



# UNIVERSITY OF THE PUNJAB

**B.S. 4 Years Program :Seventh Semester – 2020**

Paper: Plant Nutrition and Soil Fertility

Course Code: BOT-405

Part – I (Compulsory)

Time: 15Min. Marks: 10

Roll No. in Fig. ....

Roll No. in Words. ....

**Attempt this Paper on this Question Sheet only.**

**Division of marks is given in front of each question.**

**This Paper will be collected back after expiry of time limit mentioned above.**

Signature of Supdt.: .....

**Q.1. Encircle the right answer cutting and overwriting is not allowed. (10x1=10)**

- (i) Plants prefer to take up Nitrogen in the form of  
(a)  $N_2$  (b)  $NH_4^+$  (c)  $NO_3$  (d) All a, b and c
- (ii) The ability of the soil to hold essential elements in it so plants can access them during their growth is called  
(a) Nutrient level (b) pH (c) Fertilization level (d) Cation exchange capacity (CEC)
- (iii) 95% of the plant tissues are made up of  
(a) N, P & K (b) C, H & O (c) Ca, Mg & C (d) None of a, b or c
- (iv) Nitrogen is a constituent of  
(a) Amino acids (b) Co-enzymes (c) Nucleotides (d) All a, b and c
- (v) Bacteria involved in symbiotic nitrogen fixation in root nodules of legumes is  
(a) Rhizobium (b) Clostridium (c) Azobacter (d) Actinomycetes
- (vi) Which one of the following is used to raise pH of the acid soils?  
(a) Sulphur (b) Lime (c) Phosphorus (d) None of a, b or c
- (vii) Nitrogen fixation in the nitrogen cycle is brought about by  
(a) Lightening (b) Symbiosis (c) Free fixing organisms (d) All a, b and c
- (viii) Dark green or Blue green foliage is typical deficiency symptom of  
(a) Phosphorus (b) Manganese (c) Potassium (d) a and c
- (ix) Mycorrhizae is a Greek word for  
(a) Bacteria and Fungi (b) Fugus and Root (c) Nodule formation (d) Hearting Net
- (x) Hard, dry and brittle plants tissues with distorted leaves are deficiency symptoms of  
(a) Molybdenum (b) Boron (c) Copper (d) Iron



**ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED**

**Q.2. Give short answers of the following: (5x4=20)**

- (i) Describe the role of Nutrient elements as Activators, Cofactors or Regulators of enzymes
- (ii) What do you know about Cation Exchange Capacity? Briefly discuss its importance.
- (iii) Write down deficiency symptoms of Nitrogen, Boron and Phosphorus in plants
- (iv) Write down the chemical composition of Hoagland culture solution.
- (v) Benefits of use of lime in agriculture.

**Answers the following questions. (3x10=30)**

- Q 3. Enlist plant macronutrients. Critically discuss role of potassium, phosphorus and calcium in various plant physiological processes** 10
- Q 4. What is soil fertility evaluation? Briefly discuss various approaches employed to determine soil fertility status.** 10
- Q 5. (a) What are basic types of fertilizers? How fertilizers improve water use efficiency of crops?** 6  
**(b) Explain Ecotype concept.** 4