

B.Voc Mechatronics
Subject: Design of Mechatronics
Subject Code: MTE-702
Semester: Fifth
September 2022
Theory (External): 35 Marks
Time: 03 Hours

Instructions to the Students

1. This question paper consists of two sections. All sections are compulsory.
2. Section A comprises 10 questions of objective type in nature. All questions are compulsory. Each question carries 1 mark.
3. Section B comprises 8 essay type questions out of which students need to do any 5. Each question carries 5 marks.
4. Read the questions carefully and write the answers in the answer sheets provided.
5. Do not write anything on the question paper.
6. Wherever necessary, the diagram drawn should be neat and properly labelled.

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Roll Number

SECTION -A (OBJECTIVE TYPE QUESTIONS)
(10 x 1 = 10 Marks)

- A. What is mechatronics?
- B. Write four examples of mechatronic systems.
- C. What are important advantages of mechatronics systems?
- D. What is experimental modelling?
- E. What strategies are used to achieve the simplification of a basic model?
- F. What are mathematical models?
- G. What are the basic building blocks of electrical systems?
- H. Autofocus camera is a mechatronic system. Comment on it.
- I. How does a micro sensor work?
- J. What are the applications of fuzzy logic in mechatronics?

SECTION -B (ESSAY TYPE QUESTIONS)
(5 x 5 = 25 Marks)

- Q1 Discuss the key elements of mechatronics.
- Q2 Explain the mechatronics design process with a block diagram.
- Q3 Differentiate between bottom-up design and top-down design process highlighting their advantages and disadvantages.
- Q4 Discuss the following model development methods:
 - (i) Structural modelling
 - (ii) Physical modelling

- Q5 Explain briefly the basic building blocks of a mechanical system.
- Q6 Discuss the design aspects of a pick and place robot in terms of the various mechatronic elements involved.
- Q7 Explain pH control system with neat sketch.
- Q8 Write short note on artificial intelligence in mechatronics.

END OF PAPER