ME 6703 - COMPUTER INTEGRATED MANUFACTURING

UNIT – 1

INTRODUCTION

1	Mention few elements of CIM.	M/J 16
2	State the objectives of implementation of CIM.	M/J 16
3	Mention the reasons for implementing CAD?	A/M 15
4	Write the various methods for representing the solids in CAD	A/M 15
5	Compare surface modelling & solid modelling.	M/J 14
6	What are the specific characterstics that have to be incorporated in CIM models?	N/D 14
7	Define computer integrated manufacturing.	M/J 14
8	Specify the range of applications for which geometric modelling information is used?	N/D 13
9	What are the drawing features of CAD package?	M/J 12
10	What is the advantage of solid modelling?	M/J 12
11	What is the cycle time in manufacturing?	
12	What is a bottleneck station?	
13	What is production capacity?	
14	What is utilization in manufacturing plant?	
15	What is availability?	
16	What is manufacturing lead time?	
17	What is work-In-process inventory?	
18	Name five typical factory overhead expenses?	
19	Name five typical corporate overhead express?	
20	What is the difference between hard product variety and soft product variety?	
21	What is the difference between single model production line & mixed model production line?	
22	What is lean production?	
23	In lean production, what is Just-In-Time delivery of parts?	
24	Name seven forms of waste in production?	
25	What is objective of Just-In-Time production?	
26	What is kanban? What are the two types of kanban?	
27	What is the difference between push system & pull system in production control?	
28	What does autonomation mean.	

PART – B

1.	Explain the following terms and bring out their differences between CAM and CIM.	(8)	M/J 16
	With an example, discuss the differences between CAM and CIM.	(8)	M/J 16
2	What is CAD? Explain the various design related tasks performed by CAD.	(10)	A/M 15

3	List the benefits and application of CAD.	(6)	A/M 15
4	Explain how CIM can act as an enabling technology for concurrent engineering?	(8)	N/D 14
5	Discuss the hierarchial structure of computerized elements of CIM.	(8)	N/D 14
	Explain the importance of CIM. Also write the reason for implementing CIM & its types.	(16)	M/J 13
6	Explain in detail about seven forms of waste in production and methods to eliminate them.		
7	Explain in detail about Kanban system and its types with example?		
8	Briefly explain about Just-In-Time delivery?		
9	Discuss in detail about difference levels of automation?		
10	Discuss briefly about the control system in production?		
11	Explain the following Manufacturing Planning and Manufacturing Control.		

UNIT – 2

PRODUCTION PLANNING AND CONTROL and COMPUTER AIDED PROCESS PLANNING

PART – A

1	What is process planning in manufacturing system?	M/J 16
2	Name any four fuctions of production planning and control.	M/J 16
3	What is inventory management?	M/J 16
4	List any two advantages of CAPP.	M/J 15
5	Define master production schedule.	M/J 15
6	List the types of inventory	M/J 15
7	Define variant approach in CAPP	M/J 14
8	Draw the structure of an MRP system	M/J 14
9	What is meant by CAPP system?	M/J 13
10	What are the inputs to MRP system?	M/J 12
11	What is CAPP?	M/J 12
12	List the different stages of shop floor control	M/J 12
13	Define MRP – II	N/D15
14	What is master Production schedule	N/D 14
15	What are various components of generative CAPP system?	N/D 14
16	Mention the importance of shop floor control system	N/D 13
17	Write down the three phases of shop floor control system	N/D 12
	What is meant by procurement lead time?	N/D 12

PART – B

1	Describe the different elements and functioning of generative approach CAPP. State its advantages and limitations.	(8)	M/J 16
2	Discuss the need and importance of shop floor data collection systems? What are their functions?	(8)	M/J 16
3	Discuss the importance and devices that are required for shop floor control.	(8)	M/J 16
4	List the benefits of CAPP?	(10)	N/D 15
5	Explain about the four classes of users in MRP	(8)	N/D 15
6	List the benefits of MRP	(6)	N/D 15
7	Explain briefly about the functions of PPC	(10)	N/D 15
8	Explain briefly the criteria for selecting a CAPP system	(8)	M/J 15
9	Explain in detail the phases of shop floor system	(16)	M/J 15
10	Explain the problems associated with traditional production planning and control.	(8)	M/J 15
11	What is MRP? Explain the inputs to MRP and various MRP outputs. Also list the various benefits of MRP	(16)	M/J 15
12	Explain briefly capacity planning & control	(8)	M/J 15
13	Briefly explain about production planning process in discrete part manufacturing.	(16)	N/D 14

14		Explain briefly on CMPP. In what ways CMPP is considered very significant. What factors should be considered while selecting the best CAPP system?	(16)	N/D 14

