2023

AGS 5th Semester Examination

B.Sc. Hons. in Agriculture

(Geoinformatics and Nano-techonology for Precision Farming)

PAPER — 507

Full Marks : 50

Time : 2 hours

The figures in the right-hand margin indicate marks.

Candidates are required to give their answers in their own words as far as practicable.

Illustrate the answers wherever necessary.

Answer from **all** the Groups as directed.

GROUP—A

1. Answer *any* **five** questions from the following :

2×5=10

(a) Define precision agriculture and provide one example of a technique used in precision agriculture.

(b) Briefly explain the concept of geoinformatics and how is it utilized in precision agriculture.

(c) What is the role of remote sensing in agriculture? How does it contribute to crop monitoring?

(d) Name two components of the Global Positioning System (GPS) and describe their functions in precision agriculture.

(e) Explain the importance of spatial data in GIS for precision agriculture and how it is managed.

(f) Provide a brief definition of nanotechnology and mention one application of nanotechnology in agriculture.

(g) What is purpose of crop simulation models in precision agriculture and how are they used to optimize agricultural inputs?

(h) Define STCR approach in precision agriculture and explain its significance in optimizing farming practices.

GROUP—B

2. Answer *any* **four** questions from the following :

5×4=20

(a) Identify two issues and concerns related to the adoption of precision agriculture in the context of Indian agriculture. Suggest potential solutions.

(b) Discuss how geospatial technologies are employed in recommending fertilizers for crops. Provide two benefits of using this approach.

(c) Explain the role of image processing in precision agriculture. Provide one example of how image processing is used for agricultural purposes.

(d) Describe the basic principles of system simulation and how crop simulation models contribute to the optimization of agricultural inputs.

(e) Briefly explain the basic principles of geodesy and its relevance in precision agriculture.

'(*Turn Over*)

(f) Differentiate between nano-pesticides and nano-fertilizers. Provide one advantage of using nanotechnology in plant protection.

GROUP—C

3. Answer *any* **two** questions from the following :

10×2=20

(a) Elaborate how geoinformatics is applied in soil mapping. Discuss the benefits and challenges associated with this technique.

(b) Discuss the challenges related to the management of spatial data in GIS for precision agriculture. Propose two strategies to overcome these challenges.

(c) Examine various applications of nanotechnolgy in tillage, seed, water, fertilizer and plant protection. Discuss how these applications contribute to scale up farm productivity.

(d) Explore the integration of GPS and remote sensing in precision agriculture. Provide examples of how these technologies can work together to enhance agricultural practices.

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