Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME - SEMESTER– II (Old course)• REMEDIAL EXAMINATION – SUMMER 2015

Subject Code: 1725002 **Date:13/05/2015**

Subject Name: Computer-Integrated Manufacturing

Time: 02:30 pm to 5:00 pm **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks**
4. **Abbreviations have usual meaning.**

Q.1 **(a)** Classify the different types of manufacturing explaining each type clearly. **07**

(b) Explain how a closed-loop positioning control system functions in an NC machine using a diagram. State advantages and limitations. **07**

Q.2 **(a)** Explain the concept of computer-integrated manufacturing using CIM wheel. **07**

(b) What is an AGVS? Name three categories of it. What features distinguish self-guided vehicles from conventional AGVs? **07**

OR

(b) What are the basic components of an FMS. Explain any one in detail. **07**

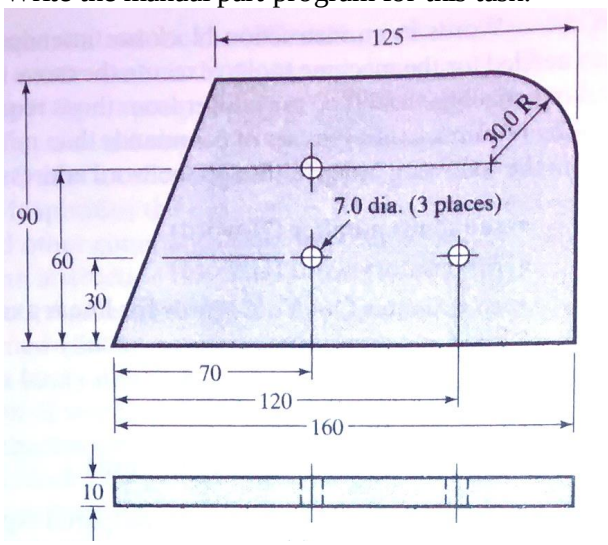
Q.3 **(a)** Discuss the problems inherent in conventional NC which motivated the development of CNC. **07**

(b) Describe the four basic components of a DNC system. How does it differ from a CNC system? **07**

OR

Q.3 **(a)** The workpart shown in figure is to be profile milled (only finish cut). The part is fixtured so that its top surface is 40 mm above the surface of the machine tool table. Thus, the origin of the axis system will be 40 mm above the table surface. A 20-mm diameter end mill with four teeth will be used. Throughout the machining sequence, the bottom tip of the cutter will be positioned 25 mm below the part top surface (Z = --25 mm). The cutter will be operated at a surface speed of about 1.0 m/sec and a feed rate = 0.20 mm/tooth. **07**

Write the manual part program for this task.



(b) Explain, using syntax, the following with reference to manual part programming: G92, G42, G02, G10, G01. What are EIA and ISO regarding punched tapes used on an NC machine? **07**

Q.4	**(a)**	Discuss the types of FMS. Why is each FMS custom engineered or unique?	**07**
	(b)	Write a detailed note on Automated Storage and Retrieval Systems.	**07**

OR

Q.4	**(a)**	Explain the features and capabilities of a horizontal machining centre which render it as a standard module for an FMS handling prismatic workpieces.	**07**
	(b)	Explain the concept of group technology when applied to FMS.	**07**
Q.5	**(a)**	Discuss, in brief, the factors that have led to the development of the CIM concept.	**07**
	(b)	State true or false or do as directed: a. Cellular manufacturing is concerned with manufacture of products made of cellular materials. b. FMS technology is limited to machining of metal components and their assembly. c. COMPACT II is a software for material handling. d. CNC software is another name for part programming. e. APT is an acronym for _____. f. ROI is an acronym for _____. g. Name three companies that produce and market machining centers.	**07**

OR

Q.5	**(a)**	Explain the meaning of the terms data, database, DBMS, and RDBMS. What is the need of database for a manufacturing company?	**07**
	(b)	Brief, using figures, about the hierarchical-, network-, and relational-data models employed for manufacturing.	**07**

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