MAR ATHANASIUS COLLEGE OF ENGINEERING, KOTHAMANGALAM
(GOVERNMENT AIDED AUTONOMOUS ENGINEERING COLLEGE)
DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

FIRST SESSIONAL EXAMINATION AUGUST 2026

B24EE3P11 BIOMEDICAL INSTRUMENTATION (ELECTIVE I) (S5 EA & EB)

Max. Marks 40 Time: 1.5 Hours

Answer all questions from Part A and Part B

PART A (4X3=12 Marks)

1. What is the purpose of a biopotential electrode? List any four types of biopotential electrodes. (CO1)
2. List suitable techniques to minimise noise and artefacts. (CO1)
3. Define a transducer. State its role in biomedical instrumentation. (CO2)
4. Define blood pressure. Distinguish between systolic and diastolic pressure. (CO2)

PART B (2X14=28 Marks)

5. a) Illustrate the generation of resting potential, action potential and the propagation of action potential with the action potential waveform. (CO1) (10 marks)

   b) Explain the opening and closing of heart valves during the cardiac cycle. (CO1) (4 marks)

6. a) Explain in detail a non-invasive BP measurement method that uses oscillations in artery walls. (CO2) (7 marks)

   b) Describe the technique of percutaneous insertion for direct blood pressure measurement. (CO2) (7 marks)

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Student will be able to:
CO 1: Understand basic human physiological systems and bioelectric signal generation and acquisition.
CO 2: Explain biomedical transducers and their application in blood pressure and cardiac measurements.

VISION

Endeavour to Ensure Excellence

MISSION

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