

M.Sc. SECOND SEMESTER EXAMINATIONS, 2021

SUBJECT: BOTANY

Course Code: BOT 201/C (TH)

Course ID: 21351

Course Title: Plant Physiology

Full Marks: 30

Time: 2 hrs

The figures in the margin indicate full marks

Answer all the questions.

1. Answer *any four* of the following questions: 1x4=4

- a) What are brassinosteroids?
- b) Name one function of jasmonate.
- c) Name two types of secondary active transport.
- d) What do you mean by negative water potential?
- e) Name two enzymes associated with senescence.
- f) What is carboxysome?
- g) Write the full form of CO & FT genes.
- h) What are growth retarding agents?
- i) Give an example of a hormone binding protein.
- j) What are secondary messengers?

2. Answer *any two* of the following questions: 5x2=10

- a) With the help of ABC model discuss the activities of homeotic genes for floral organ differentiation. Prove that floral stimulus is mobile in nature. 4+1=5

b) Briefly describe the different types of seed dormancy and enumerate four modern methods of breaking the same. **3+2=5**

c) Write short notes on senescence regulatory genes. What do you mean by monocarpic senescence? Compare ageing and senescence.

2+2+1=5

d) Describe the biosynthetic pathway of ABA in *Arabidopsis*. How is free ABA inactivated?**4+1=5**

e) Write short notes on: i) Classes of phytohormones ii) Functional role of ethylene. **2.5x2=5**

3. Answer any two of the following questions: 8x2=16

a) Explain apoplastic phloem loading with polymer trap biochemistry. What causes promotion of sink directed flow in this process? What is leakage retrieval mechanism in sieve tube during pressure flow? **4+2+2=**

b) What is an antenna complex? Differentiate between photosystem I and photosystem II. Describe the Calvin – Benson cycle. **2+2+4=8**

c) Discuss various mechanisms for inactivating DELLA repressors of the GA signaling pathway? What is the role of SPY, GAI and RGA proteins? How mutation in repressors of GAI and RGA influence growth?

3+3+2=8

d) Elucidate the major physiological effects of cytokinin. **8**

