x 10 = 20)**
9.	Compare the mechanisms of water absorption and ascent of sap.	
10.	Critically comment on the role of cytokinin in plant growth and development.	
11.	Differentiate C3 and C4 cycles.	
12.	Correlate carbon and nitrogen metabolism in plants.	
SECTION D – K5 (CO4)		
Answer any TWO of the following each in about 500 words.		**(1 x 20 = 20)**
13.	Mention the importance of essential and non-essential elements. Add a note on the deficiency symptoms.	
14.	Discuss the various steps involved in glycolysis.	
SECTION E – K6 (CO5)		
Answer any ONE of the following		**(1 x 20 = 20)**
15.	Summarize light and dark reaction.	
16.	Elaborate on the biosynthesis, bioassay and mode of action of auxin.	

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