JHARKHAND Rai University
RANCHI

PRACTICE SET
End Semester Examination, Dec- 2025

Program: B.Sc.(Hons.) Agriculture
Subject: Manures, Fertilizers and Soil FertilityManagement
Subject Code:13A.312 **Semester: 5th**

Course Outcome:
At the end of the course, the students will be able to-

CO1 Know about fertilizers and manures as sources of plant nutrients and apprise about the integrated approach of plant nutrition and sustainability of soil fertility.
CO2 Comprehend the requirements of manures and fertilizers for various crops and their proper time of application.
CO3 Understand how the soil fertility and productivity can be maintained for better crop production
CO4 Diagnose plant-nutrient disorders and nutrient behaviour.

UNIT-I
Section: I (5 Marks) LOT

Sl. No.	Model Questions	Bloom Taxonomy	CO
1.	Define green manuring.Differentiate between in-situ ad ex-situ green manuring with suitable examples.	Understand	(CO1)
2.	Explain the importance of organic manures in sustainable agriculture.	Understand	(CO1)
3.	Describe the method of preparation of compost and the nutrient content of farmyard manure (FYM)	Remember	(CO1)
4.	Differentiate between bulky and concentrated organic manures with examples.	Remember	(CO1)
5.	Tabulate the difference between manures and fertilizers.	Remember	(CO1)

Section: II (15 Marks) (HOT)

Sl. No.	Model Questions	Bloom Taxonomy	CO
6.	Discuss the integrated nutrient management (INM) concept. Explain how it help in maintaining soil health and crop productivity.	Evaluate	(CO1)
7.	Explain different techniques of green manuring. What are advantages and limitations of green manuring.	Analyze	(CO1)
8.	Differentiate between bulky organic manure and concentrated organic manure. Explain the role of organic manure in improving the properties of soil.	Analyze	(CO1)
9.	Compare and critically analyze the nutrient release patterns, advantages, and limitations of organic manures versus chemical fertilizers. How can they be efficiently combined under INM?	Analyze	(CO1)
10.	Reframe in detail the steps involved in the preparation of compost and vermicompost. How do their chemical and biological properties differ, and how do they influence soil fertility?	Evaluate	(CO1)

UNIT-II

Section: I (5 Marks) LOT

Sl. No.	Model Questions	Bloom Taxonomy	CO
11.	What is the Fertilizer Control Order (FCO)? Mention its key objectives and functions.	Understand	(CO2)
12.	Define chemical fertilizers and classify them based on nutrient content.	Undersatnd	(CO2)
13.	Mention the available form and sources of nitrogen to crop. Classify nitrogenous fertilizers with examples and mention their nutrient content in them.	Rememeber	(CO2)

14.	Differentiate between straight fertilizers and complex fertilizers with examples.	Rememeber	(CO2)
15.	Discuss different available forms of micro nutrients in soil.	Undersatnd	(CO2)

Section: II (15 Marks) (HOT)

Sl. No.	Model Questions	Bloom Taxonomy	CO
16.	Design a flow diagram for a modern, eco-friendly superphosphate production plant highlighting each step from raw phosphate rock to the final product.	Create	(CO2)
17.	Criticise properties of different nitrogenous fertilizers. Explain the industrial manufacturing of urea.	Evaluate	(CO2)
18.	Classify phosphatic fertilizers with examples based on their solubility. What are the general properties of different groups of phosphatic fertilizer.	Analyse	(CO2)
19.	Discuss the principle and industrial significance of the Haber–Bosch process in nitrogen fertilizer production. How does it contribute to global food security?	Evaluate	(CO2)
20.	Explain the importance of soil amendments. Describe how liming materials and gypsum improve soil properties and nutrient availability.	Analyze	CO2

UNIT-III

Section: I (5 Marks) LOT

Sl. No.	Model Questions	Bloom Taxonomy	CO
21.	Define soil fertility and soil productivity and state how are they interrelated	Remember	(CO3)
22.	Explain the criteria of essentiality of plant nutrients as proposed by Arnon and Stout (1939)	Understand	(CO3)

