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Total number of printed pages – 4

MBA
MBA 204

Second Semester (Special / Back) Examination – 2013

PRODUCTION AND OPERATION MANAGEMENT

BRANCH : MBA

QUESTION CODE : E 473

Full Marks – 70

Time : 3 Hours

*Answer Question No. 1 which is compulsory and any **five** from the rest.
The figures in the right-hand margin indicate marks.*

1. Answer the following questions :

2 × 10

- (a) What is the difference between P and Q type of inventory ?
- (b) What is cost tradeoff in crashing ?
- (c) What is Economic order quantity ?
- (d) What is Work sampling ?
- (e) What is flow process chart ?
- (f) What is craft ?
- (g) Write about predictive maintenance.
- (h) Distinguish between job shop and continuous production.
- (i) What is material requirement planning ?
- (j) What is Flexible manufacturing system ?



P.T.O.

2. (a) Explain the safety stock and reorder level. 4
- (b) Annual demand for an item is 4800 units. Ordering cost is Rs 500 per order. Inventory carrying cost is 24% of the purchase price per unit, per year. The price breaks are shown as :

Quantity	Price
$0 < Q_1 < 1200$	10
$1200 < Q_2 < 2000$	9
$2000 > Q_3$	8

Find the optimal order size. If the order cost is changed to Rs 300.00 per order, find the optimal order size. 6

3. (a) Explain product layout and process layout in details. 4
- (b) Consider the following machine component incidence matrix with 7 machines and 5 components, Obtain the final machine component cells using Rank order clustering algorithm. 6

		Component				
		1	2	3	4	5
	1	0	1	0	1	0
Machine	2	1	0	0	0	1
	3	0	1	1	0	0
	4	1	0	0	0	1
	5	0	0	1	1	0
	6	0	0	0	0	1
	7	0	1	1	1	0

4. (a) What is MRP and what are the methods to determine the effective lot size in MRP? 5
- (b) Consider the following 3 machines and 5 jobs flow shop problem. Check whether Johnson's rule can be extended to this problem. If so what is the optimal schedule and corresponding make span. 5

Job	Machine1	Machine2	Machine3
1	11	10	12
2	13	8	20
3	15	6	15
4	12	7	19
5	20	9	7

5. (a) Explain the steps of time study. 5
- (b) A time study engineer has studied the time taken to machine crank shafts. He has taken 40 observations and these are summarized in the form of frequency distribution as shown below. The performance rating of the operator machining the crank shaft is 110%. Find the standard time for machining the crank shaft by assuming allowance of 15%. 5



Time	Frequency
20	15
21	10
22	10
23	5

6. (a) A construction company has listed down various activities that are involved in constructing a building. Draw a project network for the above project. Find the critical path and expected project completion time. 5

Activity	Predecessors	a	m	b
A	—	4	4	10
B	—	1	2	9
C	—	2	5	14
D	A	1	4	7
E	A	1	2	3
F	A	1	5	9
G	B,C	1	2	9
H	C	4	4	4
I	D	2	2	8
J	E,G	6	7	8

(b) What are the pillars of TPM ?

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7. (a) Alpha electronic company manufactures cathode ray tubes on mass production basis. At some intermediate point of production line, 15 samples of size 50 each have been taken. Tubes within each sample were classified into good or bad. The related data are given in the following table. Construct a P-chart with 3 sigma limit.

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Sample number	Number of defective tubes	Percentage of defective tubes
1	10	.20
2	10	.20
3	9	.18
4	10	.20
5	4	.08
6	6	.12
7	2	.04
8	3	.06
9	9	.18
10	4	.08
11	8	.16
12	11	.22
13	8	.16
14	10	.20
15	9	.18

(b) Write notes on operating characteristic curve.

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8. Write notes on any **two** of the following :

5×2

- (a) JIT
- (b) TQM
- (c) New product development
- (d) ABC Analysis.

