CBCS SCHEME

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18ME744

Seventh Semester B.E. Degree Examination, Feb./Mar. 2022
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 various evolution stages of mechatronics. **(10 Marks)**

b. Explain with block diagram the working of engine management system. **(10 Marks)**

OR

2 a. Define transducer. Explain primary and secondary transducers with examples. **(10 Marks)**

b. What is hall effect? Explain the working of hall effect sensors with neat sketch and mention their applications. **(10 Marks)**

Module-2

3 a. Define signal conditioning. Explain any four methods adopted for signal conditioning. **(10 Marks)**

b. What is the significance of operational amplifiers? How it is used as non-inverting amplifier? **(10 Marks)**

OR

4 a. Define Solenoids. Explain two types of solenoids and mention their applications. **(10 Marks)**

b. With neat sketch, explain the construction and working principle of permanent magnet DC motor. **(10 Marks)**

Module-3

5 a. Explain with neat block diagram, the general form of microprocessor system. **(10 Marks)**

b. What is microcontroller? Explain the classification of micro controllers. **(10 Marks)**

OR

6 a. What are the different types of registers used in 8085 microprocessor? Explain with block diagram. **(10 Marks)**

b. What are buses? Explain different types of buses. **(10 Marks)**

Module-4

7 a. Define PLC (Programmable Logic Controller). Explain with a neat diagram working of a PLC. **(10 Marks)**

b. Briefly explain the basic structure of ladder logic diagram. **(10 Marks)**

OR

8 a. Explain various requirements for selecting a PLC. **(10 Marks)**

b. List the applications of PLC's in:
(i) Industries (ii) Power Stations (iii) Education sector
(iv) Domestic (v) Commercial sectors **(10 Marks)**

Module-5

9 a. Write notes on:
(i) Hydrostatic bearings
(ii) Linear motion guide ways (linear bearing with balls) **(10 Marks)**

b. Briefly explain the elements of open and closed loop control systems with neat block diagram. **(10 Marks)**

OR

10 a. Explain the different stages of mechatronic design process. **(10 Marks)**

b. List the differences between traditional and mechatronic design process. **(10 Marks)**

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