MAR ATHANASIUS COLLEGE OF ENGINEERING, KOTHAMANGALAM

(Government Aided Autonomous Institution)

DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

First Sessional Examination August 2026

B24EE3T04: INSTRUMENTATION SYSTEMS

S5 EEE

Max. Marks :40 Time : 1 hr 30 min

Answer all questions

PART A (3 x 4=12 Marks)

1. Illustrate the concept of Feedback Transducer system with neat block diagram. [CO1]
2. State the primary function and operating principle of a magnetostrictive transducer. [CO1]
3. What is the working principle of an orifice meter? [CO2]
4. Explain how mechanical components and electrical circuits work together in a MEMS transducer with some applications. [CO2]

PART B (2 x 14=28 Marks)

5. Construct the dynamic response of zero-order, first-order, and second-order systems. Explain their governing equations and response characteristics. [CO1]

6. a) Explain the construction and working principle of an LVDT with a neat labeled diagram and name any three common engineering applications where LVDTs are used to measure physical parameters. (10 marks) [CO2]

   b) A resistance wire strain gauge uses a soft iron wire of small diameter. The gauge factor is+4.2, neglecting the piezoresistive effects. Calculate the Poisson's ratio. (4 marks) [CO2]

Students will be able to:
CO1: Understand and comprehend the concepts of measurement systems, and classification of transducers.
CO2: Understand the principle and construction of various sensors and transducers suitable for industrial applications.

VISION

Endeavour to Ensure Excellence

MISSION

Mould technically competent and morally strong Engineers
Achieve dynamic leadership through quality Education
Cater to the needs of industry and community through Emulation
Empower the students to serve the nation with Dedication