

B.Sc. (Ag.) Honours Semester-II Examination, 2019

Course No: CPH-121 (Old)

(Crop Physiology)

Signature of Centre Superintendent

Roll No. : (in figure) _____ (in words) _____

Student Index No. _____ Regn. No. _____ of _____

Time : Two Hours

Full marks : 40

Questions are of value as indicated in the margin

Part - I

(Objective and Short Answer Type)

(Use only ball point pen)

Time : 20 minutes

Full marks : 10

- Note:** 1. Answer in question paper itself.
2. Striking, rewriting or overwriting are not allowed in the objective type questions.

1. **Fill up the blanks with most appropriate words (*any ten*):** 0.5×10=5.0
- a) The Calvin cycle in C₃ plants produces two molecules _____ by reaction of CO₂ with RuBP.
 - b) In C₄ plants the assimilated CO₂ initially produces _____ carbon compound.
 - c) TZ test is done for conducting test on seed _____.
 - d) In plant physiology the water potential of pure water is generally considered _____.
 - e) The culture of crop plants in nutrient solution is known as _____.
 - f) α-amylase enzyme is essential for seed. _____.
 - g) The pigment phytochrome is related to _____.
 - h) The fruit which is hard at green (immature) stage and soft at maturity is called _____ fruit.
 - i) 2-chloethylphosphonic acid is the chemical name of _____.
 - j) Ethylene alcohol is produced in _____ respiration.
 - k) The organelles through which photorespiration occurs are chloroplast, peroxysome and _____.
 - l) Nitrogen deficiency in plants develops _____.
 - m) The cold treatment needed in certain plants for induction of flowering is called _____.
 - n) Transfer of photosynthates from sieve tube elements to receiver cells of the sink is generally termed as phloem _____.

P.T.O.

2. Answer the following questions as per directions:

0.5×10=5.0

- a) The most abundant protein on earth is
- Rubisco
 - NAPH-dehydrogenase
 - Catalase
 - Amylase
- b) The metal element associated with chlorophyll is
- Magnesium
 - Potassium
 - Sodium
 - Calcium
- c) The ratio of economic yield and biological yield is known as
- Harvest index
 - Biomass index
 - Economic index
 - Biological index
- d) C₃, C₄ and CAM classification in plants is based on the process of
- Respiration
 - Photosynthetic carbon assimilation
 - Transpiration
 - Hormonal regulation
- e) Match List-I with List-II and select the correct answer:
- | List-I | List-II |
|-----------------------------|----------------------------|
| A) PS I | I. Respiration |
| B) Glycolysis | II. Photosynthesis |
| C) Viability | III. Hormone |
| D) ABA | IV. Seed |
| i) A-I, B-II, C-III, D-IV | ii) A-IV, B-III, C-II, A-I |
| iii) A-II, B-I, C-IV, D-III | iv) A-IV, B-I, C-II, B-III |
- f) The hormone required for germination of seed is
- Auxin
 - Gibberellin
 - Cytokinin
 - ABA
- g) Which of the following hormones helps to ripe fruits?
- Auxin
 - Gibberellin
 - Cytokinin
 - Ethylene
- h) Photorespiration is observed in
- C₃ plants
 - C₄ plants
 - CAM
 - all plants.
- i) Which of the following organelles is required for photosynthesis?
- Mitochondrion
 - Golgi body
 - Ribosome
 - Chloroplast
- j) PEP carboxylase is related to
- Respiration
 - Transpiration
 - Photorespiration
 - Photosynthesis

B.Sc. (Ag.) Honours Semester-II Examination, 2019

Course No: CPH-121 (Old)

(Crop Physiology)

Part - II
(Descriptive Type)

Time : 100 Minutes

Full marks : 30

Questions are of value as indicated in the margin

Answer *any four* questions out of which *Question No. 4 is compulsory*.

3. Write short notes on the following (*any five*): 1.5×5=7.5
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|----------------------------------|---------------------------------|
| a) Significance of transpiration | e) Growth curve |
| b) Seed germination | f) Phloem loading and unloading |
| c) Role of nitrogen in plants | g) Phytochrome |
| d) Auxins | h) Water use efficiency |
4. Differentiate between the following (*any three*): 2.5×3=7.5
- a) C₃ and C₄ plants
 - b) Physiological roles of Auxins and ABA
 - c) Photorespiration and photophosphorylation
 - d) Hormones and growth regulators
 - e) Osmosis and diffusion
5. Discuss cyclic and non-cyclic photophosphorylation. Why some plants are called C₃ and some are called C₄ plants? Narrate briefly the factors affecting photosynthesis in plants. 2+2+3.5=7.5
6. What do you mean by water potential? What are the different components of water potential? If some amount of solute is added in a glass of pure water then what will be the resultant water potential of that water and why that happens? Narrate briefly the importance of water in plant's life. 1+2+2+2.5=7.5
7. Define plant hormone. What are the different plant hormones you have studied? What are the commercial uses of gibberellins, ethylenes and Auxins? What are the physiological roles of cytokinins in plants? 1+2+3+1.5=7.5
8. Write down the definition of respiration? Name the organelle where respiration takes place apart from cytosol. Write a short note on fermentation. What are the factors that affect respiration in plants? 1+1+2+3.5=7.5
9. What are the different causes of seed dormancy? Describe in short about the different methods of breaking the dormancy in seeds. How seed viability is tested in seed testing laboratories? 2+2+3.5=7.5
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