USN

Sixth Semester B.E. Degree Examination, June/July 2024
Mechatronics

Time: 3 hrs.   Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1   a. Define Mechatronics. Briefly explain Mechatronics Design Process.   (10 Marks)
    b. Explain with block diagram, the working of Antilock Breaking System (ABS) Control.
                                                                                          (10 Marks)

OR

2   a. Define sensor and transducers. Write the classification of transducers.   (10 Marks)
    b. Explain with a neat sketch (i) LVDT   (ii) Proximity Switches   (10 Marks)

Module-2

3   a. Define signal conditioning. Explain Multichannel Data Acquisition System (DAQS).
                                                                                          (10 Marks)
    b. What is a filter? How are filters classified? Write brief note on types of filter. (10 Marks)

OR

4   a. Define Solenoids. Explain two types of solenoids and mention their applications. (10 Marks)
    b. Explain the types of Brush type D.C. motors, with filed coils with neat sketch.   (10 Marks)

Module-3

5   a. Define Microprocessor. Explain with neat block diagram, the general form of Microprocessor system.   (12 Marks)
    b. List the difference between Microprocessor and Microcontroller.   (08 Marks)

OR

6   a. With a neat sketch, explain 8085A Microprocessor Architecture.   (10 Marks)
    b. Explain briefly the following forms of memory units:
        (i) ROM   (ii) PROM   (iii) EPROM   (iv) EEPROM   (v) RAM   (10 Marks)

Module-4

7   a. Define PLC (Programmable Logic Controller). Explain with a neat diagram working of a PLC.   (10 Marks)
    b. Explain in detail the criteria used for selection of a PLC.   (10 Marks)

OR

8   a. Briefly explain the basic structure of ladder logic diagram.   (10 Marks)
    b. Explain the control of two pneumatic pistons, with a neat sketch.   (10 Marks)

Module-5

9   a. Explain friction guide ways and antifriction guide ways.   (10 Marks)
    b. Explain the working of hydrodynamic bearing with neat sketch.   (10 Marks)

OR

10 a. Explain the different stages of mechatronic design process.   (10 Marks)
    b. Explain with neat sketch working of automatic car park barrier.   (10 Marks)