

**Government College of Engineering, Aurangabad**  
(An Autonomous Institute of Government of Maharashtra)

**B.E Mechanical Examination**

End Semester Examination

ME443: MECHATRONICS

Time: Three Hours

Max. Marks: 60

*“Verify the course code and check whether you have got the correct question paper”*

N.B.: -

*1 All questions are compulsory.*

*2 Figures to the right indicate full marks.*

*3 Assume suitable data if necessary and state it clearly.*

*4 Use of Non-programmable Calculator is allowed.*

- Q.1 Attempt any TWO
- i) Explain the term mechatronics with block diagram and write its applications (06)
  - ii) What are different torque measuring methods? Explain any one (06)
  - iii) What is optical sensor? Draw its diagram and discuss the principle of operation (06)
- Q.2 Attempt any Two
- i) Explain briefly Pneumatic circuit with one industrial example (06)
  - ii) Explain principle of operation of stepper motor. In what way the stepper motor is advantageous than A.C and D.C. motor (06)
  - iii) What is function of control valve? Explain with sketch any one control valve (06)
- Q.3 Attempt any Two
- i) Giving a neat block diagram, explain the operation of A.C signal conditioning system (06)
  - ii) Write short note on microprocessor based data acquisition system (06)
  - iii) List the important features and applications of data acquisition system (06)
- Q.4 Attempt any Two
- i) What are different logic gates? Explain any two (06)
  - ii) What is microprocessor? Explain briefly various parts of a it (06)
  - iii) Discuss instruction cycle, machine cycle and state of microprocessor (06)
- Q.5 Attempt any Two (Write short note on)
- i) Artificial Intelligence (06)
  - ii) Fuzzy logic in mechatronics system (06)
  - iii) Uses of robots (06)