Reg. No. : ☐☐☐☐☐☐☐☐☐☐☐☐

| Question Paper Code:U5104 |

M.E. DEGREE EXAMINATION, NOV2024

Professional Elective

CAD / CAM

21PCD504-MECHATRONCIS IN MANUFACTURING SYSTEM

(Regulations 2021)

Duration: Three hours   Maximum: 100 Marks

Answer ALL Questions

PART - A (5 x 20 = 100 Marks)

1. (a) Explain in detail the role and function of control systems in   CO1- U   (20)
         Mechatronics.

                                    Or

    (b) Discuss in detail the different types of measurement systems   CO1- U   (20)
         utilized in robotic applications.

2. (a) In which applications are light sensors commonly used? Explain   CO2- Ap   (20)
         your answer, detailing the working principles of light sensors in
         these applications.

                                    Or

    (b) Discuss the types of sensors used for measuring temperature and   CO2- Ap   (20)
         flow levels. Explain their working principles and provide neat
         sketches.

3. (a) Identify and recommend a suitable microprocessor for a personal CO4- An   (20)
         computer. Explain your choice and conclude with a neat sketch of
         the microprocessor architecture.

                                    Or

    (b) What components would you suggest for designing a traffic light   CO4- An   (20)
         control system? Support your answer with examples to illustrate
         their functionality.

4. (a) Outline a methodology for selecting a Programmable Logic   CO5- An   (20)
        Controller (PLC) for a specific application, explain in detail the key
        criteria and considerations involved in the selection process.

                                    Or

    (b) Describe the main components of a Programmable Logic Controller   CO5- An   (20)
        (PLC) using a block diagramfor a specific application, and provide
        a short note on jump control in PLCs, including an explanation with
        a ladder diagram

5. (a) Explain the application of mechatronics in Anti-lock Braking   CO1- U   (20)
        Systems (ABS), emphasizing its key components, operational
        principles, and benefits.

                                    Or

    (b) How can mechanical systems be effectively modeled using   CO1- U   (20)
        mechatronics principles?

U5104