

## BE Semester-IV (Biomedical Engineering) Question Bank

### (BM-403 Biomedical Transducers)

All questions carry equal marks (10 marks)

Q.1	Draw & explain generalized block-diagram of medical instrumentation system.
Q.2	Explain static performance characteristics of transducer in detail.
Q.3	Explain dynamic performance characteristics of transducer in detail.
Q.4	Explain electro-magnetic blood flow transducer with its working.
Q.5	Give classification of transducers with their transduction principles & related examples.
Q.6	Explain piezoelectric phenomenon & describe a piezoelectric pressure transducer with neat diagram.
Q.7	Explain the electrical design characteristics for Biomedical transducer.
Q.8	Explain temperature compensation circuit for strain gauge transducer.
Q.9	Explain piezoelectric transducer with its modes of operation. Enlist its merits & demerits.
Q.10	Explain Polarographic clark PO <sub>2</sub> sensor & Transcutaneous PO <sub>2</sub> sensor with its constructional diagram.
Q.11	Explain construction & working of LVDT with its merits and demerits.
Q.12	Explain ultrasonic blood flow transducer & derive equation for blood velocity measurement.
Q.13	Explain different types of microbial biosensors.
Q.14	Explain thermo emf transducer with cold junction compensation.
Q.15	Explain the thermocouple temperature transducer in detail with its merits and demerits.
Q.16	Explain non-contact type infrared thermometry.
Q.17	Explain any two transducers used for measurement of nuclear radiation.
Q.18	Define the following terms: 1) Accuracy 2) Precision 3) Threshold 4) Transducer 5) Sensor
Q.19	Give the classification of electrodes & explain in detail with their application.
Q.20	Explain the construction & working of metal wire strain gauges with neat diagram.
Q.21	Explain Intraocular pressure measurement technique.
Q.22	Write a short note on Tonometry.
Q.23	Explain different types of noise in detail.
Q.24	Discuss the types of Piezoelectric materials & derive the equation for Piezoelectric voltage.
Q.25	Enlist various temperature transducers & explain RTDs in detail.
Q.26	Explain strain gauge Displacement transducer in detail.
Q.27	Explain working principle, construction & characteristics of thermistors.
Q.28	With neat diagram explain thermocouple in detail.
Q.29	Explain capacitive displacement transducer in detail with its merits & demerits.
Q.30	Explain Transient type Ultrasonic blood flow transducer.
Q.31	Explain Phonocardiograph with block diagram.
Q.32	Write a short note on Enzyme based glucose sensor.
Q.33	Write a short note on Smart Sensors.
Q.34	Write a short note on microelectrodes.
Q.35	Explain the use of strain gauge transducer for blood pressure measurement.

Q.36	Explain the principle and working of GM counter with neat sketch.
Q.37	Explain the principle and working of optical pyrometer.
Q.38	Explain construction & working of Ag/AgCl electrode.
Q.39	Explain the use of fiber optic pressure transducer for intracranial pressure measurement in new born.
Q.40	Explain Air flow transducer for Fleish pneumotachometer.