Enrolment No./Seat No_____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII EXAMINATION – SUMMER 2025

Subject Code:2171903 Date:08-05-2025

Subject Name:Computer Aided Manufacturing

Time:02:30 PM TO 05:00 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.**

			Marks
Q.1	**(a)**	Describe in short, the types of manufacturing system used in industries.	**03**
	(b)	Explain Components of CIM.	**04**
	(c)	Write a complete part program for the component shown in fig.1. The raw material MS Φ32 X 50 mm, cutting speed V=40 m/min and feed-0.1 mm/rev.	**07**
Q.2	**(a)**	What is Part Family? List different methods used to make part families.	**03**
	(b)	Explain clearly the difference between NC, CNC and DNC machine.	**04**
	(c)	Write a manual part program for profile milling of the job as shown in fig 2. All dimensions are in mm. Assume suitable tools and cutting parameter for the manufacturing of the job.	**07**
		OR	
	(c)	List various feedback devices used in CNC machine. Explain working principle of Rotary encoder with neat sketch.	**07**
Q.3	**(a)**	Differentiate clearly between GT and FMS.	**03**
	(b)	Explain in detail composite part concept.	**04**
	(c)	Why is part classification and coding required in GT. Explain OPTIZ system of coding?	**07**
		OR	
Q.3	**(a)**	What is modal and non-modal code? Give example of each.	**03**
	(b)	List essential elements of a PLC system.	**04**
	(c)	Explain the types of AS/RS and its applications.	**07**
Q.4	**(a)**	Describe the terms with reference to Robot: 1. Payload, 2. Work envelop, 3. Wrist motions: Roll, Pitch and Yaw	**03**
	(b)	With a neat sketch classify different robot configurations.	**04**
	(c)	Explain major functions of process planning and main problems associated with manual process planning.	**07**
		OR	
Q.4	**(a)**	Differentiate between a SCARA and a gantry robot.	**03**
	(b)	Write a brief note on position sensors used in robots.	**04**
	(c)	Explain with neat sketch the various types of layouts used in FMS design and their applications.	**07**
Q.5	**(a)**	Explain the role of CMM in Computer Aided Quality Control.	**03**
	(b)	Explain concept of JIT. List various advantages of JIT in manufacturing.	**04**
	(c)	Describe the methods for programming robots. What are the advantages of each method?	**07**

OR

Q.5	**(a)**	What are different elements of a CMM?		**03**
	(b)	Draw the structure of an MRP system.		**04**
	(c)	What is computer integrated production management system? Explain with neat flow chart		**07**

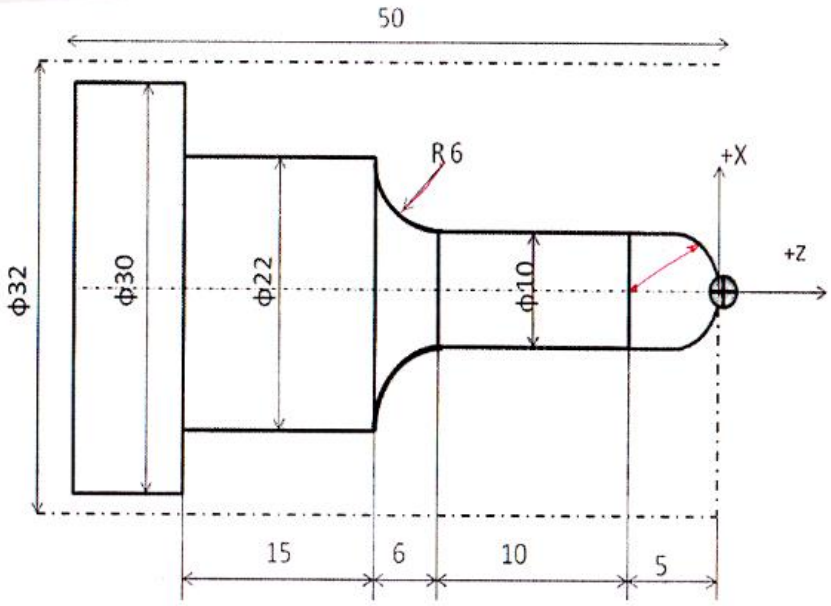

Fig.1

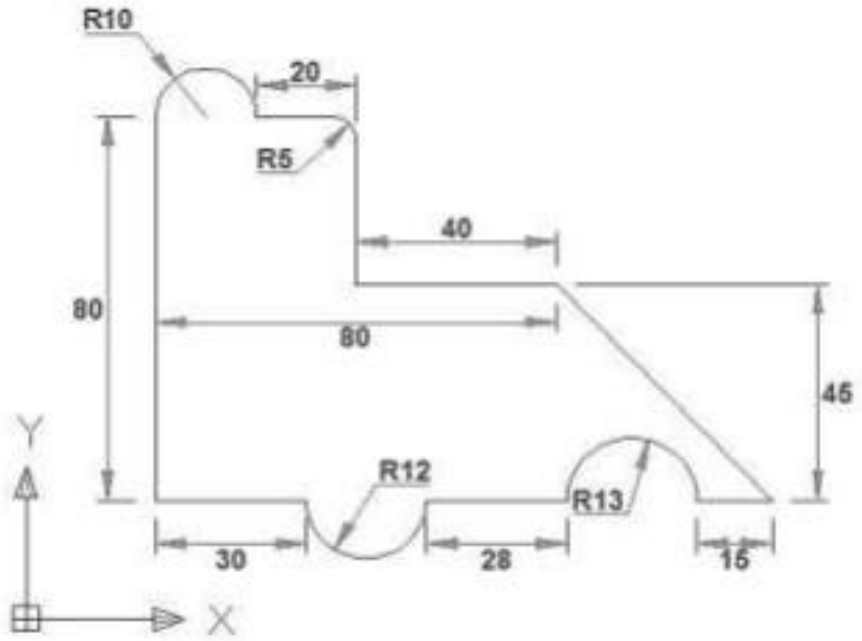

Fig.2

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