JHARKHAND Rai University
RANCHI

PRACTICE SET
End Semester (Ist Sem) Examination, December, 2025

Program: M. Sc. (Ag.) Agronomy
Semester: I
Course: Soil Fertility and Nutrient Management.
Course Code: 13A.AGRON. 502

Course Outcome
After completion of the course the students will be able to;
CO1: Know about factors affecting soil fertility and sustainability of soil fertility.
CO2: Understand the concepts of productivity and fertility and functions of essential plant nutrients.
CO3: Comprehend concept, importance and application of INM.
CO4: Prepare and use different manures and organic concentrates.
CO5: Apply commercial fertilizers in view of increasing fertilizer use efficiency.

UNIT-I

Section 1: (5 Marks only Lower order thinking-LOT)

Sl. No.	Model Questions	Bloom Taxonomy	CO
1.	Summarise the concepts of soil fertility and soil productivity, explaining their meanings and key differences with suitable examples.	Understand	CO1
2.	Describe the various factors that contribute to effective soil management and explain how they help in maintaining soil health and agricultural sustainability.	Understand	CO1
3.	State the reasons why a soil that is fertile may not always result in high productivity, highlighting the factors that influence actual crop yield.	Remember	CO1
4.	Define the concept of green manuring and differentiate between in-situ and ex-situ green manuring practices, providing appropriate examples for each method.	Remember	CO1
5.	Describe the various methods used to enhance sustainable soil fertility.	Remember	CO1

Section II: (15 Marks only Higher order thinking-HOT)

Sl. No.	Model Questions	Bloom Taxonomy	CO
6	Explain the concept of Integrated Nutrient Management (INM) and discuss its major components. Describe the need for adopting INM and highlight the key advantages of this approach in sustainable agriculture.	Analyze	CO1
7	Distinguish between soil health and soil fertility, providing suitable examples to illustrate the differences in their meanings, indicators, and importance in crop production.	Analyze	CO1
8	Evaluate in detail the various roles played by microorganisms in enhancing and maintaining soil fertility,	Evaluate	CO1

9	Recommend the different methods used to improve soil properties, including physical, chemical, and biological approaches, and explain how these methods help in enhancing soil productivity and sustainability.	Evaluate	CO1

UNIT-II

Short Questions (5 Marks only Lower order thinking-LOT)

Sl. No.	Model Questions	Bloom Taxonomy	CO
10	Compare between low-analysis and high-analysis fertilizers, explaining their characteristics, nutrient concentrations, and suitability for various crop and soil conditions.	Understand	CO2
11	Discuss whether nano-fertilizers can be applied to the soil and explain the mechanisms through which nano-fertilizers help maintain or enhance soil fertility.	Understand	CO2
12	Describe in detail the composition, characteristics, and functions of important secondary nutrients and micronutrients required for plant growth.	Remember	CO2
13	State the major factors that influence nutrient availability to plants in the soil environment.	Remember	CO2

Section II: (15 Marks only Higher order thinking-HOT)

Sl. No.	Model Questions	Bloom Taxonomy	CO
14.	Justify the major advantages and disadvantages associated with the use of nano-fertilizers in crop production, highlighting their impact on efficiency, soil health, and sustainability.	Evaluate	CO2
15	Explain the various forms in which nutrients exist in soils and classify them based on their availability and behavior in soil-plant systems.	Analyse	CO2
16	Evaluate deficiency symptoms associated with essential plant nutrients and explain how these symptoms manifest in different parts of the plant.	Evaluate	CO2
17	Evaluate the sustainability of nutrient cycles in organic agriculture and discuss how organic farming practices support long-term soil fertility and ecological balance.	Evaluate	CO2

UNIT-III

Short Questions (5 Marks only Lower order thinking-LOT)

Sl. No.	Model Questions	Bloom Taxonomy	CO
18	Explain the role of botanical formulations in enhancing soil fertility and plant nutrition.	Understand	CO3
19	Describe the concept of organic manures and explain their major properties, highlighting their significance in improving soil structure, nutrient availability, and microbial activity.	Remember	CO3
20	Compare between the recycling of organic waste and crop residue management.	Understand	CO3
21	Discuss the reasons why vermicompost generally contains higher levels of NPK compared to farmyard manure (FYM).	Understand	CO3

