

Bago University
Department of Botany
First Semester Examination, March, 2019

Bot.4106

Mineral Nutrition of Plant

Time allowed: (3) Hours

Botany Specialization

Answer All Questions

I. Determine whether each statement is TRUE or FALSE.

(10 marks)

1. Mineral nutrients are essential for plant growth and development.
2. Soil is made up of four layers surface litter, topsoil, subsoil and bedsoil.
3. In the root cells, ions move by diffusion between cells through plasmodesmata.
4. The sterol content is very low in plasmamembranes.
5. All of the ammonium taken up has to be assimilated in the roots.
6. Amines are components of the lipids fraction of biomembrane.
7. Riboflavin also accumulates in most,monotyledonous plant species under iron deficiency.
8. Zinc deficiency in dicotyledons are stunted growth and little shoot.
9. Phytate is the typical storage form of phosphorus in grains and seeds.
10. A deficiency in chlorine causes wilting of the base of leaves with chlorosis.

II. Write correct word to complete the following sentences.

(10 marks)

1. Mineral elements that are ----- only in very low concentration in plants.
2. The ions are then moved in the ----- tissue to other regions of the plant.
3. In copper-deficient plants there are ----- of anther formation.
4. Phytates are also found in roots and ----- of several crops.
5. An increase in potassium content in the ----- increases rate of Photosynthesis
6. The particular role of boron can also be shown in ----- tube growth.
7. Symptoms of boron deficiency in the shoots are noticeable at the ----- buds.
8. The maximum tolerable levels of ----- in the diet depend on plants species.
9. Grass in general and wetland rice in particular are typical ----- accumulation plants.
10. Bacterial vascular diseases spread within plants through the -----.

III. Answer all questions.

(10 marks)

1. Enumerate the three criteria essential elements by Arnon and Stout (1939).
2. Which comprise the apparent free space?
3. Draw only yield response curve for fertilizer supply.
4. Give two enzyme in reduction of nitrate.
5. Outline the nitrate assimilation and osmoregulation.

IV. Answer all questions.

(20 marks)

1. Describe passage into the cytoplasm and the vacuole.
2. Summarize the competition within ions.
3. Briefly explain nitrate reduction with diagram.
4. Draw only the penetration and growth rate of hypha on the leaf surface.

V. Answer any three questions.

(30 marks)

1. Explain the ion uptake in general with illustration.
2. Describe amino acid and protein biosynthesis.
3. Discuss the mineral nutrition and yield response with graph.
4. Clarify the term enzyme activation,phosphorylation and photosynthesis.
5. Write complete account on the role of nitrogen and potassium.