UNIT – 3

CELLULAR MANUFACTURING

PART - A

1	What is cellular manufacturing?	M/J 16
2	Write the difference between FMC & FMS systems?	N/D 15
3	Write the reasons for using a coding scheme in group technology?	N/D 15
4	What are the objectives of FDC system?	N/D 14
5	Define group technology.	N/D 13
6	Explain optiz coding system?	N/D 13
7	List the factors to be considered in selection of coding system.	M/J 15
8	Write the main elements of flexible manufacturing system.	M/J 15
9	What do you meant by cellular manufacturing?	M/J 14
10	What are the various types of layouts used in FMS design?	M/J 14
11	List some important advantages of implementing FMS?	M/J 13
12	List out the techniques available for formation of cell in GT.	N/D 12
13	Mention the benefits of GT.	M/J 12

PART – B

1		Enumerate the role of GT in CAD/CAM integration.	(8)	M/J 16
2		Discuss how group technology is used in designing manufacturing cells.	(6)	M/J 16
		Discuss D CLASS, M CLASS and OPTIZ coding systems with suitable examples.	(10)	M/J 16
3		Explain briefly about the MCLASS System.	(8)	N/D 15
4		Discuss with the examples of the following code: Monocode, Polycode, Mixed code.	(8)	N/D 14
		Briefly discuss the various benefits of implementing a GT in a firm. Also bring out the advantages & limitations of using GT.	(8)	N/D 13
5	(i)	Discuss DCLASS & MCLASS coding system.	(8)	
	(ii)	Define part classification & coding. How is it useful in forming grouping technology layout?	(8)	N/D 13
6	(i)	Explain the concept of Optiz coding system with example	(8)	N/D 12

7 (ii) Apply rank order clustering technique to the part machine incidence matrix to arrange parts and machine into groups

	Part							
Machines	A	B	C	D	E	F	G	H
1	1	1	1	1				1
2					1	1	1	
3	1	1	1		1			1
4		1		1		1		
5	1			1	1		1	1
6			1				1	1

(8) N/D 12

8 Discuss the product flow analysis? (8) M/J 15

9 List the benefits & application of Group technology. (10) M/J 15

UNIT - 4

FLEXIBLE MANUFACTURING SYSTEM (FMS) & AUTOMATED VECHILE SYSTEM

PART – A

1 Name the different components of FMS? M/J 16

2 Write the difference between FMC & FMS system. N /D15

3 Write the main elements of flexible manufacturing system? M/J 15

4 What are the objectives of FDC system? N/D 14

5 Differentiate between dedicated FMS & random order FMS. N/D 12

6 What are the various types of layout used in FMS design? M/J 14

7 List some important advantages of implementing FMS? M/J 13

8 What is a flexible manufacturing system?

9 What are the three capabilities that a manufacturing system must possess in order to be flexible?

10 Name the four tests of flexibility that a manufacturing system must satisfy in order to be flexible?

11 What are the four benefits that can be expected from a successful FMS installation?

PART – B

1. Sketch the layout of a typical FMS and explain the importance sub systems. (8) M/J 16

2 Describe the principle of an automated storage and retrieval system (AS/RS).How this is useful in FMS? (8) M/J 16

3		List & explain the various types of machines used in FMS?	(8)	N/D 15
4		What are the points to be considered while planning for FMS?	(8)	N/D 15
		Explain in detail about FMS workstations	(8)	M/J 14
5	(i)	List and explain the various functions that are performed by the FMS computer control system	(10)	M/J 15
	(ii)	Discuss the benefits of FMS.	(6)	M/J 15
6	(i)	List & Explain the functions of the material handling system in FMS.	(16)	M/J 15
7	(ii)	Write short notes on Automated guided vehicle system?	(8)	N/D 14
		Illustrate different FMS layout configurations.	(16)	N/D 13
8	(i)	Explain the fuctions of a FMS Computer control system	(8)	M/J 13
	(ii)	Discuss the application, advantage & disadvantage of a FMS?	(16)	M/J 13

UNIT 5

INDUSTRIAL ROBOTICS

PART - A

1 What is an industrial robot?
2 What are the five joint types used in robotic arms and wrists?
3 Name the five common body-and-arm configurations?
4 What is the work volume of a robot manipulator?
5 What is a playback robot with point-to-point control?
6 What is an end effector?
7 What is the advantage of dual gripper over a single gripper?
8 Robotics sensors are internal and external. What is distinction?
9 What is a palletizing operation?
10 What is robot program?
11 What is control resolution in a robot positioning system?
12 What is the difference between repeatability and accuracy in a robotic manipulator?
13 What is the difference between powered leadthrough and manual leadthrough in robot programming