

**KERALA AGRICULTURAL UNIVERSITY**  
**B.Sc. (Hons.) Agriculture – 2008 Admission - IV<sup>th</sup> Semester**  
**Final Examination – July-August 2010**

Cat. No. : Crps 2201  
 Title : Crop Physiology (2+1)

Max. marks: 80  
 Time : 3 hours

IA. State true or false

10x0.5=5

- \_\_\_\_\_ 1 CAM plants behave as C<sub>3</sub> plants under well watered condition
- \_\_\_\_\_ 2 ABA is involved in fruit ripening
- \_\_\_\_\_ 3 High temperature affects photosynthetic rate
- \_\_\_\_\_ 4 Atmospheric Nitrogen is fixed by plants
- \_\_\_\_\_ 5 CO<sub>2</sub> (<sup>13</sup>C) discrimination is higher in C<sub>3</sub> plants compared to C<sub>4</sub> plants
- \_\_\_\_\_ 6 Krebs cycle operates in the Chlotoplast
- \_\_\_\_\_ 7 Nitrogen deficiency lead to reduced photo synthesis in plants
- \_\_\_\_\_ 8 In METC reaction water proves electrons to photo-system (PS) I
- \_\_\_\_\_ 9 High temperature reduces CO<sub>2</sub> diffusability
- \_\_\_\_\_ 10 Phytochrome (*Pr* form) absorbs light at 730 nm

IB. Match the followings

10x0.5=5

- | A                                   | B                       |
|-------------------------------------|-------------------------|
| _____ 1. NADP ME                    | A. Maize                |
| _____ 2. NAD ME                     | B. Ragi                 |
| _____ 3. CO <sub>2</sub> enrichment | C. Bundle sheath cell   |
| _____ 4. PEP carboxylase            | D. OAA                  |
| _____ 5. PCK                        | E. <i>Sataria</i> sp.   |
| _____ 6. CAM                        | F. Scoto active stomata |
| _____ 7. Light reaction             | G. Thylakoid membrane   |
| _____ 8. C <sub>4</sub> pathway     | H. Hatch and Slack      |
| _____ 9. Oxygen evolution           | I. Hills reaction       |
| _____ 10. C <sub>3</sub> cycle      | J. Melvin Calvin        |

II. Answer the followings (ANY TEN)

10x3=30

1. Define seed viability and mention the methods to test seed viability
2. Define growth and explain determinate and indeterminate growth with examples
3. Define transpiration and mention its significance
4. Define seed germination and explain the factors affecting seed germination
5. Define seed dormancy and explain the different types of seed dormancy
6. Define WUE and explain the WUE in C<sub>3</sub>, C<sub>4</sub> and CAM type plants

7. Define anti-transpirants and mention classification based on mode of action
8. Define respiration and give details on different types of respiration in plants
9. Define photorespiration and mention its significance
10. Define Photoperiodism and classify the plants based on photoperiodic response
11. Define plant nutrition and classify the essential nutrients based on biochemical and physiological role
12. Define vernalization and mention its significance

**III. Write short essay on ANY SIX of the followings**

**6x5=30**

1. Explain the factors affecting photosynthesis and respiration
2. Explain the factors affecting transpiration and crop production
3. Explain the steps involved in sucrose synthesis and phloem loading in plants
4. Explain the Glycolysis with help of flow chart
5. Define or write note on CGR, NAR and SLA
6. Explain diagrammatically the photo-phosphorylation (ATP synthesis) in plants
7. Write the methods used to measure photosynthesis and respiration in plants
8. Write about properties and importance of water in relation to plant growth

**IV. Write essay on ANY ONE 1x10=10**

1. Explain in detail the carbon assimilation pathway in C<sub>3</sub> plants and regeneration of RuBP
2. Write in detail about the biosynthesis, mode of action, physiological role and commercial use of Gibberlin and Ethylene

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