

# KERALA AGRICULTURAL UNIVERSITY

B.Tech (Food.Engg) 2012 Admission  
VI<sup>th</sup> Semester Final Examination- June/July -2015

Cat. No: Elen.3202

Title: Instrumentation and Process Control (2+1)

Marks: 80

Time: 3 hours

## I. Fill in the blanks: (10 x 1 = 10)

- \_\_\_\_\_ is the least incremental value of input or output that can be detected by a measuring device.
- \_\_\_\_\_ is the degree to which an instrument indicates the changes in measured variable without dynamic error.
- Megger is a portable instrument used for testing \_\_\_\_\_.
- \_\_\_\_\_ is the process of measuring the amount of heat released or absorbed during a chemical reaction.
- \_\_\_\_\_ is the wireless transmission and reception of measured quantities for the purpose of remotely monitoring equipment parameters.
6. PLC stands for \_\_\_\_\_.
7. DCS stands for \_\_\_\_\_.
8. SCADA stands for \_\_\_\_\_.
9. If the pH of a solution is less than 7, the solution is \_\_\_\_\_.
10. Anemometer is a device used for measuring \_\_\_\_\_.

## II. Write short notes on ANY TEN: (10 x 3 = 30)

1. Differentiate between accuracy and precision
2. Differentiate between thermistors and thermocouples
3. Differentiate between analog and digital instruments
4. Differentiate between static characteristics and dynamic characteristics of instruments X
5. Differentiate between A-D converters and D-A converters X
6. Differentiate between open loop and closed loop type control systems ✓ Control Center
7. Differentiate between absolute pressure and gauge pressure
3. 8. Write a short note on Data Acquisition Systems. (indicating & signally instruments) ✓
9. Write a short note on bimetallic thermometer.
4. 10. Write a short note on proximity sensor X
5. 11. Write a short note on rheometer. X
12. Write a short note on Voltmeter.

## III. Write short essays on ANY SIX: (6 x 5 = 30)

1. Explain Non Destructive Testing of solids. (Analysis of solids by X ray diffraction) ✓
2. Explain the principle of strain gauge.

3. Explain the construction of single phase energy meters.
4. Write a short essay on pH measurement.
5. Explain the construction and working of capacitance level indicators
6. Explain the working principle of magnetic flowmeter. X
7. Explain the construction and working of a C-type Bourdon tube pressure gauge.
8. Explain the working of radiation pyrometers.

IV. Write essay on ANY ONE: (1 x 10 = 10)

1. With the help of neat relevant diagrams, explain the construction and operation of Resistance Temperature Detectors. ✓
2. With the help of neat diagrams and relevant examples, explain the functional elements of an instrument.