Reg. No.												

Question Paper Code	12246

M.E. / M.Tech. - DEGREE EXAMINATIONS, NOV / DEC 2023

Third Semester

M.E. – CAD / CAM

20PCDEL309 - INTELLIGENT MANUFACTURING SYSTEMS

(Regulations 2020)

Duration: 3 Hours Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

		Marks, K-Level, CO
1.	What is Computer Integrated Manufacturing?	*2,K1,CO1*
2.	Why CIM is important in modern manufacturing processes?	*2,K1,CO1*
3.	What are Knowledge-Based Systems?	*2,K1,CO2*
4.	Mention the application of KBS in CIM.	*2,KI,CO2*
5.	What is the primary distinction between Artificial Intelligence and Machine Learning?	*2,K1CO3*
6.	How does Machine Learning utilize data to make predictions or decisions?	*2,K1,CO3*
7.	What is meant by Process Planning?	*2,K1,CO4*
8.	Define Feature Recognition.	*2,K1,CO4*
9.	What are the key characteristics of the Visual Method in Group Technology?	*2,K1,CO5*
10.	What are the advantages and limitations of the Matrix Formation approach?	*2,K1,CO5*

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

11.	a)	Explain the structure of a typical CIM system and its various functional areas.	*13,K2,CO1*
		OR	
	b)	Explain in detail about Computer-Aided Process Planning (CAPP).	*13,K2,CO1*
12.	a)	Explain the primary components of Knowledge-Based Systems and their roles in decision-making.	*13,K2,CO2*
		OR	
	b)	Describe the role of the knowledge base in a Knowledge-Based System. How is it different from other components?	*13,K2,CO2*
13.	a)	Explain the key goals and challenges of Artificial Intelligence as a field.	*13,K2,CO3*
		OR	

b) Explain how AI and Machine Learning technologies contribute to optimizing quality control and reducing downtime in manufacturing processes. *13,K2,CO3*

14. a) Compare and contrast the Variant Approach and Generative Approach in Automated Process Planning. Highlight their advantages and limitations. *13,K2,CO4*

OR

b) Explain the various problem solving approaches in KBSES. *13,K2,CO4*

15. a) Elaborate on the Cluster Identification Method in Group Technology. How does it contribute to efficient production planning and control? *13,K2,CO5*

OR

b) Discuss the factors that influence the cost-based grouping of parts and components. *13,K2,CO5*

PART - C (1 × 15 = 15 Marks)

16. a) (i) Analyze the challenges associated with the Equipment Selection Problem in manufacturing. *7,K2,CO4*

(ii) Explain how do the phases of process planning contribute to the overall efficiency and quality of the manufacturing process? *8,K2,CO5*

OR

b) (i) Compare and contrast the Coding Method and Cluster Analysis Method in Group Technology. *7,K2,CO4*

(ii) Explain the Visual Method in Group Technology. How does it aid in the identification and classification of parts? *8,K2,CO5*