

SVKM's NMIMS University
School of Distance Learning

Management of machines & Materials

Marks: 100

Date: 19.12.2007
Time: 11.00 to 2.00

- N.B:- 1. Solve any five questions.
2. Marks allotted to the questions are shown on r.h.s margin.
3. Make Suitable assumption, if required.
4. Use of calculator is permitted

- Q.1. Discuss in brief mass type and job type of production system. (20)
- Q.2. (a) What factors would you consider most important in locating steel manufacturing plant? Justify your answer giving suitable examples. (10)
- (b) What aspects must be considered by a product designer while designing a product? Explain giving examples. (10)
- Q.3. (a) Write down eight important points of distinction between product layout and process layout. (08)
- (b) Using the following data, calculate break even point, margin of safety and contribution ratio. (12)
- | | |
|------------------------------|-------------|
| (i) Selling price per unit | Rs 20 |
| (ii) Total Fixed Cost | Rs 10 Lakhs |
| (iii) Variable Cost per unit | Rs 12 |
| (iv) Total Profit | Rs 2 Lakhs |
- What will be the effect on break even point if selling price is reduced to Rs 18 and fixed cost is increased to Rs 12 Lakhs?
- Q.4. (a) Draw a flow-process chart to prepare a batch of 1000 breads in a bakery. (10)
- (b) Discuss eight-step basic procedure of work study w.r.t an industrial example. (10)
- Q.5. (a) How would you use transportation model in Aggregate Production Planning? Explain using necessary format / matrix. (06)

(b) Calculate EOQ, total yearly cost of inventory and frequency of ordering using the data given below.

I. Purchase Price of an item	Rs 15
II. Total yearly requirement	Rs 7,20,000
III. Inventory carrying cost per year	20 %
IV. Inventory ordering cost per order	Rs 20

Q.5 (c) Using Johnson's rule prepare a minimum time schedule using following data – (08)

Jobs	A	B	C	D	E
M1	8	6	5	1	4
M2	3	9	7	6	5

Note:- M1, M2 are the machines and figures are processing time in hours processing sequence for all the jobs is M1 – M2

Q.6. Write Short Notes on any four –

- Value Analysis
- Acceptance Sampling Plan
- ABC Analysis
- Standardization and Variety reduction
- Waste Management
- Capacity Requirement Planning

Q.7. The basic data for the activities in a project are as follow :-

Activity	Normal Time (days)	Normal Cost (Rs)	Crash Time (days)	Crash Cost (Rs)
A	3	200	2	300
B	6	250	5	325
C	2	160	1	240
D	4	130	3	180
E	2	250	1	300
F	7	165	4	285
G	4	210	3	300
H	3	110	2	170

The activities are dependent as follows:-

- (i) A, B, C are the starting activities
- (ii) D, E, F can start when activity A is completed
- (iii) G can start after B and D are completed
- (iv) H can start after C and E are completed
- (v) G, F and H are the final activities

- (a) Draw the network and indicate critical path. What is normal time for project completion?
- (b) If the project is to be completed in 8 days, what is the minimum cost to be incurred?

Q.8 (a) Enumerate various types of materials handling equipment with their industrial applications. (08)

(b) Describe systematic waste reduction procedure. (08)

(c) Distinguish between inspection by variables and inspection by attributes. (04)

END