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Question Paper Code : 90053

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2025.

Seventh Semester

Computer Science and Engineering

AI 3021 — IT IN AGRICULTURAL SYSTEM

(Common to : Biomedical Engineering/Computer Science and Design/Computer Science and Engineering (Artificial Intelligence and Machine Learning)/Computer Science and Engineering (Cyber Security)/Computer and Communication Engineering/Electronics and Communication Engineering/Electronics and Telecommunication Engineering/Medical Electronics/Artificial Intelligence and Data Science/Computer Science and Business Systems/Information Technology)

(Regulations 2021)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. List the types of ground-based sensors used in agriculture.
2. Differentiate between raster and vector data in GIS.
3. Define Photosynthetically Active Radiation (PAR).
4. How does relative humidity influence plant health?
5. State the constraints commonly considered in agricultural planning.
6. Define a Gantt chart.
7. What is the Madden-Julian Oscillation (MJO)?
8. Enumerate the major consequences of climate variability in agriculture.
9. Name two expert systems used in pest and disease diagnosis.
10. Mention the ways to bridge the digital divide in rural areas.

PART B — (5 × 13 = 65 marks)

11. (a) Outline the process and applications of yield mapping. How does it assist in crop management decisions?

Or

- (b) Elaborate crop production modeling? Explain the components and types of models used.

12. (a) Explain the various artificial light systems used in greenhouses. Compare their efficiency, cost, and impact on plant physiology.

Or

- (b) What are expert systems in horticulture? Explain their structure, components, and applications in greenhouse crop management.

13. (a) Describe the use of simulation models in crop growth and field operations.

Or

- (b) Discuss project scheduling in agriculture using CPM and Gantt charts.

14. (a) Illustrate the concept of climate variability and its importance in seasonal forecasting.

Or

- (b) Provide a schematic view on the structure and functioning of global climate models (GCMs).

15. (a) Critically comment on the impact of e-commerce and e-business systems on agricultural marketing and supply chain.

Or

- (b) Explain the features, benefits, and challenges of technology-enhanced learning systems in rural agricultural education.

PART C — (1 × 15 = 15 marks)

16. (a) Discuss the role and working of GPS and GIS in precision agriculture..

Or

- (b) How does the artificial intelligence and decision support systems aid in modern agricultural management. Provide a real-world example.