Roll No. | | | | | | | | | | |

ANNA UNIVERSITY (UNIVERSITY DEPARTMENTS)
B.E. / B. Tech (Full Time) - END SEMESTER EXAMINATIONS, APRIL - 2025
MANUFACTURING ENGINEERING
Semester - VIII
IE5075 – PRINCIPLES OF COMPUTER INTEGRATED MANUFACTURING SYSTEMS
(Regulation 2019)

Time: 3 hrs Max.Marks: 100

CO 1	Analyse cellular and flexible manufacturing systems for performance.
CO 2	Gain knowledge in basics of computer-aided design (CAD).
CO 3	Design competitive manufacturing systems with appropriate tools and techniques.
CO 4	Develop integrated manufacturing systems with network structure and database.
CO 5	Understand database management system (DBMS) concepts.

BL – Bloom's Taxonomy Levels
(L1 - Remembering, L2 - Understanding, L3 - Applying, L4 - Analysing, L5 - Evaluating, L6 - Creating)

PART- A (10 x 2 = 20 Marks)
(Answer all Questions)

Q. No	Questions	Marks	CO	BL
1	Mention the strategy behind key machine concept.	2	1	L1
2	Distinguish between chain type coding and hierarchical type coding system.	2	1	L2
3	Compare world coordinate system and user coordinate system.	2	2	L2
4	What are the steps involved in general design process?	2	2	L1
5	State the significance of agile manufacturing.	2	3	L1
6	Mention the need for integration of CAD/CAM.	2	3	L2
7	List the features of ring topology.	2	4	L1
8	Compare synchronous transmission and asynchronous transmission.	2	4	L2
9	State the importance of strategic management in CIM.	2	5	L1
10	Why traditional cost justification no longer works in the present scenario?	2	5	L2

PART- B (5 x 13 = 65 Marks)

Q. No	Questions	Marks	CO	BL
11 (a)	Explain the salient features of OPITZ coding system with a neat sketch.	13	1	L4
	OR			
11 (b)	Discuss the various GT cell configurations with neat sketches.	13	1	L4
12 (a)	Write a detailed note on DDA algorithm and Bresenham's line drawing algorithm with neat sketches.	13	2	L3
	OR			
12 (b)	How does the position of an object can be modified using transformations in a typical CAD software? Explain with appropriate examples.	13	2	L3
13 (a)	Write a detailed note on tools and techniques employed in lean production.	13	3	L3
	OR			
13 (b)	Discuss generative process planning and variant process planning with neat sketches.	13	3	L3
14 (a)	Discuss the seven layers of OSI model with neat sketches.	13	4	L5
	OR			
14 (b)	Write a detailed note on communication matrix in the context of CIM with relevant examples.	13	4	L5
15 (a)	Discuss the types of data models with neat sketches.	13	5	L4
	OR			
15 (b)	Discuss the impact of expert systems with a suitable case study.	13	5	L4

PART- C (1 x 15 = 15 Marks)

(Q.No.16 is compulsory)

Q. No	Questions	Marks	CO	BL
16. (i)	Apply the rank order clustering technique to the part-machine incidence matrix in the following table to identify logical part families and machine groupings. The Parts are identified by letters and machines are identified numerically.	9	1	L5

	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

(ii)	Five 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 machines are shown in the table below. (I) Determine the most logical sequence of machines for this data. (II) Construct the network diagram for the data, showing where and how many parts enter and exit the system. (III) Compute the percentage of in-sequence moves, bypassing moves and backtracking moves in the solution.	6	1	L4

	To				
From	1	2	3	4	5
1	0	10	80	0	0
2	0	0	0	85	0
3	0	0	0	0	0
4	70	0	20	0	0
5	0	75	0	20	0