

School of Engineering**B.TECH Mechanical Engineering
Semester End Examination - Jun 2024****Duration : 180 Minutes
Max Marks : 100****Sem IV - G2UA403T - BTME3022 - G2UB403T - Sensors and transducers**General Instructions*Answer to the specific question asked**Draw neat, labelled diagrams wherever necessary**Approved data hand books are allowed subject to verification by the Invigilator*

- 1) Define unit of mass preserved at international bureau of weight and measure at Severs near Paris. K1(2)
- 2) Explain the principle of operation and an application of a strain gauge. K2(4)
- 3) Explain the term LIDAR. Illustrate the Application, Advantages, Limitations and Challenges for the use of LIDAR in industrial areas. K2(6)
- 4) Mention the utilization of sensors in Intelligent manufacturing systems. How sensors are building an important role in success of Industry 4.0. K3(9)
- 5) Explain the working of Potentiometer transducer with neat schematic. "Consider a non - conducting liquid in a tank" develop level measurement system of it using a Potentiometer transducer. K3(9)
- 6) Compare and contrast the principles behind various sensor technologies such as resistive, capacitive, and inductive sensors. Evaluate their effectiveness in different applications. K5(10)
- 7) Analyse the function of Eddy current displacement sensors. How it is different from magnetic sensors. K4(12)
- 8) Explain the basic structure of LVDT and its operation. Also mention the advantages disadvantages and Application of LVDT. K5(15)
- 9) Decide a sensor selection framework for designing a smart home automation system. Consider factors such as sensor range, resolution, power consumption, and compatibility with existing communication protocols. Justify your choices based on the specific requirements of typical smart home applications. K5(15)
- 10) Develop the principle of anisotropic magneto resistive sensors. How is it used in sensing magnetic field? A metallic magneto resistor is placed in magnetic field with its length perpendicular to the field. How does the resistance vary with this field? K6(18)