

AU – 2710

Fifth Semester B. Tech. Chemical Technology (Poly.) (Plas.) Tech. (CGS)
Examination

INSTRUMENTATION AND CONTROL

Paper – 5 PP 04
(USC – 11118)

P. Pages : 3

Time : Three Hours]

[Max. Marks : 80

- Note :** (1) Separate answer book must be used for each section in the subject Geology, Engineering material of civil branch and Separate answer book must be used for Section A and B in Pharmacy and Cosmetic Tech.
(2) Answer **Three** questions from Section A and **Three** questions from Section B.
(3) Due credit will be given to neatness and adequate dimensions.
(4) Diagrams and Chemical equations should be given wherever necessary.
(5) Illustrate your answer wherever necessary with the help of neat sketches.
(6) Use pen of Blue/Black ink/refill only for writing the answer book.

SECTION A

1. (a) Explain in detail need and scope of process instrumentation. 7
(b) Explain the operations performed by signal conditioning element. 6

OR

2. (a) Explain the construction and working of liquid filled thermometer. 7
(b) Describe various methods for level measurement for corrosive fluids. 6
3. (a) State relation between :—
(1) Absolute pressure and gauge pressure.
(2) Gauge pressure and vacuum. 6
(b) Explain in detail the measuring reference electrode in case of pH measurement. 7

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OR

4. (a) Explain dew point method for humidity measurement with neat sketch. 7
(b) Describe bellows pressure gauge. 6
5. Describe the following techniques of composition analysis :—
(1) X-ray absorption spectroscopy.
(2) UV absorption spectroscopy.
(3) IR absorption spectroscopy. 14

OR

6. Write short notes on :—
(1) Chromatography.
(2) Refractrometry.
(3) Mass spectroscopy. 14

SECTION B

7. (a) Describe the construction and working of turbine type flow meter. 7
(b) Describe the following :—
(1) Rotameter.
(2) Valve type flow meter. 7

OR

8. (a) Describe the following :—
(1) Pitot tube.
(2) Flow nozzle. 7
(b) Write short note on : Hydraulic servomotors. 7

9. (a) Explain various mathematical tools used for dynamic analysis of process. 6
(b) Derive the transfer function of mixing process. 7

OR

10. (a) Derive transfer function of C.S.T.R. 7
(b) What is process model ? Explain the following models in process control:—
(1) State space model.
(2) Impulse response models. 6

11. (a) Write short notes on :—
(1) Transfer domain models.
(2) Frequency response models. 7
(b) Derive transfer function of evaporator. 6

OR

12. (a) Explain the standard ideal input functions used for dynamic analysis of systems. 7
(b) Write short notes on :—
(1) Rise time.
(2) Settling time. 6

