CM- 303
B.E. III Semester Examination, December 2014
Chemical Instrumentation
Time : Three Hours
Maximum Marks : 70

Note: i) Answer five questions. In each question part A, B, C is compulsory and D part has internal choice.

ii) All parts of each question are to be attempted at one place.

iii) All questions cany equal marks, out of which part A and B (Max.50 words) carry 2 marks, part

C (Max. 00 words) cany 3 marks, part D (Max.400 words) carry 7 marks.

iv) Except numericals, Derivation, Design and Drawing etc.

1. a) Show primary and secondary elements of an instrument.

b) Define the term accuracy and static error.

c) Explain briefly the speed of response.

d) The accuracy of a thermometer is specified to be within + 0.25% and calibrated 225°F to 300°F. What is the maximum static error in units.

OR

Explain dynamic response of first order type instruments.

2. a) Write RTD advantages and disadvantages.

b) Importance of humidity measurement in Industry.

c) Compute the temperature at which Fahrenheit and centigrade scale coincide.

d) Describe the working principle of liquid filled thermometer.

OR

Describe briefly the working of optical pyrometer.

3. a) Write peltier effect and Thomson effect.

b) Write most commonly used industrial thermocoupled.

c) What is thermal well?

d) Explain briefly electrical pressure transducer.

OR

Explain briefly the working and principle of McLeod gauge.

4. a) Write characteristics features of rotameter.

b) Write characteristics features of orifice meter.

c) Explain works of Say bolt's viscometer.

d) Draw the PI diagram for distillation column to control top product flow and reflux flow.

OR

Draw the PI diagram for packed bed adsorption column to control and measure the feed temperature and flow rate.

5. a) Write in short the principle involved in man spectrometer.

b) Write in short the working of emission spectrometer.

c) Explain scheme of the pneumatic transmitter.

d) Write a brief note on DIP cell transmitter method for density measurement.

OR

Explain briefly the working olgas chromatograph.