

GANPAT UNIVERSITY
M. Tech. Semester II (CAD&CAM)
CBCS Regular Examination April – June 2016
3ME213 Computer Aided Production Management

Time: 3 Hours

Total Marks: 60

- Instruction:** 1. Answer all the questions.
 2. Assume suitable data if necessary.
 3. Figures to right indicate the full marks of questions.

Section - I

- Que. 1** **Answer the following questions.** [10]
- (A) How MRP differs from inventory control system? What are the inputs to MRP?
 (B) What is master production schedule? Explain the functions of MPS.

OR

- Que. 1** **Answer the following questions.** [10]
- (A) Briefly explain the methodology to be followed for developing a Retrieval type of CAPP system.
 (B) With neat sketch explain process of capacity planning.

- Que. 2** **Answer the following questions.** [10]
- (A) A company manufactures 30 items per day. The sale of these items depends upon demand which has the following distribution:

Sales(units)	27	28	29	30	31	32
Probability	0.10	0.15	0.20	0.35	0.15	0.05

The production cost and sale price of each unit are Rs. 40 and Rs. 50 respectively, any unsold product is to be disposed off at a loss of Rs. 15 per unit. There is a penalty of Rs. 5 per unit if the demand is not met. Using the following random numbers estimate total profit/loss for the company for the next 10 days: 10, 99, 65, 99, 95, 01, 79, 11, 16, 20.

- If the company decides to produce 29 items per day, what is the advantage or disadvantage to the company?
 (B) What is the need of sales forecasting? Explain the method of Collective opinion method.

OR

- Que. 2** **Answer the following questions.** [10]
- (A)

Year	Quarter	Sales (1000 units)	Year	Quarter	Sales (1000 units)
1.	1	1.0	1.	1	2.0
	2	3.0		2	4.0
	3	4.0		3	6.0
	4	2.0		4	3.0
2.	1	1.0	2.	1	2.0
	2	3.0		2	5.0
	3	5.0		3	7.0
	4	3.0		4	4.0

Find the quarterly sales for the fifth year, by suitable forecasting techniques for

the data given below (data of 4 year). Also make adjustment for expected seasonal variations.

(B) What is application of simulation in manufacturing industries? Explain in detail.

Que. 3 Answer the following questions. (Attempt any two) [10]

- (A) Enlist various instruments for inspection by contact type and non-contact type and explain any one type of non-contact type instrument.
- (B) Define BOM. List the characteristics of BOM. Explain roll of BOM as CAD/CAPM interface.
- (C) Write a short note on coordinate measuring machines (CMM).

Section – II

Que. 4 Answer the following questions. [10]

- (A) State and discuss the methods for solving an assignment problem. How is the Hungarian method better than other methods for solving an assignment problem?
- (B) An airline company has drawn up a new flight schedule involving five flights. To assist in allocating five pilots to the flights, it has asked them to state their performance score by giving each flight a number out of 10. The higher the number, the greater is performance. Certain of these flights are unsuitable to some pilots owing to the domestic reasons. These have been have marked with a X.

		Flight Number				
		1	2	3	4	5
Pilot	A	8	2	X	5	4
	B	10	9	2	8	4
	C	5	4	9	6	X
	D	3	6	2	8	7
	E	5	6	10	4	3

What should be the allocation of the pilots to the fights in order to meet as many performances as possible?

OR

Que. 4 Answer the following questions. [10]

- (A) How the assignment problem method is applicable for industrial problem. Give an algorithm to solve an assignment problem.
- (B) A department has five employees with five jobs to be performed. The time (in hours) each man will take to perform each job is given in the effectiveness matrix.

		Employees				
		I	II	III	IV	V
Jobs	A	10	5	13	15	16
	B	3	9	18	13	6
	C	10	7	2	2	2
	D	7	11	9	7	12
	E	7	9	10	4	12

How should the jobs be allocated one per employee, so as to minimize the total man hours?

Que. 5

Answer the following questions.

[10]

- (A) Can MRP system give due dates to customer orders by considering the constraints imposed by the available capacity? Justify.
- (B) An end item X is composed of two Bs and one C. moreover, each B requires three Ds and one E, and each D requires four Es. Similarly, each C is made up of two Es and two Fs. The items at each level are components of the next level up and, as in a family tree, are parents of their respective components. The available inventory on hand of each items B, C, D, and E are 4, 10, 8, and 60 respectively. Note that the quantities of each item in the product structure tree refer only to the amounts needed to complete the assembly at the next higher level. Use this information to do the following:
- (a) Draw the product tree diagram
- (b) Determine the quantities of B, C, D, E, and F needed to assemble one unit of X.
- (c) Determine the quantities of these components that will require assembling 10 Xs, taking into account the quantities on hand of various components.

OR

Que. 5

Answer the following questions.

[10]

- (A) Define Material Requirement Planning (MRP) and explain the inputs of MRP System.
- (B) Find the sequence that minimizes the total time required in performing the following jobs on three machines in the order ABC. Processing time (in hrs) are given in the following table.

Job	1	2	3	4	5
Machine A	8	10	6	7	11
Machine B	5	6	2	3	4
Machine C	4	9	8	6	5

Que. 6

Answer the following questions. (Attempt any two)

[10]

- (A) Explain the generic model of ERP system using schematic block diagram indicating flow of information.
- (B) Define JIT production. Describe the elements of JIT manufacturing.
- (C) Describe analytic hierarchy approach for ERP. List out the factors involved in ERP implementation.

END OF PAPER