

B.Voc. Automotive Mechatronics
Subject: Basics of Mechatronics
Subject Code: ABME106
Semester: 2nd
Batch: 2018-21
Theory (External): 35
Time: 03 hours

Instructions to the Students

1. This Question paper consists of two Sections. All sections are compulsory.
2. **Section A** comprises 10 questions of objective type in nature. All questions are compulsory. Each question carries 1 mark.
3. **Section B** comprises 8 essay type questions out of which students need to do any 5. Each question carries 5 marks.
4. Read the questions carefully and write the answers in the answer sheets provided.
5. Do not write anything on the question paper.
6. Wherever necessary, the diagram drawn should be neat and properly labelled

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SECTION –A (OBJECTIVE TYPE QUESTIONS)

(10x1=10 Marks)

Q1 Which of the following component is not part of Mechatronics?

- a) Sensors
- b) Control Unit
- c) Actuators
- d) Computer

Q2 Mechatronics is interdisciplinary branch involving

- a) Mechanical and Electronics Engineering
- b) Mechanical and Electrical Engineering
- c) Mechanical and Computer Engineering
- d) Mechanical, Electronics and IT Engineering

Q3 Sensors in a Mechatronics systems are:

- a) Input Unit
- b) Processing Unit
- c) Output Unit
- d) All of the above

Q4 Actuators in a Mechatronics systems are:

- a) Input Unit
- b) Processing Unit
- c) Output Unit
- d) All of the above

Q5 PLC Stands for

- a) Programmable Logic Controller
- b) Pneumatic Logic Controller
- c) Periodic Logic Controller
- d) Peripheral Logic Controller

- Q6 Pneumatic systems usually in the range of power of:
- a) < 1 hp
 - b) 2 to 3 hp
 - c) 1 to 2 hp
 - d) > 4 hp
- Q7 An OR function implemented in Ladder Logic uses
- a) Normally closed contact in series
 - b) Normally closed contact in parallel
 - c) Normally open contact in series
 - d) Normally open contact in parallel
- Q8 An AND function implemented in Ladder Logic uses
- a) Normally closed contact in series
 - b) Normally closed contact in parallel
 - c) Normally open contact in series
 - d) Normally open contact in parallel
- Q9 A NOT function implemented in Ladder Logic uses
- a) Normally Closed Contact
 - b) Normally Open Contact
 - c) Both Contact
 - d) None of the above
- Q10 The rotor of a stepper motor has no
- a) Windings
 - b) Commutator
 - c) Brushes
 - d) All of the mentioned

SECTION –B (ESSAY TYPE QUESTIONS)

(5x5=25 Marks)

- Q1 What do you understand by Mechatronics? Explain basic components of mechatronics system with the help of suitable block diagram.
- Q2 Describe the characteristics of a sensor. Explain principle of eddy current and temperature sensors.
- Q3 Explain various timers and counters of a PLC.
- Q4 Explain construction of a stepper motor in detail. Explain its working principle.
- Q5 Explain the design process of a mechatronics system with the help of suitable example.
- Q6 Differentiate between Stepper and Servo motors. Discuss advantages and disadvantages of both motors.
- Q7 Discuss basic command of PLC with suitable example.
- Q8 Describe LVDT and Hall Effect Sensors.

-----END OF PAPER-----