Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII(OLD) • EXAMINATION – WINTER 2016

Subject Code: 172002 **Date: 21/11/2016**

Subject Name: Automated Manufacturing - I

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)** The following component is to be made using a CNC turning centre equipped with a FANUC OT controller. Write a complete manual part program for machining of the component shown in figure1. Take Raw material of size Φ100 x 185 mm. Limit maximum spindle speed to 3000 RPM. **07**

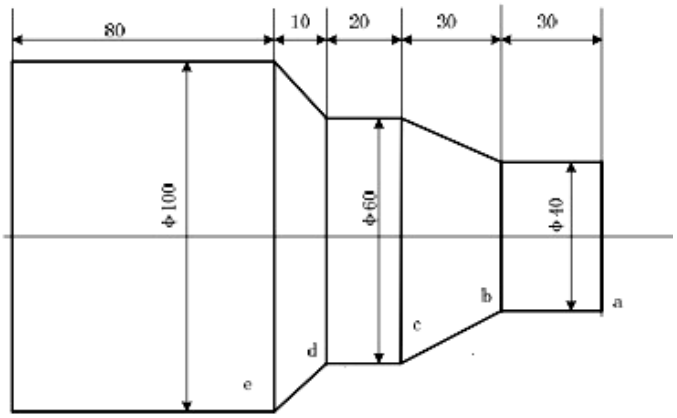

Figure 1. (All Dimension are in mm)

(b) Write a part program to machine the profile as shown in figure.2. Raw material size: 80×40×5mm. **07**

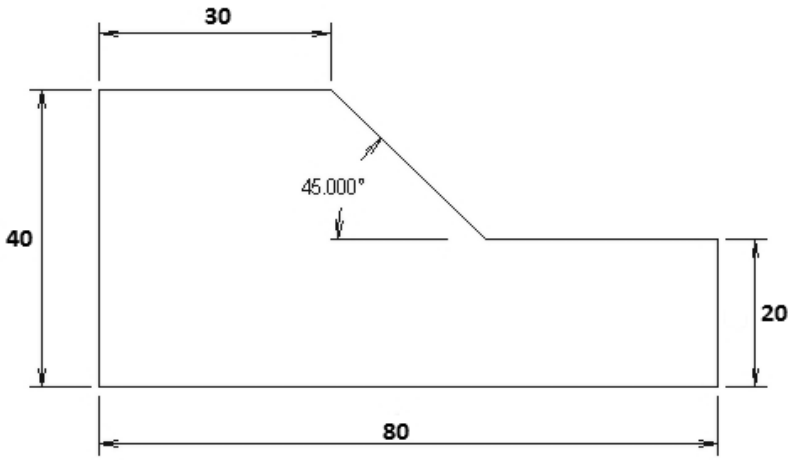

Figure 2. (All Dimension are in mm)

Q.2 **(a)** Differentiate between NC and CNC machine tools. **07**

(b) With the help of neat sketch, explain the internal and external recirculation of the balls in ballscrews. **07**

OR

(b) Difference between point to point control and continuous path control systems in CNC machine. **07**

Q.3	**(a)**	Brifly explain sequence number, preparatory codes, and miscellanuos codes.	**07**
	(b)	Expain in brifly Drilling G81, Grooving G74 and Boring Cycles G90 in milling machine.	**07**

OR

Q.3	**(a)**	What is part programing ? discuss the steps in writing a part programme.	**07**
	(b)	Difference between thread cutting method used in CNC turning by G92 and G76.	**07**
Q.4	**(a)**	Explain in details Circular and Rectangular Pocketing cycle in CNC milling.	**07**
	(b)	Explain Retrieval and Generative type CAPP.	**07**

OR

Q.4	**(a)**	Explain three different type of technologies that are used in AGVs for vehicle guidance.	**07**
	(b)	The height of storage aisle in an AS/RS= 50 ft and length of the L= 300 ft. suppose horizontal and vertical speeds of the S/R machine are 250 ft/min and 100 ft/min, respectively. The S/R machine requires 18 sec to accomplish a pick up –and –deposit operation. Find: (a) throughput for the aisle under assumptions that storage system utilization = 90% and a ratio of single-command to dual-command cycles of 3:1 (b) the single command and dual command cycle times per aisle.	**07**
Q.5	**(a)**	Describe in brief RP Techniques Stereolithography (SLA) and Selective Laser Sintering (SLS)	**07**
	(b)	Explains in briefly the types of AS/RS.	**07**

OR

Q.5	**(a)**	Explain contact and noncontact type inspection techaniques in CMM.	**07**
	(b)	Benefits and Applications Computer Aided Quality Control.	**07**

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