

KERALA AGRICULTURAL UNIVERSITY

B.Tech (Food.Engg) 2012 Admission

VIth Semester One time Special Re-Examination-June -2016

Cat. No: Elen. 3202

Marks: 80.00

Title: Instrumentation and Process Control (2+1)

Time: 3 hours

A. Fill up the blanks

(10 x 1 = 10 .0)

1. The instrumentation diagram is constructed on the basis of a
2. Boiling and freezing points of water is..... ° F and ° F respectively.
3. Electronic transmission is generally operated on transmitted signal of about
4. effect relates the absorption and evolution of heat at the thermocouple junction.
5. The maximum range of arc temperature in emission spectroscopy is
6. Sight glass is used to measure
7. Radiation pyrometers are used in the temperature range of ° C
8. The dynamic range of magnetic tape recorder is greater than dB.
9. The pH of a strongly acidic solution will be
10. Pirani gauge is useful for measurement of pressure between to mm of Hg.

B. Answer any ten questions

(10 x 3 = 30.0)

1. Explain the problems associated with thermocouple lead wires.
2. Write short notes on thermal wells.
3. What is thermal coefficient of resistance? What is its effect on temperature measurement using resistance thermometers?
4. Give the factors influencing the response of temperature sensing device.
5. Explain the hygrometer method for measuring moisture in gases.
6. Explain the method for pH ion concentration measurement.
7. What are the important uses of recorder in process instrumentation?
8. Explain direct methods of liquid level measurement.
9. Explain the working principle of pressure spring gauge (bourdon tube).
10. Explain process analysis.
11. Explain radiation temperature measurement using photoelectric pyrometers.
12. Explain the analysis of gases by thermal conductivity.

C. Answer any six questions

(6 x 5 = 30.0)

1. Explain the constructional features of a thermocouple and give its advantages and disadvantages.
2. Explain the central layout of control center and plant system with the help of diagram.
3. Differentiate between circular recording chart and strip recording chart.
4. With the help of a block diagram explain the instrumentation in modern plant.
5. Explain Null and Deflection type Resistance Thermometers.
6. Explain the measurement of moisture in paper and textile industry.
7. Explain the analysis of solids by X-ray diffraction.
8. Explain the measurement of vacuum pressure using Pirani gauge.

D. Answer any one question

(1 x 10 = 10.0)

1. Explain emission spectroscopy and Mass spectroscopy in detail.
2. Explain the working of an X-Y Recorder with a neat Diagram and give its applications.