



SB-1381

Second Year B.B.A. (Sem. IV) Examination  
March/April – 2011  
Production Management

Time : Hours]

[Total Marks : 70

**Instructions :**

(1)

नीचे दृश्यावले निशानीवाणी विगतो उत्तरवडी पर अवश्य लखवी.  
Fillup strictly the details of signs on your answer book.

Name of the Examination :  
S. Y. B.B.A. (Sem. 4)

Name of the Subject :  
Production Management

Subject Code No. : 1 3 8 1 Section No. (1, 2,.....): NIL

Seat No. :

Student's Signature

- (2) Figures to the right indicate full marks allocated to that question.  
(3) All questions are compulsory.

1 Answer the following questions briefly : 12

- (i) Explain why fixed path material handling equipments are more commonly seen in continuous manufacturing systems and variable path equipments are seen more in intermittent manufacturing systems.
- (ii) Weekly demand of one material is 1000 pieces. Ordering cost is Rs. 520.00 per order, price of material is Rs. 480.00 per box of dozen. Per unit annualized inventory carrying cost is 10% of price. Find Economic Order Quantity.
- (iii) Explain various reasons of accumulation of non-moving inventories.
- (iv) If Standard Time fixed after work-measurement is 30 minutes, allowance factor is 30% of shift time, what should be value of normal time ?

(v) Give abbreviations and symbols for following therbligs “

<i>A. Inspect</i>	<i>C. Select</i>
<i>B. Unavoidable Delay</i>	<i>D. Plan</i>

(vi) Set priority of four jobs as per Critical Ratio Rule :

	<i>Job1</i>	<i>Job2</i>	<i>Job3</i>	<i>Job4</i>
<i>Work remaining in days</i>	15	20	12	16
<i>Time available till delivery date in days</i>	15	25	18	20

**2** Define “Plant Lay-out”. Mention four major differences between “Product Lay-out” and “Process Lay-out”. **5**

**OR**

**2** Discuss Inter-action of Production Management with Finance Department and with Marketing Department. **5**

**3** Define the term; “Bill of Material”. Why Bill of Material is called heart of Material Requirement Planning ? What do you understand by the term “Explosion of Bill of Material” ? **7**

**OR**

**3** Explain the process of Capacity Requirement Planning with the help of flow diagram. Discuss various methods of capacity adjustments. **7**

**4** (a) Explain the situation of in-house manufacturing in which inventory supply is non-instantaneous and at some uniform rate. Derive formula for Economic Run Length Quantity (ERLQ) for this situation. **7**

(b) Explain modern, comprehensive idea of Purchasing Lead Time. **3**

**OR**

- 4 Annual demand of one material is 1,60,000 kgs per year. 10  
Price of this material is Rs. 40.00 per kg. This material is a cold storage item and hence, annual per unit inventory carrying cost is 40% of price. Cost of sending inquiries while placing purchase order is Rs. 50.00. Cost of making comparison statement is Rs. 50.00. Cost of arranging one negotiation session is Rs. 200.00. Cost of typing and sending one order is Rs. 100.00. Out of every order received, 5 kgs are consumed in quality checking which is done by destructive testing method. Test of conduct quality test is Rs. 200.00. This cost does not include value of 5 kgs used in test. Find out EOQ.  
The supplier offers 5% discount if order quantity is more than or equal to 16,000 kgs. He offers total 7% discount if order quantity is more than or equal to 40,000 kgs. Should we accept any of these two discount offers ? Which offer is better ? Justify your answer with proper calculations.
- 5 (a) Explain any six terms out of following in relation to 6  
Quality Assurance :  
(i) Attribute  
(ii) Variable  
(iii) TQM  
(iv)  $\infty$ -Risk  
(v)  $\beta$ -Risk  
(vi) AOQ  
(vii) ASI  
(viii) ATN
- (b) Answer following question. 8  
(i) Define and explain the term "Quality". Explain various techniques of Quality Control.

