

Open Elective-II : Mechatronics

P. Pages : 2

Time : Three Hours



PSM/KW/23/2861

Max. Marks : 70

- Notes :
1. All questions carry marks as indicated.
 2. Solve Question 1 OR Questions No. 2.
 3. Solve Question 3 OR Questions No. 4.
 4. Solve Question 5 OR Questions No. 6.
 5. Solve Question 7 OR Questions No. 8.
 6. Solve Question 9 OR Questions No. 10.
 7. Assume suitable data whenever necessary.
 8. Diagrams should be given whenever necessary.
 9. Illustrate your answers whenever necessary with the help of neat sketches.
 10. Use of non programmable calculator is permitted.

1. a) What are the key elements of a typical mechatronics system? Explain with help of fig. 7
- b) Compare traditional design with mechatronics design. 7

OR

2. a) Explain difference between mechanical cam & electronic cam. 7
- b) What are various steps involved in designing of mechatronics system. 7
3. a) Short note on position sensor. 7
- b) Explain in detail accelerometer & gyroscope. 7

OR

4. a) Define sensors & explain working of any one in detail. 7
- b) Explain principle & working of eddy current proximity sensor. 7
5. a) Explain in detail Actuators. 7
- b) Explain in detail stepper motor. 7

OR

6. a) State the working of DC servomotor. State the application of DC servomotor. 7
- b) If a stepper motor has step angle of 7.5° . What digital input rate is required to produce a rotation of 10rev/sec ? 7

7. a) What are basic components of Automation? 7
b) Explain ladder logic programming. 7

OR

8. a) Draw an architecture for PLC 7
b) Explain SCADA in detail. 7
9. a) Explain in detail about industry 4.0 in biomedical systems. 7
b) Explain automotive electronics in mechatronics. 7

OR

10. a) What is industry 4.0? Explain in detail. 7
b) Explain industry 4.0 in defense system. 7
