Code No: RT31034 **R13** SET - 1

III B. Tech I Semester Supplementary Examinations, October/November - 2018

INSTRUMENTATION & CONTROL SYSTEMS

(Mechanical Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answering the question in **Part-A** is compulsory
3. Answer any **THREE** Questions from **Part-B**

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PART –A

1	a)	What do you mean by systematic errors?	[4M]
	b)	List the metals used for resistance thermometers and give their useful temperature ranges.	[4M]
	c)	Define vibration. List out its harmful effects?	[4M]
	d)	What are the requirements of materials for strain gauges?	[4M]
	e)	State the working principle of elastic transducer to measure of force?	[3M]
	f)	List some of the engineering situations where automatic control systems are used.	[3M]

PART –B

2	a)	Explain the working of different parts of Bourdon tube pressure gauge with generalized measuring system block diagram.	[8M]
	b)	Explain the working principle of Piezoelectric transducer with neat sketch and also list out its limitations.	[8M]
3	a)	Explain the working of the thermistor with neat sketch and also list out its advantages and limitations.	[8M]
	b)	Explain the working of Thermal conductivity gauge for the measurement of pressure with neat sketch.	[8M]
4	a)	Explain the working principle of operation of hot wire anemometer with neat sketch.	[8M]
	b)	Explain the construction and working of a vibrating reed tachometer for measuring speed.	[8M]
5	a)	With a neat sketch explain the use of resistance strain gauges for bending, compressive and tensile strain measurements.	[8M]
	b)	What do you mean by resistance strain gauges? Give a detailed discussion on the subject coverings the basic principle, gauge and binding materials and applications of the method.	[8M]
6	a)	Explain the working of Load Cells and give its usages	[8M]
	b)	How can you detect the moisture content of gases and explain any one method of it	[8M]
7	a)	List out the differences between the Positive and negative feedback systems and open loop and closed loop control systems.	[8M]
	b)	Describe a typical closed loop control system that can be used to control the temperature of water being heated by steam.	[8M]

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