LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

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

FIFTH SEMESTER – **JULY 2024**

UPB 5501 – PLANT PHYSIOLOGY

Date: 13-06-2024 Dept. No. Max. : 100 Marks

Time: 10:00 AM - 01:00 PM

	SECTION A - K1 (CO1)
	Answer ALL the Questions **(10 x 1 = 10)**
1.	**Fill in the blank**
a)	Energy per molecule of water is called as ……. potential
b)	The typical symptom of Nitrogen deficiency in plants is ……..
c)	In chloroplast, the light reaction occurs in …….
d)	The importance of *Rhizobium* in legumes is…….
e)	…… stimulates elongation of stem, flowering and seed germination.
2.	**State whether the following statements are TRUE or FALSE**
a)	Transpiration occurs in guard cells.
b)	In hydroponics, plant roots are suspended in the nutrient solution.
c)	The CAM occurs in Opuntia.
d)	The energy per molecule of ATP is 7.3 calories.
e)	The BAP is a natural cytokinin.
	SECTION A - K2 (CO1)
	Answer ALL the Questions **(10 x 1 = 10)**
3.	**Choose the correct answer**
a)	The absorption of water by non-living substance is called as a) Diffusion b) Exosmosis c) Imbibition d) Endosmosis
b)	Phloem loading and unloading occurs in higher plants through a) Symplastic pathway b) Apoplastic pathway c) both a and b d) none
c)	In C_4 plants, the CO2 is fixed by a) PEP b) RuBP c) OAA d) TCA
d)	The glycolysis yields ……number of ATP molecules. a) 2 b) 3 c) 4 d) 8
e)	The reason for seed dormancy is due to a) ABA b) Glucose c) IBA d) BAP
4.	**Answer the following, each in about 50 words**
a)	Distinguish between Osmosis and Diffusion.
b)	Mention the importance of NPK in plants.
c)	Define photophosphorylation.
d)	Comment on RUBISCO.
e)	Define vernalization

	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 theories related to opening and closing of stomata.
6.	Demonstrate Red drop and Emersion Enhancement Effect.
7.	Prepare the energy budget of glycolysis and TCA cycle.
8.	Relate the importance of light period in flowering of plants.
	SECTION C – K4 (CO3)
	Answer any TWO of the following in 500 words (2 x 10 = 20) **Draw diagrams / flowcharts wherever necessary**
9.	Compare the theories on ascent of sap.
10.	Critically comment on soilless culture technique. Add a note on its merits and demerits.
11.	Explain the non-cyclic phosphorylation in plants.
12.	Illustrate how ATP is synthesised through Electron Transport System.
	SECTION D – K5 (CO4)
	Answer any ONE of the following in 1000 words (1 x 20 = 20) **Draw diagrams / flowcharts wherever necessary**
13.	Mention the importance of any five macro and micro minerals in growth and development of plants. Add a note on its symptoms due to deficiency.
14.	Compare C_3 and C_4 cycle in plants.
	SECTION E – K6 (CO5)
	Answer any ONE of the following in 1000 words (1 x 20 = 20) **Draw diagrams / flowcharts wherever necessary**
15.	Elaborate on physiology of Nitrogen Fixation.
16.	Discuss on various factors responsible for seed dormancy. Add a note on methods to break seed dormancy.

#########