

**CERTIFICATE IN CONDITION
MONITORING (CCOMO)**

Term-End Examination

June, 2026

MET-002 : MECHATRONICS

Time : 3 Hours

Maximum Marks : 70

Note : Attempt any **seven** questions. All questions carry equal marks.

1. Briefly explain the principle of operation of photoelectric sensors and fluid flow switch with neat diagrams. 10
2. Describe the working of the following pumps with neat diagrams : 10
 - (i) Gear pump
 - (ii) Vane pump
3. Explain briefly the various types of check valves used in Hydraulic and Pneumatic systems. 10

4. Describe various methods of controlling the speed of a DC motor. 10
5. What is inverse kinematics ? Discuss the importance of path planning. 10
6. Explain closed loop and open loop control systems with block diagrams. 10
7. Define the term process control. Draw and explain the block diagram of a process control system. 10
8. Describe the working principle of hydraulic motor and its applications. 10
9. What is temperature transducers ? Explain the principle of thermocouple and its applications. 10
10. Write short notes on any *two* of the following : 5+5
 - (a) Pilot operated valve
 - (b) Resistance temperature detectors (RTD)
 - (c) Thermistor
 - (d) Stepping motors

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