Registration No : | | | | | | | | | | |

Total Number of Pages : 02 **B.Tech.**
PEI4I104

4th Semester Regular / Back Examination 2017-18
INSTRUMENT DEVICES & SYSTEM - I
BRANCH : AEIE, EIE, IEE
Time : 3 Hours
Max Marks : 100
Q.CODE : C1010

Answer Part-A which is compulsory and any four from Part-B.
The figures in the right hand margin indicate marks.
Answer all parts of a question at a place.

Part – A (Answer all the questions)

Q1 **Answer the following questions: *multiple type or dash fill up type:*** **(2 x 10)**

a) The process of converting the energy from one form to another form is called_____
b) The ability of the measurement system to detect and indicate small changes is called _____
c) The number of _____ in an expression indicates the precision with which an engineer or scientist states a quantity.
d) Thermistors have _____ temperature coefficient of resistance.
e) Expand LVDT_____
f) _____ can be measured using strain gauges.
g) Bridges can be used to measure_____
h) Hay's bridge can measure _____
i) _____ ADC is the fastest ADC.
j) The ideal value of Op-Amp's bandwidth is _____

Q2 **Answer the following questions: *Short answer type:*** **(2 x 10)**

a) Define the terms: measurand and resolution
b) Define: precision and accuracy
c) How noise can influence any measuring system?
d) What are the various resistive sensing elements?
e) What are the applications of bellows?
f) How the torque can be measured?
g) Classify strain gauges.
h) Write the difference between passive and active filters
i) What are the ideal characteristics of ideal Op-Amp?
j) Write the applications of phase sensitivity demodulators.

Part – B (Answer any four questions)

Q3 **a)** Draw the block diagram of basic measurement system and explain each block in detail. **(10)**
b) Define and explain all the static characteristics of a measuring device. **(5)**

Q4 **a)** Explain the techniques for dynamic compensation **(10)**
b) Explain the loading effect with an example **(5)**

Q5 **a)** With neat diagrams explain the operation and applications of strain gauges. **(10)**
b) What are the various electromagnetic sensing elements? **(5)**

Q6	**a)**	Explain the working principle of LVDT with neat diagrams.	**(10)**
	b)	What are thermistors? Explain how they can be used to compensate the temperature variations in a system.	**(5)**
Q7	**a)**	With neat diagrams explain the procedure of pressure measurement using Bourdon tube.	**(10)**
	b)	What are thermocouple laws?	**(5)**
Q8	**a)**	With the help of a neat circuit diagram explain the operation of successive approximation ADC.	**(10)**
	b)	Compare Analog to Digital converters	**(5)**
Q9	**a)**	With a neat circuit diagram explain the operation of non-inverting amplifier.	**(10)**
	b)	Classify active filters and draw the frequency response characteristics of each filter.	**(5)**