Seat No.: _____   Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–VII (NEW) EXAMINATION – WINTER 2022

Subject Code:2171903   **Date:16-01-2023**
Subject Name:Computer Aided Manufacturing
Time:10:30 AM TO 01:00 PM   **Total Marks:70**
Instructions:
   1. **Attempt all questions.**
   2. **Make suitable assumptions wherever necessary.**
   3. **Figures to the right indicate full marks.**
   4. **Simple and non-programmable scientific calculators are allowed.**

Q.1	(a)	What is CIM? State the components of CIM	03
	(b)	State the benefits of CAM.	04
	(c)	Discuss the concept of CIM wheel and benefits derived from CIM.	07
Q.2	(a)	Explain the axis designation in a CNC milling machine.	03
	(b)	Explain clearly the difference between NC, CNC and DNC machine.	04
	(c)	Describe with sketch the working and construction of recirculating ball screw used in CNC machine tools.	07
		OR	
	(c)	Explain with examples i) Drilling canned cycle ii) Cutter radius compensation	07
Q.3	(a)	Draw and explain PLC architecture.	03
	(b)	Explain the concept of a composite part in GT.	04
	(c)	What is a PLC? Explain major components of a PLC. List various applications of PLC.	07
		OR	
Q.3	(a)	Explain the function of AGV in automated material handling.	03
	(b)	What are the parts classification methods in GT? Explain any one.	04
	(c)	What are canned cycles? What is the difference between canned cycle and subroutine? How are they useful in writing part programs	07
Q.4	(a)	Explain MRP-I.	03
	(b)	What is FMS? Explain the basic components of FMS.	04
	(c)	Explain the types of flexibilities of FMS? Discuss the various factors on which these flexibilities depend?	07
		OR	
Q.4	(a)	Explain MRP-II.	03
	(b)	Explain in brief about the JIT philosophy.	04
	(c)	What are the major functions of process planning? What are the main problems associated with manual process planning?	07
Q.5	(a)	State the different elements of a robot.	03
	(b)	What are the various types of grippers used in robots?	04
	(c)	Differentiate between a SCARA and a gantry robot.	07
		OR	
Q.5	(a)	Explain the degrees of freedom of wrist of robot.	03
	(b)	Sketch and explain cylindrical and SCARA configuration of industrial robot, showing work envelope.	04
	(c)	How are sensors useful to robots? Explain visual and tactile sensors used in a robot.	07