

M. Tech
Date: 29/05/2015

Student Exam No: _____

GANPAT UNIVERSITY

M. TECH SEM - II [ME (CAD/CAM)] REGULAR EXAMINATION APRIL-JUNE 2015

3ME213 – COMPUTER AIDED PRODUCTION MANAGEMENT

Time: 3 Hours

Total Marks: 60

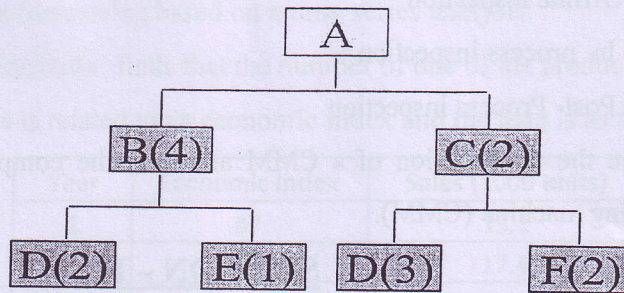
- Instructions:** 1) This Question paper has two sections. Attempt each section in separate answer book.
 2) Figures on right indicate marks.
 3) Be precise and to the point in answering the descriptive questions.

SECTION – I

Que:-1 (a) Given the product structure tree for “A” and the lead time and demand information [05]
 below, provide a materials requirements plan that defines the number of units of
 each component and when they will be needed.

Lead Times

A	1day	Demand	
B	2days	Day 10	50 A
C	1day	Day 8	20 B (Spares)
D	3days	Day 6	15 D (Spares)
E	4days		
F	1days		



(b) Explain the inputs to material requirements planning system. Sketch the sample [05]
 output table for material requirements planning system and discuss in detail.

OR

Que:-1 (a) An end item X is composed of two Bs and one C. moreover, each B requires three [05]
 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 14, 18, 12, and 82 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:

- (i) Draw the product tree diagram.
 - (ii) Determine the quantities of B, C, D, E and F needed to assemble 2 unit of X
 - (iii) Determine the quantities of these components that will required to assemble 15 Xs, taking into account the quantities on hand of various components
- (b) Define Material Requirement Planning (MRP). Explain manufacturing resource planning. How MRP-I and MRP-II differs from each other? [05]

- Que:-2 (a) What is ERP? Discuss its benefits in large scale industry. [05]
- (b) Explain seven wastes in JIT. [05]

OR

- Que:-2 (a) Explain the generic model of ERP system using schematic block diagram indicating flow of information. [05]
- (b) What is Kanban? List types of KANBAN system and explain them. [05]

- Que:-3 Attempt any two. [10]
- (a) Differentiate contact and non-contact type of inspection.
- (b) Explain following term:
- (i) Online inspection
 - (ii) Offline inspection
 - (iii) In process inspection
 - (iv) Post- Process inspection
- (c) Describe the construction of a CMM and List the components of a co-ordinate measuring machine (CMM).

SECTION – II

- Que:-4 (a) List out the methods for assignment problem. Explain any one method. [04]
- (b) A company has four territories open, and four salesmen available for an assignment. [06]
- The territories are not equally rich in their sales potential. It is estimated that a typical salesman operating in each territory would bring in the following annual sales:

Territory :	I	II	III	IV
Annual Sales (Rs) :	126,000	105,000	84,000	63,000

The four salesmen also differ in their ability. It is estimated that, working under the same conditions, their yearly sales would be proportionately as follows:

Salesmen :	A	B	C	D
Proportion :	7	5	5	4

If the criterion is maximum expected total sales, then the intuitive answer is to assign the best salesman to the richest territory, the next best salesman to the second richest, and so on; verify this answer by the assignment technique.

OR

- Que:-4** (a) Define BOM. Enlist the BOM processor module's functions. Also distinguish [04]
clearly between explosions and implosion in details.
- (b) A department has five employees with five jobs to be performed. The time (in [06]
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** (a) What is meant by short term and long term forecasting. Describe and evaluate the [04]
method of sales forecasting based on a time series analysis.
- (b) A wholesale distributor finds that the number of one of his products sold during the [06]
past seven years is related to an economic index and the data is as follows:

Year	Economic Index	Sales (1000 units)
1	87	13.1
2	122	17.4
3	119	15.3
4	130	22.8
5	93	11.6
6	124	19.2
7	115	14.7

- Determine the equation of the least squares line that gives the relationship between the economic index and sales.
- Determine the coefficient of correlation between the two variables.
- If the value of the economic index for a future period is 127, what sales can be expected during that period?

OR

Que:-5 (a) What is forecast? What steps are involved in using time series data to make a forecast? Summarize the key features of the more commonly used forecasting method. [04]

(b) Sale data for previous 4 years is a variable in some firm as shown below: [06]

Year	Quarter	Units Sales ($\times 10^4$)
1993	1	72
	2	103
	3	121
	4	84
1994	1	93
	2	120
	3	131
	4	105
1995	1	110
	2	139
	3	147
	4	117
1996	1	117
	2	135
	3	145
	4	130

Forecast the sales for last two quarters (i.e., July to Dec.) of year 1997.

Que:-6 Attempt all.

[10]

- (a) What is Simulation? List the advantages and disadvantages of Simulation technique.
- (b) A manufacturing company processes 6 different jobs on two machines A and B. Number of units of each job and its processing times on A and B are given in the following table. Find the optimum sequence, the total minimum elapsed time and idle time for each machine.

Job Number	No. of Units of Each Job	Processing Time (hours)	
		Machine A	Machine B
1	3	5	8
2	4	16	7
3	2	6	11
4	5	3	5
5	2	9	7.5
6	3	6	14

-----END OF PAPER-----