Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME - SEMESTER– IV(NEW) EXAMINATION – SUMMER - 2017

Subject Code: 2742804 **Date:03/05/2017**

Subject Name: FLEXIBLE MANUFACTURING SYSTEM

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)** List methods used to form part families. Describe the process of forming part families with suitable example. **07**

(b) What is the need of Flexibility in manufacturing? Explain with suitable example in detail. **07**

Q.2 **(a)** List various approaches used in CAPP. Explain each in detail. **07**

(b) List various material handling systems used in FMS. Discuss application of each with suitable example. **07**

OR

(b) List various methods of part classification and coding. Explain any one and also explain the benefits of coding a part. **07**

Q.3 **(a)** Discuss various Flexible manufacturing system layout configurations with suitable example. **07**

(b) Discuss various challenges to be faced in implementation of FMS? **07**

OR

Q.3 **(a)** Discuss distributed data processing in FMS and its application in FMS. **07**

(b) Compare conventional storage system and AS/RS with respect to various aspects. **07**

Q.4 **(a)** Discuss interfacing of Computers, Machine tools and material handling system in FMS. **07**

(b) What is PLC? List the method of programing it and explain any one with suitable example. **07**

OR

Q.4 **(a)** What is AGVs? Discuss various types of AGVs and its working principle. **07**

(b) List various application of a Robots in FMS. Describe the robot configuration used for loading and unloading a part on a CNC machining center. **07**

Q.5 **(a)** What is a cellular manufacturing? Explain in detail. **07**

(b) Use Rank order clustering method to form machine cell for the following data. **07**

	Part Numbers						
Machine ID		1	2	3	4	5	6
	A			1		1	
	B		1	1			
	C	1			1		
	D		1	1		1	
	E	1			1		1

OR

Q.5	**(a)**	Explain the concept of composite part with suitable example.	**07**
	(b)	In order to determine the number of vehicles required to meet the demand for a particular automated guided vehicle system. The system must be capable of making 40 deliveries per hour. The following are the data of performance characteristics of the system: Vehicle velocity = 150 m/min. Average distance traveled per delivery = 450 m Pick up time = 0.75 min. Drop off time = 0.75 min. Average distance traveling empty = 300 m Traffic factor = 0.9 Determine the number of vehicles required to meet the demand of delivery. Also determine the handling system efficiency?	**07**

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