

M.Sc.(Ag.) Semester – III Examination, 2014

Agronomy

Course : AGR – 502

(Principles and Practices of Soil Fertility and Nutrient Management)

Time: 3 Hours

Full Marks: 50

Questions are of value as indicated in the margin.

Answer **any five** questions.

1. Briefly explain **any five** of the following: 2×5=10
 - (a) Immobile nutrients in soil
 - (b) Phosphorus cycle
 - (c) K-equilibrium in soil
 - (d) Liquid biofertilizer
 - (e) Supercompost
 - (f) Scope of organic farming in India
2. Differentiate between **any five** of the following: 2×5=10
 - (a) Soil fertility and productivity
 - (b) Green manuring *in situ* and green leaf manuring
 - (c) Blue Green Algae and Azolla
 - (d) Nitrogen mineralization and immobilization
 - (e) Nitrate fertilizers and Ammoniacal fertilizers
 - (f) Macronutrients and micronutrients
 - (g) Band placement and point placement
3. Justify the following statements (**any five**): 2×5=10
 - (a) Application of organic matter improves soil physico-chemical properties.
 - (b) Phosphatic fertilizers are applied in single dose as basal.
 - (c) Gypsum is used as a soil amendment for sodic soils.
 - (d) Single super phosphate is a neutral fertilizer.
 - (e) Presence of NH_4^+ in soil alter the fixation and release of K^+ ion.
 - (f) Muriate of potash is not recommended for sugar crops and tobacco.
 - (g) In acid soils, judicious use of fertilizers and liming in combination is the best practice.
4.
 - (a) Explain the law of minimum.
 - (b) Explain Bray's nutrient mobility concept and Baule percentage yield concept.
 - (c) Write two important roles and two important characteristic deficiency symptoms of the following plant nutrients – P, Mg, Fe, Mn and Zn 1+(2+2)+5=10

P.T.O.

5. (a) What are the advantages and disadvantages of bulky organic manures?
(b) What are the different types of nitrogenous fertilizers? Explain with examples.
(c) Discuss the process of ammonification and nitrification.
(d) Explain different methods of fertilizer application to crop plants. $2+3+3+2=10$
6. (a) What is biofertilizer? Explain different types of biofertilizers.
(b) Describe the method of vermicompost preparation
(c) Explain the criteria of essentiality of elements for plants? $(1+2)+4+3=10$
7. (a) Classify different phosphatic fertilizers and explain their properties.
(b) Explain physical optimum and economic optimum dose of nitrogenous fertilizers.
(c) Explain about SSNM approach of nutrient management. $3+3+4=10$
8. (a) What are the functions of organic matter in soil?
(b) What is integrated nutrient management (INM)? Describe the components of INM.
(c) What do you understand by nutrient use efficiency? Explain how to increase nitrogen use efficiency in lowland rice? $2+(2+2)+(2+2)=10$
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