

BIRLA INSTITUTE OF TECHNOLOGY, MESRA
END SEMESTER EXAMINATION
Subject: ME 515 – Computer Integrated Manufacturing

Class: M.Tech
 Branch: CAAD
 Time: 2:00 Hours

Session: SP/22
 Full Marks: 50

Answer any ten questions

- 1) What is Computer Integrated Manufacturing? How it is different from CAD/CAM? (2+3)
- 2) Describe about various wastes in lean manufacturing. (5)
- 3) What is Group Technology? What are various objectives of Group Technology? What are the various methods of grouping parts into family? (1+2+2)
- 4) Apply the rank order clustering technique to the part-machine incidence matrix in the following table to identify logical part families and machine groups. Parts are identified by letters, and machines are identified numerically. (5)

	A	B	C	D	E	F	G	H	I
1			1	1	1				
2	1	1					1	1	1
3						1	1	1	
4	1	1		1					
5			1		1				
6		1						1	1
7	1		1	1					
8		1				1		1	1

5) Four machines used to produce a family of parts are to be arranged into a GT cell. The From-To data for the parts processed by the machine are shown in the table below.

(a) Determine the most logical sequence of machines for this data using Hollier Method

(b) Compute the percentage of in-sequence moves and the percentage of backtracking moves in the solution (3+2)

	To				
From		1	2	3	4
	1	0	10	0	40
	2	0	0	0	0
	3	50	0	0	20
	4	0	50	0	0

- 6) Describe in brief about various layouts of FMS. (5)
- 7) What leads to the development of NC? Illustrate with an example, explain the operation of an NC machine tool. (5)
- 8) Define NC words? Explain with examples: Preparatory function, Auxiliary function-codes & M-codes.
- 9) Explain with neat sketches point-to-point, straight cut and continuous path system. (5)
- 10) Robot has established itself as a powerful productivity tool in industries. "Discuss". (5)
- 11) Using the notation scheme for defining manipulator configurations, draw diagrams of the following robots: (a) TRT (b) VVR (c) VROT. (5)
- 12) Describe the differences in orientation capabilities and work volumes for a TR and a :RT wrist assembly. Use sketches as needed. (5)