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(Pages : 2)

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Name.....

Reg. No.....

FOURTH SEMESTER M.Sc. DEGREE EXAMINATION, JUNE 2019

(CUCSS—PG)

Botany

BO 04 ET 13 9—PLANT PHYSIOLOGY

(2010 Admissions)

Time : Three Hours

Maximum : 36 Weightage

I. Answer *all* questions. Each question carries 1 weightage :

- 1 What is the role of calcium channels in plants ?
- 2 Differentiate between apolastic and symplastic pathways of water uptake.
- 3 How are amides transported ?
- 4 Comment on the ecophysiological significance of C4 photosynthesis.
- 5 What are cryptochromes ?
- 6 Explain apoptosis.
- 7 Write notes on heat shock proteins.
- 8 Discuss the role of photoperiodism in flowering.
- 9 What is meant by quantum requirement in photosynthesis ?
- 10 What is the ABC model of flower development ?
- 11 Explain the importance of potassium assimilation in plants.
- 12 Describe  $\beta$  oxidation and its significance.
- 13 Distinguish between phloem loading and unloading.
- 14 What is water potential ? Why is it important in plant physiology ?

(14  $\times$  1 = 14 weightage)

II. Answer any *seven* questions. Each question carries 2 weightage :

- 15 Explain the role of aquaporins in water transport.
- 16 What are CAM plants ? What is its physiological significance ?
- 17 Explain the stomatal response to blue light.
- 18 Which is the enzyme responsible for nitrogen fixation ? Describe its structure and mechanism of nitrogen fixation.

Turn over

- 19 Discuss the morpho-physiological adaptations of plants to salinity stress.
- 20 Explain the mechanism of photophosphorylation.
- 21 Describe transport protein carriers with examples.
- 22 Give an account on the physiology of fruit ripening.
- 23 What are the methods adopted to break seed dormancy?
- 24 Give an account on the distribution of photoassimilates.

(7 × 2 = 14 weightage)

III. Answer any *two* questions. Each question carries 4 weightage :

- 25 Discuss the role of mitochondria in respiration and ATP synthesis. Add a note on the unique transport enzymes in plant mitochondria.
- 26 What are phytohormones? Elaborate on the structure and role of phytohormones in plant growth regulation.
- 27 Give a detailed account on the light independent reactions of photosynthesis and its role in plant metabolism.
- 28 Describe the role of inorganic nutrients in plant growth and development. Add a note on the role of microbes in nutrient uptake.

(2 × 4 = 8 weightage)