

## Model Question Paper-2 with effect from 2019-20 (CBCS Scheme)

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### Fourth Semester B.E. Degree Examination Biomedical Transducers & Measurements

TIME: 03 Hours

Max. Marks: 100

Note: 01. Answer any **FIVE FULL QUESTIONS**, choosing at least **ONE QUESTION** from each **MODULE**.

Module -1			
Q.01	a	Define the following (i)Signal (ii) Standard (iii) Calibration (iv) SNR (v) Accuracy.	(10 Marks)
	b	What is a transducer? Discuss the static & dynamic characteristics of the transducer.	(10Marks)
OR			
Q.02	a	Give the transduction principle of position & motion transducers with neat figures.	(10 Marks)
	b	What is error? Discuss the different types of error.	(10 Marks)
Module-2			
Q. 03	a	Explain the following terms with waveforms respectively (i) ECG (ii)EEG (iii) EMG (iv)EOG (v) ERG	(10Marks)
	b	With neat figures describe about recording Electrode –Electrode interface & Electrolyte skin interface.	(10Marks)
OR			
Q.04	a	Explain the following (i) Skin contact impedance (ii) Motion artifacts	(08Marks)
	b	Discuss the type of electrodes for ECG with a neat figure.	(12Marks)
Module-3			
Q. 05	a	Briefly describe the physiological pressure ranges & measurement sites.	(08Marks)
	b	What is Blood Pressure? Describe the direct method of measurement of blood pressure using catheter tip pressure transducer.	(12Marks)
OR			
Q. 06	a	Write short notes on (i) Pressure telemetering capsules (ii) Implantable pressure transducer	(12Marks)

		(iii) Strain gauge transducer.	
	b	With a neat figure & waveforms describe the detection of Kortokoff sounds.	(08Marks)
<b>Module-4</b>			
Q. 07	a	What is a thermistor? With a neat figure explain the construction principle of the thermistors.	(10Marks)
	b	Explain the following terms with figures (i) P-N junction diodes & transistors (ii) Infrared thermography	(10Marks)
OR			
Q. 08	a	What is a clinical thermometer? Discuss the different indwelling thermometer probes.	(12Marks)
	b	Write short notes on (i) Photo voltaic cells (ii) Photo emissive cells	(08Marks)
<b>Module-5</b>			
Q. 09	a	Explain the blood flow in (i) Single vessel (ii) Tissue blood flow (iii) Respiratory gas flow	(06Marks)
	b	Explain the perivascular & intra vascular probes with neat figures.	(06Marks)
	c	With a neat figure explain the ultrasonic Doppler flow meter along with the propagation of ultra sound in tissues.	(08Marks)
OR			
Q. 10	a	Discuss with a neat figure the principle of working of thermo dilution method	(10Marks)
	b	Describe in detail about Indicator dilution method.	(10Marks)