59151

November 18 Solution
S.E Biomedical (Choice Base)
Biomedical Transducers and Measuring Instruments

1		Attempt **any four** out of the following:	
	(a)	Explanation on blood-gas physiology Explanation on acid- base physiology	2.5 2.5
	(b)	Needle electrodes and wire electrodes with diagrams.	05
	(c)	Resistance versus temperature graph of an NTC type thermistor Resistance versus temperature characteristics of an NTC type thermistor	02 03
	(d)	piezoelectric transducer – diagram piezoelectric transducer - working	02 03
	(e)	Any five points of difference between primary and secondary transducers with examples.	05
2	(a)	Block diagram of CRO Working of CRO	04 06
	(b)	RTD principle RTD working	02 03
	(c)	What is motion artefact Methods of minimization	03 02
3	(a)	Define biosensor. Classification of biosensors. Catalytic biosensor – diagram Catalytic biosensor – Description and features Catalytic biosensor – advantages and disadvantages.	01 03 02 04 02
	(b)	Any four static characteristics of transducers with suitable examples.	08
4	(a)	2 Methods of thermistor linearization – Diagram and working of each.	08
	(b)	Any 3 points of differentiation between first order and second order system Examples of first order and second order system	06 02
	(c)	FET voltmeter – diagram FET Voltmeter - explanation	02 02
5	(a)	What is meant by gauge factor Prove that "For metals, gauge factor is always greater than 1.6".	02 08
	(b)	Successive approximation type of ADC – principle of operation Successive approximation type of ADC – explanation	02 03
	(c)	ISFET – diagram ISFET – description	02 03
6	(a)	What is half-cell potential? How is it measured? Explain over potential Explain 3 types of over potential	02 02 06
	(b)	Any 5 points of differentiation between dual beam and dual trace CRO.	05
	(c)	Diaphragms, bellows and bourdon tubes – diagram and explanation.	05