ABES ENGINEERING COLLEGE, GHAZIABAD
Department of Mechanical Engineering 2022-23
Fundamentals of Mechanical Engineering (BME 101)

QUESTION BANK	Unit V
Topic	**Introduction to Measurement and Mechatronics**
Course	**B. Tech**
Semester	**I**

Q. NO.	Short Types Question (2 Marks)
1.	Differentiate between accuracy and precision.
2.	What is a transducer? Describe with any one example.
3.	What are primary and secondary types of measurements?
4.	What are the main elements of a transducer?
5.	What are direct and indirect methods of measurement?
6.	Write any four mechanical actuator components.
7.	Differentiate between Active and passive transducers.
Q. NO.	**Long Types Question (7 Marks)**
8.	Briefly explain a Bourbon tube-based pressure measurement device.
9.	Differentiate between bonded and unbonded strain gauges systems.
10.	Differentiate between Autotronics, Bionics, and Avionics along with their Applications.
11.	Discuss the merits and demerits of mechatronics systems.
12.	What are various types of strain gauges? Explain their working in detail.
13.	Write short notes on the following: (1) Proving ring, (2) Prony brake dynamometer
14.	Discuss in detail about following components of mechanical actuation system, Kinematic Chains, Cam, Ratchet Mechanism.
Q. NO.	**Long Types Question (10 Marks)**
15.	Explain the Seeback effect and the working principle of thermocouples with help of a neat sketch. Also discuss their advantages and disadvantages.
16.	What are the parts of venturi meter? Derive a formula to measure the rate of flow of a liquid through venturi meter.
17.	Explain the working of pneumatic and hydraulic actuation systems with suitable diagrams.
18.	What are sensors and transducers? Explain the various types of transducers.
19.	Define Mechatronics. Write the advantages, disadvantages and applications of mechatronics.
20.	Differentiate between the absolute, gage and vacuum pressure. A manometer, shown in figure, is used to measure the pressure of a gas in a tank. The fluid used has a specific gravity of 0.85, and the manometer column height is 55 cm. If the local atmospheric pressure is 96 kPa, determine the absolute pressure within the tank.