

Seat No. : _____

ZL-124

May-2014

MBA, Sem.-II

Production and Operation Management

Time : 3 Hours]

[Max. Marks : 100

- Instructions :** (1) This is a closed book examination.
(2) Question number One and Five are compulsory.
(3) Please start your answer to next question on a new page.

1. Answer the following questions : **20**
- (i) Differentiate between products and services
 - (ii) Talk about objectives of waiting theory
 - (iii) Discuss fixed position layout with its need,
 - (iv) Explain concept of yield management.
2. (a) Discuss launch of Cadbury Oreo in terms of the strategies adopted for competitive advantage **10**
- (b) Explain issues involved, while developing products, with examples. **10**

OR

- (a) Discuss steps involved in forecasting products.
 - (b) Discuss the importance of mass customisation as preferred process, in the 21st century.
3. (a) Discuss different costs associated with inventory control. **10**
- (b) Explain types of operations scheduling with their applications. **10**

OR

- (a) Explain Toyota production system, in terms of its importance for Just-in-Time practices.

- (b) 3 choices for location are being evaluated with following data :

Particulars	A	B	C
Electricity cost per year	16000	18000	20000
Water charges per year	8000	9000	6500
Material cost per unit	1.8	2.1	1.9
Labour cost per unit	0.8	0.75	0.72
Transportation cost per unit	0.28	0.24	0.32
Quality of life	5	3	2
Community attitude	1	3	3
Business conditions	3	2	4

In the given data, last 3 rows talk about ratings to qualitative factors. Based on the given data, find the best location.

4. (a) Discuss importance of six sigma in managing operations and explain DMAIC cycle. 10
- (b) A company manufactures an electrical cooling fan. When the fans are performing properly, samples of 20 fans average 12.5 watts with an average range of 1.2 watts. A 3σ control chart program is being used to monitor performance of the fans and data from 10 recent samples was collected : 10

Sample no.	Sample mean	Sample range (watts)	Sample no.	Sample mean	Sample range (watts)
1	12.5	1.1	6	12.6	1.0
2	12.45	1.2	7	12.48	1.4
3	12.55	0.9	8	12.46	1.1
4	12.5	0.8	9	12.56	0.9
5	12.45	0.9	10	12.48	0.8

- (a) Calculate 3σ control limits for an \bar{x} average chart.
- (b) Calculate 3σ control limits for an R chart.

For $n = 10$, $A_2 = 0.31$, $D_3 = 0.22$ and $D_4 = 1.78$

OR

- (a) Manager of Lakshmi Computers gives orders of Printers. 500 printers are required yearly. Annual carrying costs are ₹ 20 per printer and order cost is ₹ 40. Determine optimal order quantity and the total cost.

ORDER QUANTITY	PRICE PER UNIT
20-69	₹ 6000
70-99	₹ 5800
100 and more	₹ 5600

- (b) Discuss techniques used for measuring performance of supply chains.

5. Data about a Project is given in terms of tasks with timings and cost. Draw the network diagram. Find critical path and critical path time. Find slack on different activities and interpret. Crash the network by 4 weeks and find total increase in cost, due to crashing. **20**

Activity	Predecessor	Normal Time in weeks	Crash Time in weeks	Normal Cost in ₹	Crash Cost in ₹
A	—	6	5	10000	15000
B	—	4	3	12000	14000
C	A	5	5	16000	16000
D	B	3	3	18000	18000
E	C	4	2	11000	17000
F	D	4	2	24000	32000
G	C	4	3	12000	18000
H	D	9	6	50000	68000
I	E, F	2	2	16000	16000
K	G, H, I	3	2	10000	11000

