

Duration: 3 Hours

Marks: 80

- 1) Question **No. 1** is compulsory.
- 2) Attempt any **three** questions out of remaining **five** questions.
- 3) Figures to the right indicate full marks.
- 4) Assume suitable data if necessary, stating your assumption.

Q.No.1	Attempt any four	Marks
A	Explain the capacitance microphone used for measuring dynamic displacement changes.	5
B	Explain the blood gas and acid- base physiology.	5
C	Differentiate between active and passive transducer	5
D	What is motion Artifacts? & how it is minimized?	5
E	Explain typical current verses voltage characteristics of the bead type NTC thermistor.	5
Q.No.2	A Explain generalized instrumentation system with the help of block diagram.	08
	B With the help of examples explain in detail the second order instrument characteristics	06
	C Explain different types of pressure sensing elements.	06
Q.No.3	A Explain basic principle of strain gauge and derive the equation for gauge factor.	10
	B Explain with suitable diagram the construction and working of LVDT. Draw the block diagram of phase shift detection system. Give one application of LVDT.	10
Q.No.4	A What is thermocouple? Explain with neat sketches laws governing thermocouple. State its advantages and applications.	10
	B What is half cell potential? How it is measured? What is over potential? What are the types of over potential?	10
Q.No.5	A Draw & Explain electrical equivalent circuit of electrode skin interface.	10
	B Explain transcutaneous measurement of arterial oxygen tension.	10
Q.No.6	Attempt any four	
A	Explain microelectrodes.	5
B	Write short note on PCO ₂ electrode.	5
C	Explain in detail ISFET	5
D	Fiber Optic pressure transducer.	5
E	Distinguish between potentiometric and amperometric sensors.	5
