

BACHELOR OF TECHNOLOGY (C.B.C.S.) (2020 COURSE)
B.Tech.Sem - V CHEMICAL : WINTER- 2022
SUBJECT : CHEMICAL PROCESS INSTRUMENTATION

Day : Wednesday

Time : 02:30 PM-05:30 PM

Date : 14-12-2022

W-24452-2022

Max. Marks : 60

N.B.

- 1) All questions are **COMPULSORY**.
 - 2) Figures to the **RIGHT** indicate **FULL** marks.
 - 3) Use of non-programmable calculator is **allowed**.
 - 4) Assume suitable data **WHEREVER** necessary.
 - 5) Draw neat labeled diagrams **WHEREVER** necessary.
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Q.1 Describe the principle, construction and working of thermocouple used for temperature measurement. (10)

OR

Q.1 Describe the factors affecting dynamic response of the thermocouple. (10)

Q.2 Describe with the help of neat figures : (10)

- i) U-tube Manometer
- ii) Inclined leg manometer.

OR

Q.2 Describe Bourdon pressure gauge in detail. (10)

Q.3 Discuss the X-ray absorption spectroscopy technique of composition analysis in detail. (10)

OR

Q.3 Discuss the UV absorption spectroscopy technique of composition analysis in detail. (10)

Q.4 Draw typical chromatographic recorder chart and describe its use for determining concentrations of components of the mixture. (10)

OR

Q.4 Classify the chromatography methods, how chromatography is superior separation technique over other techniques. (10)

Q.5 Find the output response of a first order lag system with $\tau_p = 0.5$ and $K_p=1$ to a step change of magnitude 2 units. (10)

OR

Q.5 Find the output response of a first order lag system with $\tau_p = 0.5$ and $K_p=1$ to a unit impulse input change. (10)

Q.6 Draw block diagram of feedback control system. Describe the hardware elements involved in it. (10)

OR

Q.6 Discuss following control actions i) P ii) PI iii) PID. (10)
