

**B.Tech Sem - VI (2007 Course) (Chemical Engg.) : WINTER -
2017**

**SUBJECT: PROCESS INSTRUMENTATION & INSTRUMENTAL
METHODS OF ANALYSIS**

Day: **Wednesday**
Date: **22/11/2017**

W-2017-2496

Time: **10.00 AM TO 01.00 PM**
Max. Marks: **80**

N.B.:

- 1) **Q. No. 1 and Q. No. 5 are COMPULSORY.** Out of the remaining attempt any **TWO** questions from each section.
- 2) Figures to the right indicate **FULL** marks.
- 3) Answers to both the sections should be written in **SEPARATE** answer book.
- 4) Draw neat diagrams **WHEREVER** necessary.

SECTION-I

- Q.1** a) Define the following terms: (04)
i) Hysteresis ii) Resolution
iii) Accuracy iv) Speed of response
- b) Explain the different temperature scale used for temperature measurement, and their conversion. (05)
- c) What is refractive index? Explain the effect of temperature on refractive index. (05)
- Q.2** a) Write short note on standards of measurements. (06)
b) Explain with neat diagram programmable logic controller. (07)
- Q.3** a) Give classification of pressure measuring instrument. Describe with neat diagram principle, constriction and working of Bourdon tube pressure gauge. (06)
b) Discuss with neat diagram construction and working of Geiger- Muller counter. (07)
- Q.4** a) List the various level measuring instruments used in process industries. Explain with neat diagram construction and working of ultrasonic level measurement method. (06)
b) Describe with neat diagram Time of Flight displacement sensor. (07)

SECTION- II

- Q.5** a) Explain chromatography methods with examples. (05)
b) Define following terms: (04)
i) Decay ratio ii) Overshoot
iii) Process Time constant iv) Rise Time
c) Write down conventional controller Transfer function. (05)
- Q.6** Explain Gas chromatography with construction, operation and industrial applications. (13)
- Q.7** Define forcing function and discuss step response for 1st order system with response graph. (13)
- Q.8** Explain the following parameters with neat diagram for heat exchanger. (13)
i) Pressure loop ii) Flow loop
iii) Level loop iv) Temperature loop

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