

**B.TECH. SEM -VI (CHEMICAL 2014 COURSE (CBCS) :
WINTER - 2017**

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

Day: **Thursday**
Date: **23/11/2017**

Time: **10.00 AM TO 01.00 PM**
Max Marks. **60**

W-2017-2176

N.B.

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Assume suitable data, if necessary.
- 4) Draw neat and labeled diagram **WHEREVER** necessary.

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- Q.1** Explain displacer level gauge in detail. Give its merits and demerits. (10)
OR
- a) Explain performance characteristics of resistance temperature detector. (05)
b) Describe liquid filled thermometer with diagram. Give its principle and working. (05)
- Q.2** a) Explain mass spectroscopy in detail. (06)
b) What is electromagnetic radiation? (04)
OR
Describe measuring electrode and reference electrode for pH measurement in detail. Draw neat and labelled diagram. (10)
- Q.3** Describe abbe refractometer in detail. (10)
OR
- a) Compare Nephelometry with spectroscopy. (06)
b) Give advantages & disadvantages of conductometry. (04)
- Q.4** Give principle, construction & working of liquid chromatography with diagram. (10)
OR
- a) Explain column efficiency for liquid chromatography. (05)
b) Describe the various apparatus & materials for liquid chromatography. (05)
- Q.5** a) What is dynamic behavior of pure integrator? Explain in detail. (06)
b) Give physical examples of first order and second order system. (04)
OR
- a) Explain first order and second order system. (06)
b) Describe poles & zeros of transfer function. (04)
- Q.6** a) Give the characteristics of P+I+D control mode. (05)
b) What is the general criteria to draw process flow diagram. (PFD) (05)
OR
Explain derivative mode control in detail. (10)