

Q.P. Code – 50829

Third Year B.Sc. Degree Examination

SEPTEMBER/OCTOBER 2013

(Directorate of Distance Education)

Botany

(DSC 291) Paper IV – PLANT PHYSIOLOGY, PLANT BREEDING AND
TISSUE CULTURE

Time : 3 Hours]

[Max. Marks : 75/85

Instructions to Candidates :

- 1) Students who have attended **25** marks **IA** scheme will have to answer for total of **75** marks.
- 2) Students who have attended **15** marks **IA** scheme will have to answer for total of **85** marks.
- 3) **One** mark questions should be answered in first two pages of the answer book.
- 4) Draw **neat** labelled diagrams **wherever** necessary.
- 5) Question No. **V** is **compulsory** for **85** marks scheme **only**.

I. Simple Answer Questions :

Answer in a word or a phrase or a sentence :

10 × 1 = 10

1. Define Guttation.
2. What is Zymogen?
3. What is explant?
4. Write the net gain of ATP released during Glycolysis.
5. Define Vernalisation.
6. Define Active absorption.
7. What is Bagging?

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8. Name the basic unit of photosynthesis.
9. Who proposed the law of Limiting factors?
10. What is Scion?

II. Short Answer Questions :

Write any **FIVE** of the following :

5 × 3 = 15

11. What is Photoperiodism? Explain different types of plants based on photoperiodism.
12. Describe Ion-exchange Theory of Mineral Sap absorption.
13. Mention any three differences between cyclic and non-cyclic photophosphorylation.
14. Write a note on Sigmoid curve.
15. Give an account of Nastic movements in Plants.
16. Explain Intra specific and Intra generic crosses.
17. Mention the steps involved in plant tissue culture.

III. Medium Answer Questions :

Answer any **FIVE** of the following :

5 × 6 = 30

18. Differentiate between photosystem I and photosystem II.
19. Explain oxidative phosphorylation.
20. Explain the role plant breeding in producing disease resistance varieties.
21. Describe :
 - (a) Cuttings
 - (b) Layering
 - (c) Bud grafting
22. Explain the practical applications of Gibberellins and Cytokinins.
23. Explain the factors affecting Transpiration.

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IV. Long Answer Questions :

Answer any **TWO** of the following :

2 × 10 = 20

24. Explain C₃ pathway.
25. What is hybridization? Explain its significance.
26. Give an account of the N₂ fixation by plants.
27. Explain :
 - (a) Fermentation
 - (b) Organogenesis

V. **Compulsory** Question for **85** marks scheme only :

Answer any **ONE** of the following :

1 × 10 = 10

28. Write the differences between Respiration and Photorespiration.
 29. Describe :
 - (a) Cytochrome pump theory
 - (b) Mechanism of opening and closing of stomata
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