

M.Sc. (Ag.) Semester -II Examination 2015

Agronomy

Course : CPH-502

(Mineral Nutrition of Plants)

Time : Three Hours

Full Marks : 50

Questions are of value as indicated in the margin.

Answer **any five** questions.

1. Write short notes on **any four** of the following with suitable illustrations. 2.5×4=10
 - (a) Names and forms of essential elements taken by plants
 - (b) Compounds present in modified Hoagland solution and its pH and why it is known as balanced nutrient solution
 - (c) Criteria of essentiality
 - (d) Classification of the mineral elements on the basis of their mobility. Deficiency symptoms of N and S
 - (e) Different zones of absorption of root system by using L.S. of root
 - (f) Donnan equilibrium
 2. Write on nature in respect to its availability, presence in plant system (as plant's constituent), function and deficiency symptoms of Fe, Mo, Zn and B. 2.5×4=10
 3. Write on the importance of plant tissue analysis for mineral elements. Describe about the various zones depending on plant tissue analysis and application of nutrient/s in the soil. What is beneficial element? 3.5+4.5+2=10
 4. Write short notes on **any four** of the following : 2.5×4=10
 - (a) Mycorrhizal fungi and its role in mineral uptake
 - (b) Chelators and their role
 - (c) Hydroponics and its commercial importance
 - (d) Passive absorption of minerals
 - (e) Sulfate transporters present in plant system
 - (f) Deficiency symptoms of calcium
 5. What are the channels and carriers—describe with illustrations? Diagrammatically represent the channels, carriers & pumps present in the plant plasma membrane & tonoplast membrane. 4+6=10
 6. Write on the following : 4+3+3=10
 - (a) Role of metal transporters for micronutrients
 - (b) Mengel's classification of mineral elements
 - (c) Write down the basis of ion uptake with examples
 7. Write a note on molecular mechanism of ion uptake on the basis of ion transporters for phosphate and potassium. 10
 8. Write in brief on molecular mechanism of ion uptake on the basis of ion transporters for iron (Fe) in both monocots & dicots. 10
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