Seat No.: _____ Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII(NEW) EXAMINATION – SUMMER 2019

Subject Code:2172002 **Date:14/05/2019**

Subject Name:Automated Manufacturing - I

Time:02:30 PM TO 05:00 PM **Total Marks: 70**

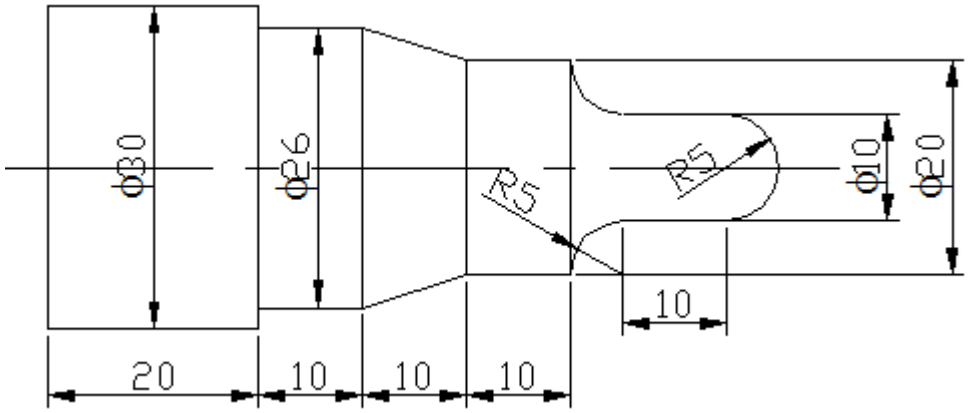
Instructions:

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

Q.1 **(a)** Explain types of Automation. **03**

(b) Applications of CNC Technology in Manufacturing. **04**

(c) The following component is to be made using a CNC turning Centre equipped with a FANUC controller. Write a complete manual part program for machining as shown in fig.1. **07**



All Dimension are in mm

Fig 1.

Q.2 **(a)** List ten stratergies for automation and process improvement. **03**

(b) Explain closed loop and open loop control system in CNC machine. **04**

(c) With the help of neat sketch, explain the methods of eliminating the backlash in recirculating ballscrews. **07**

OR

(c) Schematically explain the followings: **07**

1. Multiple turning stock removal cycle.
2. Multiple facing stock removal cycle.
3. Pattern repeating cycle.

Q.3 **(a)** What is the stick-slip phenomenon in friction guideways? **03**

(b) Why the friction guideways are not used in CNC machine tools? **04**

(c) What is the advantage of subprograming? What is the format for a subprogram call? **07**

OR

Q.3 **(a)** Explain Automatic Tool Changer(ATC) in CNC machine. **03**

(b) Differentiate Automatic Tool Changer(ATC) and Automatic Pallet Changer(APC) in CNC machine. **04**

(c) Explain with schematic diagrams the simple drilling and pack drilling. **07**

Q.4 **(a)** Difference between AGV and AS/RS system. **03**

(b) Differnace between forword engineering and reverse engineering. **04**

	(c)	Describe briefly various guidance methods available for automated guided vehicle(AGV).	**07**

OR

Q.4	**(a)**	Write down basic component of automated storage/retrival system.	**03**
	(b)	Brifly describe the two basic approaches in computer aided process planning.	**04**
	(c)	The length of the storage aisle in an AS/RS = 240 ft and its height = 60 ft. suppose horizontal and vertical speeds of the S/R machine are 400 ft/min and 60 ft/min,respectively. The S/R machine requires 20 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.	**07**
Q.5	**(a)**	Difference between AS/RS system and carousel system.	**03**
	(b)	Contact and non-contact type inspection techniques.	**04**
	(c)	Explain the application and advantage of integration of CAQC with CAD/CAM systems.	**07**

OR

Q.5	**(a)**	Write down application of RP techniques.	**03**
	(b)	Classification of rapid prototyping processes.	**04**
	(c)	Describe in brief one of the RP process laminated object manufacturing	**07**

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