U.S.N.										

B. M. S. College of Engineering, Bengaluru - 560019

Autonomous Institute Affiliated to VTU

September / October 2023 Supplementary Examinations

Programme: B.E. **Semester: VII**
Branch: Mechanical Engineering **Duration: 3 hrs.**
Course Code: 20ME7DCMCT **Max Marks: 100**
Course: Mechatronics **Date: 23.09.2023**

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

UNIT - I

1. a) Discuss the constituent of a Mechatronics system with neat sketches. How does a Microprocessor based spring mass system function? **10**

   b) With the help of a case study, explain how the mechatronics is helping in monitoring the tool wear. **10**

UNIT - II

2. a) With neat sketches, explain the working of **12**

   (i) Hall effect sensor (ii) Inductive Proximity switch

   b) Explain the principle of pyroelectricity and hence describe the Construction and working of a Pyroelectric sensor. **08**

OR

3. a) Explain the principle of 555 timer with PIN diagram. **10**

   b) What is a photo diode? Discuss the construction and working of photo diode detector. **10**

UNIT - III

4. a) Discuss the mechanism involved in automatic tool changer with a neat sketch. **10**

   b) Discuss the working principle of AC motors. With neat sketch, explain the working principle of synchronous motors. **10**

UNIT - IV

5.	a)	Discuss the operation of a pressure reducing valve with relevant sketch.	**08**
	b)	Discuss the working principle of combination Pump with neat sketch. List some of the general applications of Hydraulic Pumps.	**12**

OR

6.		Design and discuss the hydraulic circuit for furnace door control.	**20**

UNIT - V

7.	a)	Discuss the role of air lubricator with a neat sketch in air treatment process.	**10**
	b)	Discuss the working principle of double acting cylinder in pneumatic system.	**10**

*****