

PRACTICE SET

End Semester (V Sem.) Examination, Dec, 2025

Program: B. Sc. (Hons.) Agriculture

Semester: V

Course: Geoinformatics and Nano-technology and Precision farming

Course Code: 13A.316

Course Outcomes:

At the end of the Course, the Student will be able to-

CO1 Acquire skills to develop more effective use of inputs results in greater crop yield and/or quality, without polluting the environment.

CO2 Develop critical thinking for encourage the farmers to study of spatial and temporal variability of the input parameters using primary data at field level.

CO3 Demonstrate an integrative approach for precision agriculture which can address both economic and environmental issues that surround production agriculture today

CO4 Apply knowledge for more effective use of inputs results in greater crop yield and/or quality, without polluting the environment.

Section: I (5 Marks questions, only Lower Order Thinking -LOT)

UNIT-I

Sl. No.	Model Questions	Blooms Taxonomy	CO
1.	Define Geo-informatics. Explain its role in data collection and decision-making in agriculture.	Remember	CO1
2.	Describe the key issues and concerns for implementing precision agriculture in Indian agriculture.	Understand	CO1
3.	Define Precision Agriculture and explain its main objectives in modern farming.	Remember	CO1
4.	Compare between GPS and GIS in terms of their functions and applications in agriculture.	Understand	CO1

5.	Define geo-informatics.What are the concepts associated with geo-informatics.	Remember	CO1
6.	List the primary goals of precision agriculture. List some benefits of adopting precision agriculture practices in context to Jharkhand.	Remember	CO1

Section- II (15 Marks questions, (HOT))

Sl. No.	Model Questions	Blooms Taxonomy	CO
7	Critically analyze the concept and scope of precision agriculture in India. Discuss how it can address the challenges of resource-use efficiency and sustainability.	Analyze	CO1
8	Compare and contrast traditional and precision farming systems with respect to input efficiency, productivity, and environmental impact.	Evaluate	CO1
9	Design a model of a precision agriculture system for a selected crop (e.g., rice or maize), integrating Geo-informatics, IoT sensors, and variable rate technology.	Create	CO1
10	Evaluate in detail the socio-economic and technical constraints in the adoption of precision agriculture in India and suggest practical strategies to overcome them	Evaluate	CO1
11	Analyze the concept of Precision Agriculture and critically evaluate how Geo-informatics tools such as GPS, GIS, and Remote Sensing contribute to sustainable agricultural management. Explain the major challenges and future prospects of adopting these technologies in Indian agriculture.”	Analyze	CO1

UNIT-II

Section: I (5 Marks questions, only Lower Order Thinking -LOT)

Sl. No.	Model Questions	Blooms Taxonomy	CO
12	Define crop discrimination and explain how remote sensing helps in identifying different crops.	Remember	CO2
13	What are crop simulation models, and how are they used in agriculture? Name one application of crop simulation models.	Understand	CO2
14	Explain the concept of yield monitoring and list the main components of a yield monitoring system.	Understand	CO2
15	Describe how GIS can be used for fertilizer recommendation based on soil nutrient status and crop requirements.	Remember	CO2
16	What does STCR stand for in precision agriculture? How does the STCR approach optimize agricultural inputs?	Understand	CO2

Section: II (15 Marks questions, HOT)

Sl. No.	Model Questions	Blooms Taxonomy	CO
17	Critically discuss the role of geospatial technologies (remote sensing, GPS, GIS) in crop discrimination and yield estimation. Explain with suitable examples from Indian agriculture.	Evaluate	CO2
18	Analyze the process of soil mapping using GIS and Remote Sensing data. Discuss how digital soil maps can improve nutrient management and fertilizer efficiency.	Analyze	CO2
19	Design a GIS-based fertilizer recommendation model integrating soil test data, crop nutrient requirements, and yield targets for a given region.	Create	CO2
20	Discuss the advantages and limitations of using geospatial technologies in monitoring crop growth, soil variability, and precision nutrient management under Indian conditions.	Analyze	CO2
21	Explain crop discrimination and its significance in precision agriculture. Explore the role of soil mapping in sustainable farming practices and precision agriculture. Explain with suitable examples.	Analyze	CO2

Section: I (5 Marks questions LOT)**UNIT-III**

Sl. No.	Model Questions	Blooms Taxonomy	CO
21	Explain remote sensing and mention its major applications in agriculture.	Understand	CO3
22	Explain the basic components and functions of the Global Positioning System (GPS)	Understand	CO3
23	Define image interpretation. Describe the key elements involved in image interpretation.	Remember	CO3
24	State the concept of the Soil Test Crop Response (STCR) approach and its role in precision agriculture	Remember	CO3
25	List the main uses of crop simulation models in optimising agricultural inputs.	Remember	CO3

Section: II (15 Marks questions HOT)**UNIT III**

Sl. No.	Model Questions	Blooms Taxonomy	CO
26	Analyze the principles of remote sensing and discuss how image processing enhances agricultural decision-making..	Analyse	CO2
27	Evaluate the importance of integrating GPS, GIS, and remote sensing in precision agriculture for improving input efficiency	Evaluate	CO2
28	Explain the application of crop simulation models for optimising fertiliser, water, and pesticide use under different cropping systems	Analyze	CO3
29	Evaluate the STCR approach in relation to precision nutrient management and sustainable crop production	Evaluate	CO4

30	Design a framework showing how remote sensing data, GPS information, and crop simulation models can be integrated to develop site-specific management plans in precision agriculture	Create	CO4
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UNIT IV

Sl. No.	Model Questions	Blooms Taxonomy	CO
31	Define nanotechnology and mention its significance in agriculture	Remember	CO4
32	Explain nano-particles and how do their properties differ from bulk materials.	Understand	CO4
33	Define nano-fertilizers and their advantages over conventional fertilizers.	Remember	CO4
34	Explain the role of nano-sensors in precision farming.	Understand	CO4
35	Mention two applications each of nanotechnology in seed and plant protection.	Understand	CO4

UNIT IV

Sl. No.	Model Questions	Blooms Taxonomy	CO
36	Explore the structure and properties of nano-particles. How are nano-particles different from larger particles, and what diverse applications do they have in various industries, including agriculture?	Evaluate	CO4
37	Explain the fundamental concepts that underpin nanotechnology and the key techniques employed in manipulating materials at the nanoscale. How do these concepts and techniques differ from traditional approaches?	Analyse	CO4
38	Design a comprehensive model showing the integration of nanotechnology tools for scaling up farm productivity and environmental sustainability	Create	CO4
39	Provide a detailed overview of how nanotechnology is applied to enhance seeds. What advancements does nanotechnology bring to seed technology, and how does this contribute to improved crop yields and resilience?	Evaluate	CO4

40	Evaluate the benefits and potential risks of using nano-pesticides and nano-fertilizers in sustainable agriculture	Evaluate	CO4
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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.