

M.Sc. (Ag.) Examination, 2018
Semester-II
Genetics and Plant Breeding
Course- CPH-502
(Mineral Nutrition of Plants)

Time: Three Hours

Full Mark: 50

Questions are of value as indicated in the margin

Answer **any five** questions

1. Differentiate between the following (**any four pairs**): 2.5×4=10
 - (i) Macro nutrient and micro nutrient elements
 - (ii) Carriers and channels
 - (iii) Deficiency symptoms of N and K
 - (iv) Co-transport and uniport
 - (v) Symplast and apoplast
 - (vi) Active transport and passive transport
 2. Write short notes on **any four** of the following: 2.5×4=10
 - (i) Role of primary nutrients in plants
 - (ii) Phytosiderophores
 - (iii) Ascent of sap
 - (iv) Indicator plants
 - (v) Pumps
 - (vi) Mobility of mineral elements in plant system
 - (vii) Role of silicon in plants
 3. Describe the factors influencing the mineral absorption in plants? What is mycorrhiza? Describe the role of mycorrhiza in nutrition of plants. 3+2+5=10
 4. What are the different criteria of essentiality of mineral elements? Classify plant nutrients according to biochemical behaviour and physiological functions? Write down the roles of *phosphorous*, *potassium* and *calcium* in plants? 2+2+6=10
 5. How different nutrient elements are taken up by the root system of plants? How mineral elements are transported inside the plant system? Write in brief about the Crafts-Brayer Hypothesis. 3+3+4=10
 6. (a) What do you mean by hydroponics? How is it different from aeroponics? Write in brief about advantages and disadvantages of hydroponics. 5
(b) Write in brief about the toxicity effect of any two micronutrients on plant. 5
 7. Describe different types of *phosphate* and nitrate transporters in plants. Write down the mechanisms of active absorption of salts by the plants. 5+5=10
 8. Describe the molecular basis of mineral ion transport in plants. Narrate briefly the mechanisms of potassium and ammonium ion transport. 6+4=10
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