2008

(b) What are the differences between total factor productivity and partial factor productivity ? What partial factor productivity is likely to be measured most frequently in production and operations management ? 5

(c) Explain acceptance sampling plan with the help of OC curve. 5

7. (a) The following tasks are required to be performed on an assembly line with the given precedence relationship and task time specified below :

Task	Performance line (sec)	Preceding tasks
a	50	—
b	40	—
c	20	a
d	45	c
e	20	c
f	25	d
g	10	e
h	35	b, f, g

The manufacturer desires an output of 380 units per 8-hour day and stops the line for a 20-minute break in the morning. Draw the precedence diagram. Calculate the theoretical minimum number of work stations and maximum possible efficiency. 10

(b) Explain the concept of cost of quality. 4

2008

PRODUCTION AND OPERATION MANAGEMENT

Paper : 202

Full Marks – 70

Pass Marks – 28

Time – Three hours

The figures in the margin indicate full marks for the questions.

Answer any *five* questions.

(a) What are the major operations objectives in production dicision problem ? Why traditional view of operations objectives are inadequate for managing operations ? 5

(b) Explain the differences between made-to-order and made-to-stock processes. Classify processes according to product flow and type of customer order. 5

(c) Critically examine the operational issues in the product life cycle. 4

2. (a) Why are facilities decisions often made by top management ? What is the role in these decisions of operations, marketing, finance and personnel ? 7

[Turn over

(b) For a machine, the following data are available :

Year	0	1	2	3	4	5	6
Cost of spares	–	200	400	700	1000	1400	1600
Salary	–	1200	1200	1400	1600	2000	2600
Losses due to break down	–	600	800	700	1000	1200	1600
Resale value	12,000	6000	3000	1500	800	400	400

Determine the optimum period of replacement of the machine. 7

3. (a) Examine how different types of layout design apply to different situations. 4

(b) Define JIT manufacturing. List Shigeo Shingo's seven wastes. 5

(c) Draw clear distinction between automatic factory and the automated factory of the future. 5

4. (a) The annual demand of a product is 48,000 units. The average LT is 4 weeks. The standard deviation of demand during LT is 75 units/week. The cost of ordering is Rs. 400 per order. The cost of purchase of the product per unit is Rs. 10. The cost of carrying per unit per year 15% of the purchase price. The maximum delay in LT is 2 weeks and the probability of this delay is 0.25. Assume a service level of 0.95. Find reorder level if Q-system is followed. 10

(b) Classify in wnat ways do independent demand inventories differ from dependent demand inventories. 4

5. (a) Ambrex Ltd has received an order for 70 units of product 20 to be delivered in 12 weeks . The BOM of the product 20 is given below. Ambrex has on hand 300 units each of components 31 and 37 ; there is no stock on hand or on order for other components. Determine the sizes and timing of planned order releases necessary to meet delivery commitments for product 20. 10
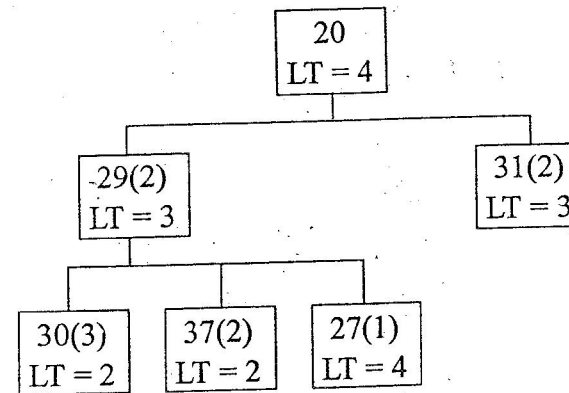
(b) State the use of ABC, VED and other classifications to departments other than inventory control. How does the classification of materials affect the inventory control of the same ? 4

6. (a) Under what circumstances might a market-driven approach or a technology driven approach to new-product design to be the best approach ? 4