

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

B.E Mechanical Examination

End Semester Examination

ME403: MECHATRONICS

Time: Three Hours

18 NOV 2016

Max. Marks: 60

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

N.B.: -

5. *All questions are compulsory.*
6. *Figures to the right indicate full marks.*
7. *Assume suitable data if necessary and state it clearly.*
8. *Use of Non-programmable Calculator is allowed.*

- Q.1** Attempt any TWO
- i) Define and explain the term mechatronics with block diagram (06)
 - ii) What are different vibration measuring methods? Explain any one (06)
 - iii) What is load cell? Draw a strain gauge based load cell and discuss the principle of operation. (06)
- Q.2** Attempt any Two
- i) Explain briefly Hydraulic 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 direction control valve? Explain with sketch briefly (06)
- Q.3** Attempt any Two
- i) Giving a neat block diagram, explain the operation of D.C.signal conditioning system (06)
 - ii) Write short note on Op-amplifier (06)
 - iii) Why a data acquisition system is necessary? 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 microcontroller? Explain briefly various parts of a it (06)
 - iii) Discuss instruction cycle ,machine cycle and state of microprocessor (06)
- Q.5** Attempt any Two
- i) Explain point to point robot control and XYZ robot control (06)
 - ii) Elaborate PLC programming by ladder diagram with one industrial process (06)
 - iii) Write short note on use of CIM in mechatronics system (06)