Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME – SEMESTER IV (NEW) – • EXAMINATION – SUMMER 2016

Subject Code: 2742804 **Date:04/05/2016**

Subject Name: Flexible Manufacturing System

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)** Define FMS. Describe their types, application, advantages, and disadvantages of FMS Implementation. **07**

(b) Explain the Principle Objectives of FMS. **07**

Q.2 **(a)** Why Group Technology adopting for industries? Which are the benefits of GT affecting many areas of an industry? **07**

(b) Four machines will constitute a GT cell. The from-to data for the machine is as follows: **07**

To → ↓ From	1	2	3	4
1	0	5	0	45
2	0	0	0	0
3	50	0	0	0
4	0	45	0	0

Determine the most logical sequence of machines for these data according to/from ratios.

OR

(b) Four machines will constitute a GT cell. The from–to data for the machine are as Follows. **07**

	From			
To	1	2	3	4
1	0	5	0	25
2	30	0	0	15
3	10	40	0	0
4	10	0	0	0

(i) Determine the sequence of machine according to/from ratio

(ii) Construct a flow diagram

(iii) Where do the parts enter cell and exit the cell

50 parts enter at machine 3, 20 parts after machine 1 leaves and 30 parts after machine 4 leaves.

Q.3 **(a)** What is Composite part concept? Why it is necessary for Group Technology? **07**

(b) What is Computer aided process planning? Explain Variant CAPP. **07**

OR

Q.3 **(a)** Explain the Role of DBMS in FMS. **07**

(b) What is FMC? Explain Job Scheduling in Flexible Manufacturing Cell. **07**

Q.4 **(a)** What is AGV? Discuss their types, advantage and disadvantage of AGV. **07**

	(b)	Following are the data of AGV system: Vehicle Velocity = 45 m/min. Average distance travelled/delivery = 135m Pick up time = 45 sec. Drop off time = 45sec. Average distance traveling empty = 90 m Traffic factor = 0.9 Determine the number of vehicles required to satisfy the delivery demand if the delivery demand is 40 deliveries per hour. Also determine the handling system efficiency.	**07**

OR

Q.4	**(a)**	What is AS/RS? Discuss their types, advantages & application of AS/RS.	**07**
	(b)	Consider an operation of unit load AS/RS, which uses an S/R machine for each aisle of the system. The length of storage aisle is 300 m and its height is 50 m. Horizontal and vertical speeds of S/R machine are 400 m/min. and 75m/min. respectively. The S/R requires 30 seconds to accomplish pickup and delivery. Determine the single and dual command cycle times.	**07**
Q.5	**(a)**	Explain the approach to Part Programing in CAD/CAM Software & Step for CAD/CAM Integration in CNC Machining.	**07**
	(b)	What is MAP (Manufacturing Automation Protocol)?	**07**

OR

Q.5	**(a)**	What is the Role of communication in Automation? Discuss various communication standards in detail.	**07**
	(b)	What is Programmable Logic Controller (PLC)? Write methods for programming in PLC.	**07**

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