**BME515A**

**USN** | | | | | | | | | | |

# Model Question Paper 2022-23 (CBCS Scheme)
# Fifth Semester B.E. Degree Examination (Mechanical Engineering)
# MECHATRONICS

**TIME: 03 Hours** **Max. Marks: 100**

**Note: 01. Answer any FIVE full questions, choosing at least ONE question from each MODULE**

| | | Module -1 | Bloom's Taxonomy Level | Marks | CO |
|---|---|---|---|---|---|
| **Q.01** | **a** | Define Mechatronics. Explain with block diagram, the basic elements of feedback control systems. | **L2** | **10** | **CO1** |
| | **b** | Explain with neat block diagram, the working of an automated washing machine. | **L3** | **10** | **CO1** |
| | | **OR** | | | |
| **Q.02** | **a** | Explain the working principle of hall effect sensor. Discuss how a hall effect sensor is used in fluid level detector. | **L2** | **10** | **CO1** |
| | **b** | Compare Transducer and Sensor based on various factors. | **L3** | **10** | **CO1** |
| | | **Module-2** | | | |
| **Q.03** | **a** | What is a filter? How are filters classified? Write brief note on types of filters. | **L2** | **10** | **CO2** |
| | **b** | With a neat sketch, explain the Data acquisition system. | **L3** | **10** | **CO2** |
| | | **OR** | | | |
| **Q.04** | **a** | With a neat circuit diagram, explain Relays and Solenoids | **L2** | **10** | **CO2** |
| | **b** | With a neat sketch, explain the working of DC brushed motors. What are its advantages? | **L3** | **10** | **CO2** |
| | | **Module-3** | | | |
| **Q. 05** | **a** | Explain briefly the following forms of memory units<br>i) ROM; ii) RAM; iii) PROM; iv) EPROM; v) EEPROM; | **L2** | **10** | **CO3** |
| | **b** | Difference between Microprocessor and Microcontroller | **L3** | **10** | **CO3** |
| | | **OR** | | | |
| **Q. 06** | **a** | Explain with neat layout the internal architecture of INTEL 8085A microprocessor. | **L2** | **10** | **CO3** |
| | **b** | Define buses? List the classification of buses and explain anyone. | **L3** | **10** | **CO3** |
| | | **Module-4** | | | |
| **Q. 07** | **a** | Define PLC? With a neat diagram, explain the basic structure of PLC. | **L2** | **10** | **CO4** |
| | **b** | Explain in detail the selection criteria for PLC. | **L3** | **10** | **CO4** |
| | | **OR** | | | |
| **Q. 08** | **a** | With a neat block diagram, explain Extending and retracting a pneumatic piston using latches. | **L2** | **10** | **CO4** |
| | **b** | With a neat sketch, explain the control of vibrating machine using PLC. | **L3** | **10** | **CO4** |
| | | **Module-5** | | | |
| **Q. 09** | **a** | Explain any two most commonly used antifriction guideways in CNC machine. | **L2** | **10** | **CO5** |
| | **b** | Explain the working of a hydrostatic bearing with a neat sketch. What are its advantages? | **L3** | **10** | **CO5** |
| | | **OR** | | | |
| **Q. 10** | **a** | Briefly Discuss a Traditional and Mechatronics design concepts. | **L2** | **10** | **CO5** |
| | **b** | Explain movements of a pick and place robot with a suitable sketch. | **L3** | **10** | **CO5** |