M.Sc. (Ag.) Examination, 2017
Semester-II
Genetics and Plant Breeding
Course: CPH-502
(Mineral Nutrition of Plants)

Time : 3 Hours **Full Marks : 50**

Questions are of value as indicated in the margin.

Answer ***any five*** questions

1. Differentiate between the following (***any four***): 2.5×4=10
   i) Essential elements and beneficial elements
   ii) Group I elements and Group II elements
   iii) Active absorption and passive absorption
   iv) Co-transport and uniport
   v) Deficiency symptoms of Mg and Mn
   vi) Symplast and Apoplast
2. Write short notes on ***any four*** of the following: 2.5×4=10
   i) Active uptake of solutes
   ii) Craft Brayer Hypothesis
   iii) Role of mycorrhiza in plant nutrition
   iv) Passive uptake of solutes
   v) Munchs Hypothesis
   vi) Nernst equation
3. Discuss the deficiency symptoms of N, P and Ca. Classify and place the essential elements on the basis of their phloem mobility. State how such classification of the elements help in the identification of nutritional disorder. 5+3+2=10
4. Write the biochemical functions of manganese, copper and molybdenum and Boron. 2.5×4=10
5. What is hydroponics? In which aspects its synthetic growing medium (nutrient solution) does differ from the natural growing medium of crops (soil)? Discuss its importance in (i) Nutritional research (ii) high value crop cultivation and (iii) crop cultivation in problematic situations. 1+3+6=10
6. Discuss about different kinds of transport proteins present in the membranes of plants. Give an overview of various transport processes through suitable flowchart/diagram. 4+6=10
7. What are meant by high affinity uptake system and low affinity uptake system? Discuss about operation of such systems in phosphorus and potassium uptake. Mention the physiological roles and biochemical functions of potassium. 2+3+5=10
8. Discuss in brief about the long distance transport of mineral ions. 10
