Register No : _____

THE KAVERY ENGINEERING COLLEGE

(An Autonomous Institution)

B.E/B.TECH DEGREE END SEMESTER THEORY EXAMINATIONS, NOV /DEC 2024

Seventh Semester

Mechanical Engineering

ME3792 - Computer Integrated Manufacturing

Regulations - 2021

Duration : 3 Hrs *Maximum : 100 Marks*

*PART – A(ANSWER ALL QUESTIONS) (Marks 10*2=20)*

Q.No	*Questions*	*BLT*	*CO*	*Marks*
1.	Define CIM.	RE	1	2
2.	What is one major advance in Computer-Integrated Manufacturing (CIM) in recent years?	RE	1	2
3.	What is an automated production line?	RE	2	2
4.	What is smart manufacturing?	RE	2	2
5.	Define Part family.	RE	3	2
6.	List any four important advantages of implementing FMS.	RE	3	2
7.	What is Process planning?	RE	4	2
8.	Compare CAPP and manual PP.	UN	4	2
9.	What is a linear feedback control system?	RE	5	2
10.	Differentiate between PLC and SCADA.	UN	5	2

*PART – B (ANSWER ALL QUESTIONS) (Marks 5*13 = 65)*

Q.No			*Questions*	*BLT*	*CO*	*Marks*
11.	a		Discuss the major hardware and software components of a CIM system. Discuss how these components work together to automate and integrate various stages of manufacturing.	AP	1	13
			Or			
	b		Discuss the role of computers in CIM systems. Explain how computer technology is utilized in different stages of the manufacturing process, from design and production to management and control.	AP	1	13
12.	a		Explain the 10 principles of material handling and discuss how they can be applied to improve material flow and productivity in a manufacturing environment.	UN	2	13
			Or			
	b		Explain the different types of Automated Guided Vehicle (AGV) systems and their applications in manufacturing and warehousing.	UN	2	13
13.	a	i	Explain the concept of parts classification and coding system with example.	UN	3	7
		ii	Explain the components of FMS in detail with a neat diagram.	UN	3	6
			Or			
	b	i	Explain the steps involved in Holier method with an example.	UN	3	7
		ii	Describe the composite part concept in cellular manufacturing.	UN	3	6

14.	a	What are the key activities in process planning and the information required for each? Describe how these activities contribute to effective process planning.	AP	4	13
		Or			
	b	Describe the concept of variant and generative process planning in detail.	AP	4	13
15.	a	Explain the computer process control and its components, including computer process interface and interface hardware. How do these elements work together to manage and monitor processes?	UN	5	13
		Or			
	b	Explain the key features of Direct Digital Control (DDC) and Supervisory Computer Control.	UN	5	13

*PART – C (Marks 1*15 = 15)*

Q.No		*Questions*	*BLT*	*CO*	*Marks*
16.	a	Analyze the role of conveyor systems in automated production. How do conveyor types and configurations affect material transfer efficiency and production line layout?	AN	2	15
		Or			
	b	Use 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	AN	3	15

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