Total No. of Questions: 6 *Total No. of Printed Pages:3*

Enrollment No.....

Faculty of Agriculture
End Sem Examination Dec 2024
AG3CO40
Geoinformatics & Nano-technology & Precision Farming

Programme: B.Sc. (Hons.) Branch/Specialisation: Agriculture

Duration: 3 Hrs. **Maximum Marks: 50**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d. Assume suitable data if necessary. Notations and symbols have their usual meaning.

			Marks	BL	PO	CO	PSO
Q.1	i.	What is the primary goal of precision agriculture? (a) To increase the number of farmers (b) To reduce the number of machines used on farms (c) To optimize the use of inputs and maximize crop yields (d) To completely eliminate manual labor on farms	**1**	2	5	1	
	ii.	What is one major concern related to the adoption of precision agriculture in India? (a) Lack of interest from farmers (b) High cost of technology and limited access to infrastructure (c) Scarcity of labor in rural areas (d) Decline in crop diversity due to technological advancements	**1**	2	6	1	
	iii.	Which of the following methods is used for soil mapping in agriculture? (a) Remote sensing and GIS (b) Satellite television (c) Manual soil sampling without any tools (d) Genetic modification of crops	**1**	1	2	2	
	iv.	How is soil mapping useful?	**1**	3	5	2	

P.T.O.

(a) Identifies soil type and health
(b) Measures soil temperature
(c) Tracks erosion
(d) Counts earthworms

v. What is one key function of the Global Positioning System (GPS) in farming? **1** 2 5 3
(a) Predicting crop yields
(b) Guiding tractors for precision farming
(c) Measuring soil fertility
(d) Identifying pests in crops

vi. Which is NOT a component of the GPS system? **1** 2 7 3
(a) Satellites (b) Ground stations
(c) Control room (d) Receivers

vii. What does STCR stand for in precision agriculture? **1** 2 7 4
(a) Soil Temperature Control Regulation
(b) Soil Test Crop Response
(c) Seed Treatment for Crop Resilience
(d) Standard Technique for Crop Rotation

viii. What is nanotechnology? **1** 2 9 4
(a) Study of soil microorganisms
(b) Science of manipulating materials at the nanoscale
(c) A technique for planting crops
(d) A system for controlling water in fields

ix. What type of nano-materials can improve seed coatings? **1** 2 2 5
(a) Traditional plastics
(b) Nanopolymers
(c) Natural fibers
(d) Regular metals

x. What are nanoparticles? **1** 2 6 5
(a) Large particles visible to the naked eye
(b) Particles smaller than 100 nanometers
(c) Organic materials used in compost
(d) Common fertilizers

Q.2	i.	What are the key components of precision agriculture?	**1**	2	6	1
	ii.	What is the importance of precision farming?	**2**	2	5	1
	iii.	Discuss the tools and techniques of geo-informatics and their applications in precision agriculture.	**5**	1	2	1
OR	iv.	Explain the use of geo-informatics in monitoring and managing soil health in precision agriculture.	**5**	3	1	6
Q.3	i.	What is soil mapping?	**1**	2	2	9
	ii.	Describe the process of using geospatial technologies for fertilizer recommendations.	**3**	3	2	7
	iii.	Describe the concepts of remote sensing utilized in agricultural practices.	**4**	3	2	4
OR	iv.	Write short note on crop discrimination and yield monitoring.	**4**		2	9
Q.4	i.	What is image processing in agriculture?	**2**	2	3	3
	ii.	Write the importance of GPS in precision farming.	**6**		3	3
OR	iii.	What are the main components of GPS, and how do they function in precision agriculture?	**6**	2	3	5
Q.5	i.	What is the main goal of the STCR approach?	**2**	2	4	6
	ii.	Define nanotechnology.	**2**	1	4	5
	iii.	Discuss the key components of the soil test crop response method used in precision agriculture.	**4**	1	4	8
OR	iv.	How can nanotechnology improve pest management and disease control in agriculture?	**4**	3	4	7
Q.6		Attempt any two:				
	i.	What are the benefits of using nano-pesticides over conventional pesticide formulations in agriculture?	**4**	2	5	4
	ii.	Discuss the challenges and limitations of implementing nanotechnology in modern farming systems.	**4**	1	5	6
	iii.	Write down the benefits of nano fertilizers.	**4**	2	5	6

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Marking Scheme

AG3CO40- Geoinformatics & Nano-technology & Precision Farming

Q.1	i)	(c) To optimize the use of inputs and maximize crop yields	**1**
	ii)	(b) High cost of technology and limited access to infrastructure	**1**
	iii)	(a) Remote sensing and GIS	**1**
	iv)	(a) Identifies soil type and health	**1**
	v)	(b) Guiding tractors for precision farming	**1**
	vi)	(c) Control room	**1**
	vii)	(b) Soil Test Crop Response	**1**
	viii)	(b) Science of manipulating materials at the nanoscale	**1**
	ix)	(b) Nanopolymers	**1**
	x)	(b) Particles smaller than 100 nanometers	**1**
Q.2	i.	What are the key components of precision agriculture? 1 mark	**1**
	ii.	What is the importance of precision farming? 2 mark	**2**
	iii.	Discuss the tools and techniques of geo-informatics and their applications in precision agriculture. 5 mark	**5**
OR	iv.	Explain the use of geo-informatics in monitoring and managing soil health in precision agriculture. 5 mark	**5**
Q.3	i.	What is soil mapping? 1 mark	**1**
	ii.	Describe the process of using geospatial technologies for fertilizer recommendations. 3 mark	**3**
	iii.	Describe the concepts of remote sensing utilized in agricultural practices. 4 mark	**4**
OR	iv.	Write short note on crop discrimination 2 mark yield monitoring. 2 mark	**4**
Q.4	i.	What is image processing in agriculture? 2 mark	**2**
	ii.	Write the importance of GPS in precision farming. 6 mark	**6**
OR	iii.	What are the main components of GPS 3 mark how do they function in precision agriculture 3 mark	**6**
Q.5	i.	What is the main goal of the STCR approach? 2 mark	**2**
	ii.	Define nanotechnology. 2 mark	**2**
	iii.	Discuss the key components of the soil test crop response method used in precision agriculture. 4 mark	**4**
OR	iv.	How can nanotechnology improve pest management and disease control in agriculture? 4 mark	**4**
Q.6		Attempt any two:	
	i.	What are the benefits of using nano-pesticides over conventional pesticide formulations in agriculture? 4 marks	**4**
	ii.	Discuss the challenges 2 marks limitations of implementing nanotechnology in modern farming systems. 2 marks	**4**
	iii.	Write down the benefits of nano fertilizers. 4 marks	**4**

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