23.	List the deficiency and toxicity symptoms of nitrogen and phosphorus in crop plants.	Remember	(CO3)
24.	Differentiate between luxury consumption and hidden hunger in plants. Explain how both conditions affect nutrient management in crop production.	Remember	(CO3)
25.	Describe briefly the mechanisms of nutrient transport to plants mass flow, diffusion, and root interception	Understand	(CO3)

Section: II (10 Marks) (HOT)

Sl. No.	Model Questions	Bloom Taxonomy	CO
26.	Analyze the role of different essential nutrients in plant growth and how their interactions influence nutrient uptake efficiency	Analyse	(CO3)
27.	Explain the mechanisms of nutrient transport to plants from soil. State the factors affecting the process of nutrient transport in soil	Analyse	(CO3)
28.	Describe the mechanisms of phosphorus fixation in soils and evaluate the factors influencing phosphorus availability to plants. Suggest suitable management practices to minimize fixation losses under different soil conditions.	Analyse	(CO3)
29.	Discuss how understanding nutrient transport mechanisms and deficiency symptoms can help in precision nutrient management and diagnosis of soil fertility constraints.	Analyse	(CO3)
30.	Design the different symptoms of Primary nutrient deficiency on plants with Deficiency flow chart.	Create	(CO3)

UNIT-IV

Section: I (5 Marks) LOT

Sl. No.	Model Questions	Bloom Taxonomy	CO

31.	Illustrate the deficiency symptoms of major plant nutrients on leaves using a flow chart and briefly explain the visual symptoms for each nutrient.	Understand	(CO4)
32.	Define soil testing and explain its importance in nutrient management.	Remember	(CO4
33.	Discuss the factors influencing nutrient use efficiency (NUE) in crop plants.	Understand	(CO4)
34.	Compare rapid tissue and DRIS method of soil fertility evaluation.	Understand	(CO4)
35.	List the critical levels of major nutrients (N, P, K)in soils and explain their significance.	Remember	(CO4)

Section: II (15 Marks) (HOT)

Sl. No.	Model Questions	Bloom Taxonomy	CO
36.	Compare the efficiency of different methods of fertilizer application (broadcasting, band placement, foliar application) under rainfed and irrigated conditions, considering nutrient losses..	Analyze	(CO4)
37.	Explain the mechanism of nutrient movement to plant roots?	Analyze	(CO4)
38.	Evaluate the forms of micronutrients in soil and suggest appropriate management strategies for improving their uptake by crops, considering soil pH, organic matter, and interactions with other nutrients.	Evaluate	(CO4)
39.	A crop requires 90 kg of nitrogen (N), 50 kg of phosphorus (P_2O_5), and 70 kg of potassium (K_2O) per hectare. Calculate the amount of urea (46% N), single super phosphate (SSP, 16% P_2O_5), and muriate of potash (MOP, 60% K_2O) needed to meet the crop's nutrient requirements.	Create	(CO4)
40.	A crop requires 100 kg of nitrogen (N), 50 kg of phosphorus (P_2O_5), and 80 kg of potassium (K_2O) per hectare. Calculate the amount of urea (46% N), DAP (18% N, 46% P_2O_5), and MOP	Evaluate	(CO4)

	(60% K_2O) needed to meet the crop's nutrient requirement if these three fertilizers are used exclusively.		

Summary Sheet:

CO Wise

CO	Q. No	Marks
CO1	1-10	100
CO2	11-20	100
CO3	21-30	100
CO4	31-40	100
Total		400

Unit Wise

Unit	Q. No	Marks
Unit 1	1-10	100
Unit 2	11-20	100
Unit 3	21-30	100
Unit 4	31-40	100
Total		400

Blooms Taxonomy Level (BTL) Wise

BTL	Q. No	Marks
LOT	1-5, 11-15,21-25,31-35	100
HOT	5-10,16-20,26-30,36-40	300
Total		400

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Disclaimer: - This is a practice set. The Question in End semester examination will differ from the practice set. This practice set is meant for practice only.