OR

- 5 (a) The Western Jeans Company produces denim jeans. The company has taken 20 samples for quality control. Each sample is made of 100 jeans. No. of defectives in these samples are as following : 6

6	0	4	10	6	4	12	10	8	10
12	10	14	8	6	16	12	14	20	18

Construct suitable control chart with 3 -sigma limits and decide whether process is under control.

- (b) Diameter of ball bearing is a critical variable. To check quality, employees have taken 10 samples of 5 ball bearings. Following are results : 8

Sample	Obeervations (Diameters in cms)				
	1	2	3	4	5
1	5.02	5.01	4.94	4.99	4.96
2	5.01	5.03	5.07	4.95	4.96
3	4.99	5.00	4.93	4.92	4.99
4	5.03	4.91	5.01	4.98	4.89
5	4.95	4.92	5.03	5.05	5.01
6	4.97	5.06	5.06	4.96	5.03
7	5.05	5.01	5.10	4.96	4.99
8	5.09	5.10	5.00	4.99	5.08
9	5.14	5.10	4.99	5.08	5.09
10	5.01	4.98	5.08	5.07	4.99

From the past data, it is known that process standard deviation is 0.08 cms. Develop  $\bar{X}$ -chart with 3-sigma limits. Do not use mean factor multipliers for  $\bar{X}$ -chart. Is process under control ?

- 6 (a) Six jobs are to be processed on four machines in the order of M1 → M2 → M3 → M4. Timings of six jobs are shown in following table : 6

	Job 1	Job 2	Job 3	Job 4	Job	Job 6
Machine 1	25	35	40	20	20	30
Machine 2	15	10	05	05	10	20
Machine 3	20	20	05	10	05	20
Machine 4	20	25	20	30	35	40

Note : All timings are in minutes.

Decide the sequence in which six jobs are to be processed so that total processing time of six jobs is minimum.

- (b) Write a short note on “Line of Balance.” 6

**OR**

- 6 (a) There are four machines and each machine is capable of processing four products. For each combination of product and machine, cost shall be different. In the following table, cost for each combination of product and machine is shown in Rupees. Please note that Product I cannot be processed on Machine 3 and product 3 cannot be processed on Machine 4. Decide the best combination of product and machine so that total cost of making all four products is minimum. What is that minimum total cost ? 7

	Machine 1	Machine 2	Machine 3	Machine 4
Product 1	300	500	Noe Possible	200
Product 2	700	400	200	300
Product 3	900	300	500	Not Possible
Product 4	700	200	600	700

- (b) Explain use of various types of Gantt Charts in Operations Scheduling. 5

7 Answer any two : 10

- (i) Write a short note on two handed process chart.  
(ii) Explain various types of allowances used in deciding allowance factor in Time-Study.  
(iii) In the following table, time-study observations are shown for a manufacturing operation :

Element	Cycle (Time in minutes)					Performance Rating in %
	1	2	3	4	5	
Takes four raw material pieces from tray	0.96	-	-	-	50.97	110
Loads one piece in machine	2.10	12.78	23.39	34.23	52.13	95
Machine drills hole	8.70	19.53	30.19	40.68	58.98	100
Worker inspects finished piece	11.15	21.89	32.78	43.01	61.40	105
Puts finished piece in crate	11.60	22.31	33.17	44.69	61.83	96
Ties shoe string	-	-	-	46.85	-	-
Packs 4 pieces in a box	-	-	-	50.01	-	110

These time readings are taken with non fly back stop watch and hence these are cumulative time readings.

Following allowances are given in an eight hour shift :

- Lunch Break - 30 minutes
- Toilet visit and water drinking - 20 minutes

- Interference allowance - 5 minutes
- Periodic activity allowance - 10 minutes
- Interference allowance - 10 minutes
- Fatigue allowance - 5 minutes

Find out normal time and standard time for this operation.

---