INTELLIGENTMANUFACTURINGSYSTEMS

UNITI:

ComputerIntegratedManufacturingSystemsStructureandfunctionalareasofCIM system,-CAD,CAPP,**CAM,**CAQC,ASRS.AdvantagesofCIM.ManufacturingCommunicationSystems—MAP/TOP,OSIModel,DataRedundancy,Top-downandBottom-upApproach,Volume ofInformation.IntelligentManufacturingSystemComponents,SystemArchitectureandDataFlow,SystemOperation.

UNITII:

Robotics : Robot anatomy, robot configuration, motions joint notation work volume, robot drive system, control system and dynamic performance, precision of movement -Endeffectors:grippers-types,operation,mechanism-Applications of robot:Materialtransfer,Machineloading/unloading.Processingoperation,AssemblyandInspection,FeatureApplication

UNITIII

MachineLearning--
ConceptofArtificialIntelligence,ConceptualLearning,ArtificialNeuralNetworks-BiologicalNeuron,ArtificialNeuron,TypesofNeuralNetworks,ApplicationsinManufacturing.

UNITIV:

AutomatedProcessPlanning—VariantApproach,GenerativeApproach,ExpertSystemsfor ProcessPlanning,FeatureRecognition,PhasesofProcessplanning.KnowledgeBasedSystemfor EquipmentSelection(KBSES)—
Manufacturingsystemdesign.EquipmentSelectionProblem,ModelingtheManufacturingEquipmentSelectionProblem,ProblemSolvingapproachinKBSES,StructureoftheKRSES.

UNITV:

GroupTechnology:ModelsandAlgorithmsVisualMethod,CodingMethod,ClusterAnalysis Method,MatrixFormation—SimilarityCoefficientMethod,Sorting-basedAlgorithms,BondEnergy
Algorithm,CostBasedmethod,ClusterIdentificationMethod,ExtendedCIMethod.KnowledgeBasedGroupTechnology-GroupTechnologyinAutomatedManufacturingSystem.Structure ofKnowledgebasedsystemforgrouptechnology(KBSCIT)—
DataBase,KnowledgeBase,Clustering Algorithm.

TextBooks:

I.IntelligentManufacturingSystemsbyAndreKusaic.
1. ArtificialNeuralNetworksbyYagnaNarayana
2. Automation,ProductionSystemsandCIMbyGrooverM.P.
3. NeuralNetworksbyWassarman.
4. Industrialrobotics,MikellP.Groover/McGrawHill.

ANDHRA UNIVERSITY
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MODEL QUESTION PAPER

INTELLIGENT MANUFACTURING SYSTEMS

Time: 3 Hours **Max. Marks: 100**

Answer Any **FIVE** questions only

All Questions Carry Equal Marks

1	a) What are the various components of IntelligentManufacturingSystem and mention its advantages & Limitations?	10
	b) Describe the importance of CAPP, CAQC & ASRS, explain their effects on quality and quantity of production.	10
2	a) What is the need of manufacturing automation protocol and technical office protocol in implementing the networks	10
	b) Differentiate between conventional and intelligent manufacturing systems.	10
3	a) How the artificial neural networks are applied in the automated manufacturing	10
	b) what are the various methods of CAPP and explain the retrieval type computer aided process planning systems?	10
4	a) Describe the role of robotics in assembly and inspection?	10
	b) What is an end effector? Explain its operation and mechanism?	10
5	a) Differentiate between variant and generative approach of automated process planning?	10
	b) What is KBSES and explain the problem-solving approach in KBSES?	10
6	a) Explain how the expert systems work for process planning & face recognition?	10
	b) Explain the concept of artificial intelligence in manufacturing?	10
7	a) What is the role of group technology in automated manufacturing systems?	10
	b) Explain about the cost based and cluster identification methods with suitable examples in group technology?	10
8	a) Explain the structure of knowledge based system for group technology (KBSCIT) with data base and knowledge base?	10
	b) Explain about the drive and control systems of a robot?	10