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SC-4117

M. B. A. (Sem. II) (Full Time THM & Evening) Examination

April / May – 2011

Production and Operations Management

(New Course)

Time : **3** Hours] [Total Marks :**100**

Instructions :

(1)

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup strictly the details of ☛ signs on your answer book.

Name of the Examination :

☛ **M. B. A. (Sem. 2) (F. T., THM & Eve.)**

Name of the Subject :

☛ **Production and Operations Management (New)**

☛ Subject Code No. : **4 1 1 7** ☛ Section No. (1, 2,.....) : **Nil**

Seat No. :

Student's Signature

(2) Figures to the right indicate marks to the respective questions.

(3) Q. no. **1** and Q. no. **5** are Compulsory. Attempt any **two** full questions from Q. no. 2, 3, 4 and two full questions from 6, 7, 8.

1 (a) Provide your views on current status of manufacturing in India. **8**

(b) XYZ Dairy Ltd. is considering where to locate dairy processing centres to prepare milk products for regional markets in India. Locations and milk volumes are given below. Transportation cost are uniform throughout the area at Rs.50/km. **10**

Location	*Co – Ordinate location (X, Y) (in km)*	*Loads to new Location*
A	(20, 0)	200
B	(0, 400)	300
C	(140, 20)	800
D	(360, 80)	200

Use the simple median method to find the best location and also calculate total transportation cost

2 (a) Determine the best sequencing of 6 jobs on 4 machines. The processing time is given below. Determine idle time on each machine and total elapsed time. **10**

	Machine			
Jobs	*M*1	*M*2	*M*3	*M*4
A	6	5	3	4
B	7	2	5	5
C	9	6	3	3
D	8	5	5	4
E	8	3	4	3
F	9	5	5	4

(b) Obtain the initial basic feasible solution by using Vogel's Approximation Method. **6**

Plant ↓ *Werehouse* →	*W*1	*W*2	*W*3	*W*4	*Supply*
*P*1	48	60	56	58	150
*P*2	45	55	53	60	250
*P*3	50	65	60	62	350
*P*4	52	64	55	61	250
Demand	250	250	250	250	

The Entries in the cell indicates the unit transportation cost.

3 An airline that operates 7days a week has the time table shown below. Crews must have a minimum layover of 5 hours between flights. Obtain the pairing of flights that minimizes layover time away from home assuming that crews flying from Delhi to Jaipur for any given pairing, the crew will be based at the city that results in smaller layover. **16**

	Delhi –	*Jaipur*		*Jaipur* –	*Delhi*
Flight No.	*Depart*	*Arrive*	*Flight No.*	*Depart*	*Arrive*
101	7.00*AM*	8.00*AM*	201	8.00*AM*	9.15*AM*
102	8.00*AM*	9.00*AM*	202	8.30*AM*	9.45*AM*
103	1.30*PM*	2.30*PM*	203	12*NOON*	1.15*PM*
104	6.30*PM*	7.30*PM*	204	5.30*PM*	6.46*PM*

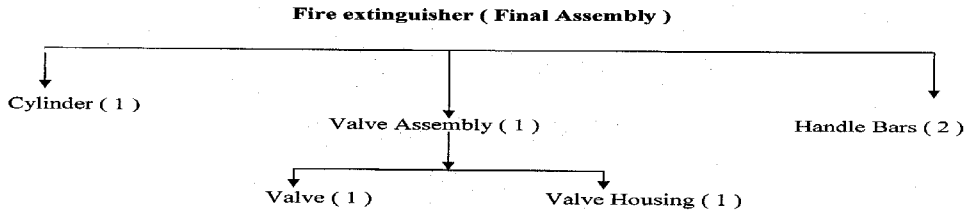
4 Write short notes : (any **two**) **16**

(1) Batch production system.

(2) Factors affecting facility location decision.

(3) Product layout with advantages and disadvantages.

5 A firm has planned to manufacture fire extinguisher whose product structure is as shown below : **18**



The Master production schedule to manufacture the fire extinguisher is given in below. The details of bill of materials along with economic order quality and stock on hand for the final product and subassemblies are also shown below.

Master production schedule

Week	1	2	3	4	5	6	7	8
Demand	100	–	150	140	200	140	–	300

Details of bill of Materials

Parts required	*Order quntity*	*No of units*	*Lead time (Week)*	*Stock on hand*
Fire extinguisher	300	1	1	150
Cylinder	450	1	2	350
Valve assemblies	400	1	1	325
Valve	350	1	1	150
Valve Housing	450	1	1	350
Handle bars	700	2	1	650

Complete the material requirements plan for the fire extinguisher, cylinder, valve assembly, valve, valve housing and handle bars and show what quantities of orders must be released and when they must be released in order to satisfy the MPS.

6 (a) Write a short note on ABC - FSN Analysis. **6**

(b) Using the following data relating to 10 samples of 5 item each, calculate the control limits for the x bar and R chart and cheek whether the process is in control or not. **10**

(Take A2 = 0.577, D3 = 0 and D4 = 2.116)

Sample	*Dimensions in Cms*				
1	1.04	0.98	0.99	1.00	1.01
2	0.98	0.98	0.98	1.03	1.01
3	1.01	1.02	1.02	1.04	0.98
4	0.97	0.99	1.01	0.95	0.97
5	1.04	1.02	1.01	1.00	1.00
6	1.03	1.01	0.97	0.98	0.99
7	1.00	1.02	0.98	1.01	1.01
8	1.00	1.01	0.99	0.99	0.95
9	0.99	1.02	1.03	1.01	0.97
10	0.96	0.95	1.02	1.03	1.01

7 (a) "Inventory is a necessary evil" Explain. **6**

(b) The company is purchasing a product P from out side suppliers. Consumption of a product is 18000 units per year. The purchase price of the item is Rs. 4 per unit. The ordering cost is Rs 75 per order. The inventory carrying cost is 20%. Consider the uniform consumption rate and find out economic purchasing quantity. Now the company is planning to manufacture the product P in house with a machine that is estimated to produce 200 units per day. The cost of the units produced will be Rs 2.80 per unit. The set up cost is Rs 100 per set up and the inventory carriying cost is 20%. The company works for 300 days in a year. Calculate Economic Batch Quantity. **10**

8 Write short notes : (any **two**) **16**

(1) Maintenance management

(2) Project management

(3) Materials handling.