Section II: (15 Marks only Higher order thinking-HOT)

Sl. No.	Model Questions	Bloom Taxonomy	CO
22	Explain the process of composting and describe in detail the various methods used for compost preparation.	Analyse	CO3

23	Analyse the step-by-step procedure involved in the preparation of bulky organic manures and describe their characteristics and agricultural significance.	Analyse	CO3
24	Justify the reasons behind the gradual shift of substrate pH toward neutrality during the vermicomposting process, highlighting the biological and chemical changes involved.	Evaluate	CO3
25	Evaluate whether *Trichoderma* species can be used as biofertilizers and explain how they contribute to enhancing soil fertility and plant growth.	Evaluate	CO3

UNIT-IV

Short Questions (5 Marks only Lower order thinking-LOT)

Sl. No.	Model Questions	Bloom Taxonomy	CO
26	Describe the concept of fertilizer use efficiency and explain how it reflects the effectiveness with which plants utilize applied nutrients.	Remember	CO4
27	Explain the various agronomic, chemical, and technological methods adopted to enhance fertilizer use efficiency.	Understand	CO4
28	Compare and contrast the fertilizer mixtures and fertilizer grades, explaining their composition, purpose, and significance in nutrient management.	Understand	CO4
29	Describe the traditional and improved methods used for preparing farmyard manure (FYM) in India.	Remember	CO4

Section II: (15 Marks only Higher order thinking-HOT)

Sl. No.	Model Questions	Bloom Taxonomy	CO
30	Discuss the types of chemical fertilizers that negatively affect soil microorganisms and explain how their continuous use impacts soil biological activity and overall soil health.	Evaluate	CO4
31	Conclude the concept and methodology of Integrated Nutrient Management (INM).	Analyse	CO4
32	Evaluate the most reliable method for estimating the organic carbon content in soil and explain the principle and procedure involved in this method.	Evaluate	CO4

UNIT-V

Short Questions (5 Marks only Lower order thinking-LOT)

Sl. No.	Model Questions	Bloom Taxonomy	CO
33	Explain the meaning of chemical fertilizers and discuss their major roles and contributions in modern agricultural production.	Understand	CO5
34	Compare between the residual effects of fertilizers and fertilizer use efficiency.	Understand	CO5
35	Compare between soil fertilization and foliar fertilization, explaining the methods, advantages, limitations, and suitable conditions for each practice.	Understand	CO5
36	Describe the differences between organic manures and inorganic manures, providing appropriate examples and explaining their roles in soil nutrient management.	Remember	CO5
37	List and briefly explain the various uses and benefits of vermicompost in crop production and soil improvement.	Remember	CO5

Section II: (15 Marks only Higher order thinking-HOT)

Sl. No.	Model Questions	Bloom Taxonomy	CO

38	Analyse how foliar fertilization contributes to meeting the nutrient requirements of crops, and discuss its effectiveness compared to soil fertilization, with suitable examples.	Analyse	CO5
39	Evaluate why time and method of manures and fertilizer application is important in obtaining good productivity.	Evaluate	CO5
40	Describe how crops respond to the application of various essential nutrients and provide suitable examples to illustrate the effects of nutrient deficiencies and adequate nutrient supply on plant growth.	Evaluate	CO5

SUMMARY SHEET:

CO WISE

CO	Question No.	Marks
CO1	1-9	90
CO2	10-17	80
CO3	18-25	80
CO4	26-32	75
CO5	33-40	75
TOTAL		**400**

UNIT Wise

CO	Question No.	Marks
UNIT1	1-9	90
UNIT2	10-17	80
UNIT3	18-25	80
UNIT4	26-32	75
UNIT5	33-40	75
TOTAL		**400**

BLOOM'S Taxonomy Level (BTL) Wise

BTL	Question. No.	Marks
LOT	1-5, 10-13, 18-21, 26-29, 33-37	100
HOT	6-9,14-17, 22-25, 30-32, 38-40	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.