Code No: **RT41025** **R13** **Set No. 1**

IV B.Tech I Semester Supplementary Examinations, February/March - 2018

INSTRUMENTATION

(Open Elective)

Time: 3 hours **Max. Marks: 70**

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any THREE questions from Part-B
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PART–A *(22 Marks)*

1.	a)	List out the static characteristics of an instrument.	[3]
	b)	What are the various types of transducers?	[4]
	c)	Define gauge sensitivity	[4]
	d)	What are the specifications of digital voltmeters?	[4]
	e)	What is the function of phosphor screen in CRO?	[4]
	f)	What is a Q meter? Discuss	[3]

PART–B *(3x16 = 48 Marks)*

2.	a)	What is pulse code modulation? Give an example?	[8]
	b)	The current through a resistor is 5A, but the measurement yields a value of 4.9A. Calculate the absolute error and the percentage error of the measurement.	[8]
3.	a)	Discuss in detail about the advantages of electrical transducers	[8]
	b)	A certain crystal has a coupling coefficient of 0.32. How much electrical energy must be applied to produce an output of 1 oz.in. of mechanical energy.	[8]
4.	a)	Explain in detail about the advantages and disadvantages of turbine flowmeter.	[8]
	b)	Discuss in detail about various methods of measuring angular velocity.	[8]
5.	a)	Explain the advantages and disadvantages of microprocessor based ramp type digital voltmeters.	[8]
	b)	A 3 ½ digital voltmeter is used for measuring voltage. Find the resolution of the instrument. How would a voltage of 14.42 be displaced on 10 V range? How would be a reading 14.42 be displaced on 100 V range?	[8]
6.	a)	Draw various lissajous patterns and explain their significance.	[8]
	b)	A CRO with a sensitivity of 5 V/cm is used. AC voltages of different magnitudes are applied to the y-input each time. Determine the AC voltages if the length of the straight lines observed are (i) 5 cm (ii)12 cm	[8]
7.	a)	Discuss about various types of Harmonic distortion analyzers.	[8]
	b)	Discuss in detail about the operation of RMS voltmeters in detail.	[8]