Model Question Paper-1 with effect from 2022-23 (CBCS Scheme)

USN | | | | | | | | | | |

Fourth Semester B.E. Degree Examination
Production and Operations Management

TIME: 03 Hours   **Max. Marks: 100**

Note: 01. Answer any **FIVE** full questions, choosing at least **ONE** question from each **MODULE**.
         02. Each question Carry equal marks

		Module -1	**Marks**	**Bloom's Taxonomy Level**	**COs**
Q.01	a	Define Operations Management and discuss the functions of operation management in detail.	10	L2	CO1
	b	Explain the steps involved in decision making process.	10	L2	CO1
		OR			
Q.02	a	A Computer Co. is Evaluating three cities for a new plant to manufacture hardware components which will sell at Rs 170/- each. The economic portion of a plant location study shows the following cost and market data:	10	L3	CO1

Cost Data			
	Cities		
	A	B	C
FC/yr. (in thousands)	300	200	150
VC/Unit	30	45	65

Market Data	
Volume	Probability
4500	0.10
5500	0.30
6500	0.60

		1. On the basis of maximizing an economic expected value, graph the plant location curve(cost) using appropriate scale. 2. Which city should be selected basis of given volume estimate? 3. What is the break-even volume for the city selected?			
	b	Classify production Systems. Explain each production System with an example.	10	L2	CO1
		Module-2			
Q.03	a	With the help of least square method develop a linear trend equation for the data given below:	7	L3	CO2

Year	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
Ship	2	3	6	10	8	7	12	14	14	18	19

		Calculate trend forecast for the year 1995.			
	b	Define forecasting and explain the steps involved in forecasting process.	7	L2	CO2
	c	Explain the elements of good forecasting technique.	6	L2	CO2
		OR			

Q.04	a	The past data for the sales of wet grinders of a particular company in an area is shown below.	10	L3	CO2

Month	Jan	Feb	March	April	May	June
Sales	585	610	675	750	860	970

Forecast the demand for the month of July 2001 using
1. Simple Average for all previous months
2. A three-month moving average
3. A 3-month moving average where the weights are 0.5 for the latest month, 0.3 and 0.2 for the months previous to that respectively.

	b	Write a short note on 1. Correlation co-efficient 2. Forecast control	10	L2	CO2

		Module-3			
Q.05	a	Explain different types of layouts with an example for each	7	L2	CO3
	b	Photo flash company wants to estimate number of cubicles required to maintain an output of 200 good prints/hr. The setup and exposure time can be theoretically done in 2min /print. The operators are 90% efficient and 5% of the prints must be scrapped and redone. If the cubicles can be utilized for enlarging only 75% of the time, determine: i. The required system capacity in prints/hr. ii. Average output/ hr. expected ii. Number of cubicles required	7	L2	CO3
	c	Explain the steps involved in capacity planning	6	L2	CO3
		OR			
Q.06	a	Valley electronics has a facility with 6 production areas as given below.	7	L2	CO3

1	2	3
4	5	6

It proposes to locate 6 depts. (A, B, C, D, E, F) which have the number of moves/days between depts. as given table below. Develop a layout that minimizes the non-adjacent flows.

	Number of moves to					
	A	B	C	D	E	F
A	-	5	10	-	3	2
B	-	-	-	12	-	-
C	10	4	-	8	-	-
D	-	-	16	-	-	-
E	-	-	7	-	-	-
F	-	-	8	-	-	-

	b	Define plant layout. Explain the main objectives of good plant layout.	7	L2	CO3
	c	Discuss the factors that determine the type of layout in a plant.	6	L2	CO3

		Module-4			
Q.07	a	Bata India Ltd. has a Master Schedule for running shoe production in its facility in lot sizes of 40 Pairs of units. The initial inventory has 45 units and the demand forecast is 20, 20, 30, 20,20,13,15 and 20 units respectively for eight weeks. The company has received orders for 22units in week 1, 9	10	L3	CO4

		units in week 2, 4 units in week 3, 15 units in week 4 and 5 units in week 5. Setup an MPS and find the ATP inventory values for week 1 through 8.			
	b	List the strategies used in aggregate planning and explain any two strategies in detail.	10	L2	CO4
		OR			

Q. 08	**a**	An XYZ company has estimated its quarterly demand for TV sets as given in the table below. The company is expecting similar demand pattern to existing one and wishes to restore ending inventory employment etc. to beginning level. Considering the following decision variables one by one, find the one having least cost
		   i. (OT & IT) Maintain a stable workforce capable of producing 500 units /quarter. Use OT at Rs. 5/unit and IT at Rs .20/unit
		   ii. (Back order) Produce at a steady rate of 400 units /period and accept a limited number of back orders when demand exceeds 400. The stock out cost of lost sales is Rs 22/unit.
		   iii. (Subcontract) produce at a steady rate of 300 units /period and subcontract for excess requirements at a marginal cost of Rs.9/ unit.
			10	L3	CO4

	b	With flow chart **discuss** master production scheduling process	10	L2	CO4
		Module-5			
Q. 09	**a**	A firm has forecast demand rate averaging 10 units /week for an item A. It produces A in order quantities of 40 units during 1-week lead time and carries a safety stock of 15units. The firm has on hand inventory of 20units (includes safety stock) and is scheduled to receive 40 units during week one. Prepare MRP schedule for 12-week period with the details given.	7	L3	CO5
	b	What is ERP? Write the benefits and limitations of ERP.	6	L2	CO5
	c	Define Material Resources Planning (MRP) and with a block diagram. Explain the various inputs to an MRP system and output from MRP.	7	L2	CO5
		OR			
Q. 10	**a**	Design product structure & Intended BOM for a bracket (Z100) that is made up of brass (A10), 2 springs (B11) and 4 clamps (C20). The base is assembled from one clamp (C20) and two housing (D21). Each clamp has one handle (E30) and each housing has two bearings (F31) and one shaft (G32).	7	L3	CO5
	b	Explain the following terms: i. Dependent demand ii. Scheduled Receipts iii. Requirement explosion	6	L2	CO5
	c	Explain the importance of supply management and purchase.	7	L2	CO5