Gandhi Institute of Engineering and Technology University, Odisha, Gunupur
(GIET University)

B. Tech (Fifth Semester - Regular) Examinations, November – 2024

22BBTOE35011/22BCHOE35011 - PROCESS INSTRUMENTATION

(BT/CHEM)

Time: 3 hrs Maximum: 70 Marks

Answer ALL questions

(The figures in the right-hand margin indicate marks)

PART – A **(2 x 5 = 10 Marks)**

Q.1. Answer ***ALL*** questions		CO #	Blooms Level
a.	What is the importance of flow measurement in process control?	CO1	K1
b.	What is a strain gauge? How does the resistance change in it?	CO2	K3
c.	What do you mean by pressure switch? State its uses.	CO1	K2
d.	Write any two advantages of mass spectroscopy.	CO2	K4
e.	Differentiate between accuracy and precision.	CO1	K1

PART – B **(15 x 4 = 60 Marks)**

Answer ***All*** the questions		Marks	CO #	Blooms Level
2. a.	Draw the block diagram of an instrument system and explain the functions of each functional elements.	8	CO1	K1
b.	With the help of a diagram, explain the construction and working of the McLeod gauge.	7	CO2	K2
	(OR)			
c.	Describe the working principle of the radiation level indicator with a diagram.	8	CO1	K2
d.	Write short notes on Absorption spectroscopy.	7	CO4	K1
3.a.	Write the principles of working of an optical pyrometer with a neat sketch.	8	CO1	K3
b.	Explain the working of thermal flowmeters used for measuring the unsteady flow of gases.	7	CO1	K2
	(OR)			
c.	Briefly explain the statistical analysis of a measurement data for the determination of uncertainty of the system response.	8	CO2	K2
d.	Describe the method of composition analysis through Emission Spectroscopy.	7	CO4	K3
4.a.	What are the different types of direct methods of liquid level measurement? Explain with a neat sketch any one of them.	8	CO3	K1
b.	Draw a neat sketch to show the essential parts of a bourdon tube pressure gauge. Describe purpose of each part.	7	CO2	K4
	(OR)			
c.	What do you mean by periodic maintenance? What are the different steps to be followed during calibration of a pressure transmitter?	8	CO1	K1
d.	What are the different types of static errors? Explain each of them.	7	CO3	K3
5.a.	Explain the operation of mass spectroscopy.	8	CO1	K2
b.	Describe the construction and working of a thermocouple with a neat sketch.	7	CO1	K1
	(OR)			

c.	Write the working principle of the Rotameter with its advantages and disadvantages.	8	CO2	K3
d.	Define the following terms: (i) Repeatability (ii) Reproducibility (iii) Sensitivity (iv) Speed of response (v) Dead Zone (vi) Drift (vii) Rangeability.	7	CO3	K1

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