

**PT9402 – SCHEDULING AND PLANNING FOR PRINT PRODUCTION**

(REGULATIONS 2008)

Time : 3 hrs

Max Mark:100

ANSWER ALL QUESTIONS

**Part – A (10 x 2 = 20 Mark)**

1. Write the various approaches to job design.
2. Compare the characteristics of two types of partnership.
3. Which method of solving transportation problem is efficient? Why?
4. How the simple sequencing problem can be solved (use example)?
5. What are the inventory management systems, define them?
6. Define: Decoupling inventory.
7. Mention the applications of CRP.
8. Enumerate the characteristics basic modules in MRPII?
9. How the Time cost curve is related?
10. Define : Float

**Part – B (5 x 16 = 80 Mark)**

11. Define: MRP. Explain the concepts, applications, inputs & outputs of MRP in detail.
12. a. What is organization structure? Explain the salient features, pros and cons of different types of ownership in detail.  

or

  - b. i. Draw layout of an ink factory with justification of the neighbouring departments.(10Marks)
  - ii. Explain the various factors involved in the selection of location (6 Marks))
13. a. Solve the following problem using transportation method, obtain the initial feasible solution by VAM and also find the optimal solution.

From	TO					Supply
	1	2	3	4	5	
1	80	69	103	64	61	12
2	47	100	72	65	40	16
3	16	103	87	36	94	20
4	86	15	57	19	25	8
5	27	20	72	94	19	8
<b>Demand</b>	<b>16</b>	<b>14</b>	<b>18</b>	<b>6</b>	<b>10</b>	

or

- b. i. There are 5 salesmen to be assigned to 5 districts. Estimates of sales revenue in thousands of rupees for each salesman in different districts are given below. What should be the placement of the sales man if the objective is to maximise the sales revenue. (10 Marks)

Sales man	Districts				
	D1	D2	D3	D4	D5
S1	40	46	48	36	48
S2	48	32	36	29	44
S3	49	35	41	38	45
S4	30	46	49	44	44
S5	37	41	48	43	47

ii). The following eight jobs has to be processed on the three machines Machine. A, Machine B & Machine C in the order A, B C. Determine the sequence that minimise the total elapsed time (T) and also evaluate the idle time for the machines. **(6 Marks)**

Job	J1	J2	J3	J4	J5	J6	J7	J8	J9
M/c. A	3	8	7	4	9	8	7	10	6
M/c. B	4	3	2	5	1	4	3	2	4
M/c. C	6	7	5	11	5	6	12	6	8

14. a. A publisher signed a contract for publication of a book. What is the earliest time by which the book can be ready for distribution? The tasks given in the table are involved with time estimate given in weeks.

Task Name	Task	Precedence	Most likely	Optimistic	Pessimistic
A	Appraisal of book by reviewers	-	8	4	10
B	Initial pricing of the book	-	2	2	2
C	Assessment of marketability	A,B	2	1	3
D	Revisions by Author	A	6	4	12
E	Editing of final draft	C,D	4	3	5
F	Typesetting of text	E	3	3	3
G	Plates for Artwork	E	4	3	5
H	Designing and printing of Jacket	C,D	6	4	9
I	Printing and Binding of Book	F,G	8	6	16
J	Inspection and final assembly	I,H	1	1	1

- Find the expected task durations and the their variances **(3marks)**
- Draw the PERT network and find the critical path. What is the expected length of the critical path and its variance? **(3 Marks)**
- What is the probability that the length of the critical path does not exceed 32 weeks? 38 weeks? **(6 Marks)**
- Find the Total and free float for the activities and table the values. **(4 Marks)**

b. The data for the project are:

Activity	Preceding activity	Time (in weeks)		Cost (in Rs.)	
		Normal	Crash	Normal	Crash
A	-	3	2	18000	19000
B	-	8	6	600	1000
C	B	6	4	10000	12000
D	B	5	2	4000	10000
E	A	13	10	3000	9000
F	A	4	4	15000	15000
G	F	2	1	1200	1400
H	C,E,G	6	4	3500	4500
I	F	2	1	7000	8000

- a) Draw the network diagram and find the critical path. **(4 Marks)**  
 b) Determine the project duration which will return in minimum total project cost and minimum total duration? **(12 Marks)**

15. a. i. A company has a contract to supply 5000 units of an item per year. For this the company estimates that the ordering cost is Rs. 150 and the carrying cost is 20% of the unit price. The company is negotiating with a dealer who offers to give the following quantity discount. Recommend the best inventory policy with price and quantity. **(10 Marks)**

Order size	Price per unit
Less than 1000	500
1000-2999	450
3000-4999	400
5000 or more	350

- ii. Explain the inventory profile of classical EOQ model in detail. **(6 Marks)**

or

- b. i. Explain the inventory profile of planned shortage EOQ model in detail. **(6 Marks)**

ii. A dealer supplies the following information pertaining to an item of inventory: Annual demand: 800 units, Buying cost Rs. 150/order, Inventory carrying cost: Rs3 / unit/ year and back ordering cost: Rs. 20/unit/ year.

- a) What will be the EOQ? What quantity should allowed to be back ordered ? **(4 Marks)**  
 b) What will be the cost savings, if any, resulting from back-ordering? What is the maximum inventory of the item at any time of the year? **(4 Marks)**  
 c) If the dealer wants that no more than 12% of the units can be back ordered, then should the policy of back ordering be adopted? **(2 Marks)**