

B.E. Instrumentation Engineering (Model Curriculum) Semester-VII  
**IN704M2 - Core Elective-I : Instrumentation in Agriculture and Food Industries**

P. Pages : 2

Time : Three Hours



**GUG/S/25/14260**

Max. Marks : 80

- Notes :
1. All questions carry marks as indicated.
  2. Due credit will be given to neatness and adequate dimensions.
  3. Assume suitable data wherever necessary.

1. a) Evaluate the steps involved in the seed germination and explain the use of instrumentation for the same. 8

b) Define remote sensing? State various applications of remote sensing. 8

**OR**

2. a) Illustrate the use of biosensors in the field of agriculture. 8

b) List the engineering properties of soil and analyze any four of them in detail. 8

3. a) Explain oil extraction process and different methods involved in it. 8

b) What are pesticides? How are they manufactured? Explain precautionary methods to be taken while handling the pesticides. 8

**OR**

4. a) Define fermentation process? State required conditions for fermentation process. Explain importance of fermentation in various industrial products. 8

b) Discuss with suitable flowchart the steps involved in the production of sugar from raw sugarcane. 8

5. a) What is water distribution management and control? State different techniques involved in it. 8

b) Discuss the role of SCADA for DAM parameters management and control. 8

**OR**

6. a) Throw the light on auto drip irrigation system. 8

b) Discuss application of SCADA for Irrigation Canal (up-stream & down-stream) management and control system. 8

7. a) Explain the requirement and benefits of automation in earthmoving and farm equipment. 8

b) Discuss application of SCADA and PLC in packing industry and cold storage system. 8

**OR**

8. a) Discuss various types and functions of earth moving equipment and farm equipment which are used in day-to-day life. 8
- b) Explain the purpose of implementation of hydraulic, pneumatic and electronics control circuits in harvesters, cotton pickers and tractors. 8
9. a) What is a greenhouse? How does the greenhouse effect work? 8
- b) Write a short note on CO<sub>2</sub> enrichment in green house. 8

**OR**

10. a) How would you classify non-conventional energy sources. Explain Tidal power in detail. 10
- b) What is smart grid? What are the challenges in expanding smart grid technology. 6

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