Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC - SEMESTER–VIII EXAMINATION – SUMMER 2016

Subject Code:X81903 Date:07/05/2016

Subject Name: Computer Integrated Manufacturing

Time:10:30 AM TO 01:00 PM Total Marks: 70

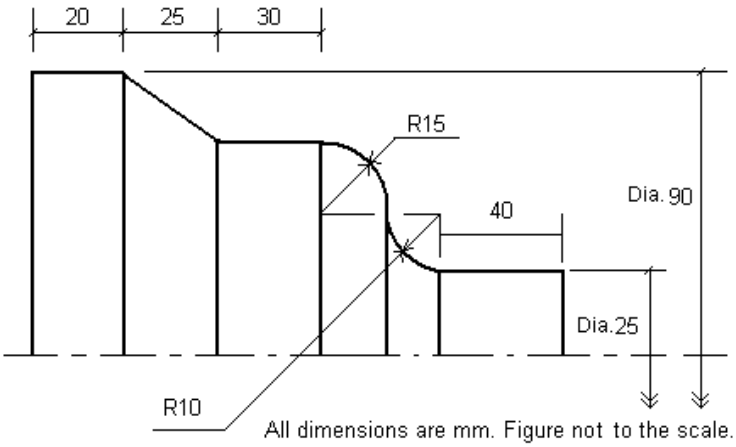
Instructions:

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

Q.1 **(a)** What do you understand by Numerical Control (NC) of CNC? Write various functions of CNC controller. Justify: "CNC machines are more suitable for job-shop and batch production". **07**

(b) Define CIM. Enlist area covered in CIM using block diagram. Write any eight potential benefits of CIM. **07**

Q.2 **(a)** Write a necessary tool positons to turn a machine component in absolute and incremental mode in tabular format as shown in the figure below. Size of raw stock is ϕ90 x 140 mm. Both the end faces are turned. Prepare the process plan. Highlight the important functions used in the CNC program of a component. **07**



(b) What is stick slip phenomenon in friction guide ways? Explain various methods of preloading of recirculating ball screws with a neat sketch. State advantages of using recirculating ball screw over conventional screw. **07**

OR

(b) Explain 5-bit absolute rotary optical encoder using a sketch. What is the difference between absolute and incremental encoders? **07**

Q.3 **(a)** Differentiate the following: **07**
i) Absolute and incremental programming ii) Stepper and servo motor

(b) What do you mean by robot configuration? Draw 2P, 2PR, and 3R configuration. **07**

OR

Q.3 **(a)** Name some contact and non-contact type of sensors. Define sensitivity and linearity in regard to robotic sensors. **07**

(b) What is manipulator? Which are different types of joints used in industrial robotics? Draw sketch of each joints showing the joint movement directions. **07**

Q.4 **(a)** Explain types of FMS. Which are the issues associated with its implementation. Differentiate between FMC and FMS. **07**

(b) Which are the design and manufacturing attributes in group technology? **07**

Explain Optiz part classification and coding system.

OR

Q.4	**(a)**	Define FMS. State reasons for FMS implementation. List main components of FMS.	**07**
	(b)	What is machine cell? How are machine cells formed in group technology? State benefits of Group Technology.	**07**
Q.5	**(a)**	Explain role of management in CIM	**07**
	(b)	What is PPC? State the problems associated with traditional PPC.	**07**

OR

Q.5	**(a)**	Explain role of manufacturing engineers in CIM	**07**
	(b)	What is process planning? Compare between retrieval and generative type of process planning.	**07**

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