(3 Hrs.) **[Total Marks:80]**

N.B (1) Question No. 1 is Compulsory.
(2) Attempt any four questions out of remaining six.
(3) Figures on the right indicate full marks.
(4) Assume data wherever necessary.
(5) Draw diagrams / sketches wherever necessary.
(6) Use legible handwriting. Use blue / black ink only.

1	**(a)**	Differentiate between primary and secondary transducer	**05**
	(b)	Explain with a neat diagram elastic pressure sensor	**05**
	(c)	Define half-cell potential and Over potential. Classify over potential	**05**
	(d)	Explain the working of a capacitive sensor.	**05**
2	**(a)**	Explain in detail true RMS voltmeter	**08**
	(b)	Explain with a neat block diagram working of a CRO	**12**
3	**(a)**	Explain the construction and working of L.V.D.T. Explain the need of phase sensitive demodulator with the help of necessary diagrams.	**12**
	(b)	Define Gauge factor. Derive the expression of a gauge factor.	**08**
4	**(a)**	Define biosensor. Explain any one type with a neat diagram	**08**
	(b)	Draw and explain equivalent circuit model for electrode-electrolyte interface	**08**
	(c)	Explain with neat diagram laws governing working of a thermocouple	**04**
5	**(a)**	Giving suitable example explain zero order, first order and second order system	**10**
	(b)	Giving suitable example explain any four static characteristics	**10**
6		Write short notes on (any four)	**20**
	(a)	PO_2 electrode	
	(b)	Photoconductive Cell	
	(c)	Internal Electrodes	
	(d)	FET voltmeter	
	(e)	IC based temperature sensor	

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