Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII (NEW) EXAMINATION – WINTER 2017

Subject Code: 2171903 Date:15/11/2017

Subject Name: Computer Aided 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)**	Draw a neat sketch and explain why recirculating ball screws are used in NC/CNC machine tools.	**03**
	(b)	Define robot and explain different joints used in robots.	**04**
	(c)	Discuss the concept of CIM wheel and benefits derived from CIM	**07**
Q.2	**(a)**	What is tool compensation? Explain tool length and cutter radius compensation.	**03**
	(b)	What is motion statement in APT language? Explain the format of motion statements used in APT language?	**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**
		OR	
	(c)	What are canned cycles? What is the difference between canned cycle and subroutine? How are they useful in writing part programs	**07**
Q.3	**(a)**	What is GT? Explain methods of grouping parts into part families in brief.	**03**
	(b)	Explain OPTIZ classification and coding system in detail.	**04**
	(c)	Explain cellular manufacturing and different types of machine cell designs.	**07**
		OR	
Q.3	**(a)**	Explain MICLASS classification and coding system in detail.	**03**
	(b)	Explain in detail composite part concept.	**04**
	(c)	Explain variant type CAPP system. State its benefits and limitations.	**07**
Q.4	**(a)**	Define PLC. Discuss the relay device components used in it.	**03**
	(b)	Write a short note on: Automated guided vehicle associated with FMS	**04**
	(c)	Describe with neat sketch AS/RS system used in FMS	**07**
		OR	
Q.4	**(a)**	Draw and explain PLC architecture	**03**
	(b)	Draw and describe various layouts used in FMS	**04**
	(c)	Explain the types of flexibilities of FMS? Discuss the various factors on which these flexibilities depend?	**07**
Q.5	**(a)**	Enlist and explain different elements of robots.	**03**
	(b)	What are the various types of grippers used in robots?	**04**
	(c)	Explain MRP-I and MRP-II in detail.	**07**
		OR	
Q.5	**(a)**	Explain the degrees of freedom of wrist of robot.	**03**
	(b)	Sketch and explain cylindrical and SCARA configuration of industrial robot, showing work envelope.	**04**
	(c)	What is computer integrated production management system? Explain with neat flow chart.	**07**

FIG-1