Seat No.:	Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

ME – SEMESTER II– EXAMINATION – WINTER - 2016

Subject Code: 2720815 Date: 19/11/2016

Subject Name: Computer Integrated Manufacturing

Time: 2:30 pm to 5:00 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) (b)	Explain ten strategies for automation and production systems. What is workpart transfer mechanism? Enlist different workpart transfer mechanisms and explain any one.	07 07
Q.2	(a) (b)	Enlist various line balancing algorithms and explain any one. A 20-station transfer line has an ideal cycle lime $Te=1.2$ minute. The probability of station breakdowns per cycle is $p=0.005$ breakdowns/cycle. For each of the upper-bound and lower-bound approaches, determine (a) frequency of line stops per cycle, (b) average actual production rate and (c) line efficiency.	07 07
		OR	
	(b)	Production rate for a certain assembly product is 47.5 units per hour. The assembly work content time = 32 minutes of direct manual labor. The line operates at 95% uptime. Ten workstations have two workers on opposite sides of line so that both sides of product can be worked on simultaneously. The remaining stations have one worker. Repositioning time lost by each worker is 0.2 min/cycle. It is known that number of workers on line is two more than required for perfect balance. Determine (a) number of workers, (b) number of workstations, (c) balance efficiency and (d) average manning level.	07
Q.3	(a)	What is automated assembly system? Explain inline and carousel assembly	07
	(b)	systems with neat sketches. What is automated guided vehicle system? Explain working principle of AGVS stating its applications.	07
		OR	
Q.3	(a)	Explain (a) vibratory bowl feeder and (b) selector and orienter part feeding devices with neat sketches.	07
	(b)	What is automated storage and retrieval system? Explain unit load ASRS with neat sketch.	07
Q.4	(a)	What is barcode? Enlist and explain technology of different types of barcodes.	07
	(b)	Explain generative type of computer aided process planning (CAPP) system with neat sketch.	07
		OR	
Q.4	(a) (b)	What is machine vision? How image acquisition and its processing are carried out? Explain retrieval type of computer aided process planning (CAPP) system with neat sketch.	07 07
Q.5	(a) (b)	What is FMS? Discuss various FMS components. What is CIM? Discuss various CIM components with neat sketch.	07 07
		OR	
Q.5	(a) (b)		07 07