

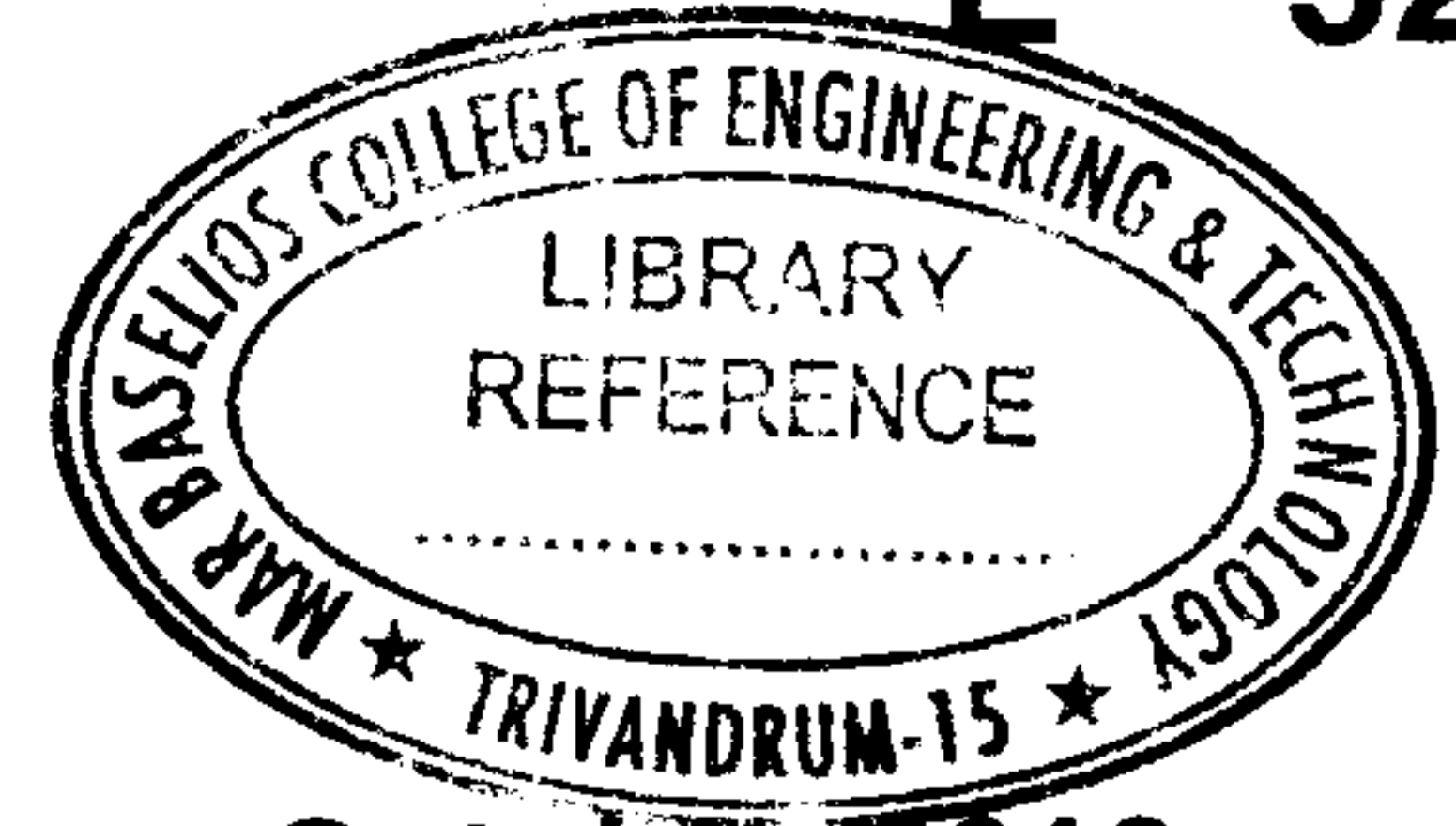


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E – 5274

Reg. No. :

Name :



**Seventh Semester B.Tech. Degree Examination, October 2018
(2013 Scheme)
13.702 : Mechatronics (MPSU)**

Time : 3 Hours

Max. Marks : 100

Instructions : Answer *all* questions in the Part – A and *any one full* question from *each* Module in Part – B.

PART – A

1. What is Mechatronics ? Write any two applications of Mechatronics.
2. List any four requirements of Piezo electric sensors used in Mechatronics.
3. State the advantages and limitations of CNC machines.
4. Mention the requirements of control system.
5. Draw the line diagram of pressure control valve.
6. Write any applications of directional control valve.
7. State the significant role of gyroscope in MEMS.
8. What is latching in PLC ladder logic ?
9. What are the different types of servo and stepper motors used in mechatronics robotics ?
10. List any four applications of CID cameras. **(10×2=20 Marks)**

PART – B

Module – I

11. i) With the help of neat diagrams explain resolvers and synchro's used in Mechatronics engineering. **20**
ii) Explain different types of Piezoelectric sensors.
- OR
12. i) Explain the servo control systems applications. **20**
ii) Explain different types of sensor characteristics used in Mechatronics field of engineering.

P.T.O.



Module – II

13. i) Briefly explain the different types of hydraulic and pneumatic actuators. **20**
ii) Explain various standard symbols used in developments of hydraulic circuits.

OR

14. i) Explain various standard symbols used in development of pneumatic circuits. **20**
ii) With the help of neat diagrams explain MEMS fabrication process.

Module – III

15. i) Explain different techniques used in design of modern CNC machines. **20**
ii) Explain the working of anti-friction bearing mechanisms.

OR

16. i) Explain typical elements of open and closed loop control systems. **20**
ii) Explain the development of simple ladder programs for specific purposes.

Module – IV

17. With the help diagrams explain the working and advantages of the following :
i) Charge Coupled Device (CCD)
ii) Charge Injection Device (CID). **20**

OR

18. With the help of diagrams explain the working and advantages of different types of image processing techniques. **20**
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