

**B.Tech Odd Semester (CBCS) Exam.,
December—2016**

AGRICULTURAL ENGINEERING

(5th Semester)

Course No. : AE-501

(Instrumentation and Control)

Full Marks : 75

Pass Marks : 30

Time : 3 hours

- Note :
1. Attempt **one** question from each Unit.
 2. Begin each answer in a new page.
 3. Answer parts of a question at a place.
 4. Assume reasonable data wherever required.
 5. The figures in the margin indicate full marks for the questions.

UNIT—1

1. Describe briefly about different applications of measurement systems. Discuss the different functional elements of a measurement system with a block diagram. 7+8=15

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(Turn Over)

2. (a) What is a strain gage? Write its uses. Explain the working principle of strain gages. 6
(b) Explain the circuit for the measurement using strain gages. What is temperature compensation? How do you get amplification in a strain gage bridge circuit? Explain. 9

UNIT—2

3. What is a manometer? Discuss different types of manometer with their applications. 5+10=15
4. What is a Bourdon tube? Discuss Bourdon tube pressure gauge with proper diagram. 5+10=15

UNIT—3

5. Describe the Pitot static tube with a proper diagram. Discuss its advantages and disadvantages. 7+8=15
6. What is a dynamometer? Discuss the different types of dynamometers with its merits and demerits. 5+10=15

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(Continued)

(3)

UNIT—4

7. What is a thermometer? Discuss different types of thermometer with their applications. 5+10=15
8. Write short notes on the following : 5+5+5=15
- (a) Bimetallic thermometers
 - (b) Pressure thermometers
 - (c) Thermocouples

UNIT—5

9. What do you mean by feedback control? Explain various types of feedback control taking the example of temperature control in a hot air oven. 5+10=15
10. (a) Explain the working of a micro-processor-based computer. 9
- (b) Explain the working of analog-to-digital converter. An 8-bit ADC has V_{ref} of 7 Vd.c. The analog input 2.5 Vd.c. What is the binary output of ADC? 6

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