CBCS SCHEME

USN

Seventh Semester B.E. Degree Examination, Jan./Feb. 2021
Operations Management

Time: 3 hrs.

Max. Marks: 80

Note: *Answer any FIVE full questions, choosing ONE full question from each module.*

Module-1

1 a. Explain the 4 stages of historical development of operations management. **(08 Marks)**
  b. What is Productivity? What are the factors affecting productivity. **(05 Marks)**
  c. Discuss about the environment of operations. **(03 Marks)**

OR

2 a. Discuss about the characteristics of decisions. **(06 Marks)**
  b. Explain the framework for decision making. **(06 Marks)**
  c. Draw the breakeven chart. **(04 Marks)**

Module-2

3 a. Discuss about manufacturing and service systems. **(06 Marks)**
  b. What are the longterm capacity strategies? **(06 Marks)**
  c. An assembly line has four work center (A, B, C and D) in series with individual capacities (units per day) and actual output as shown determine :
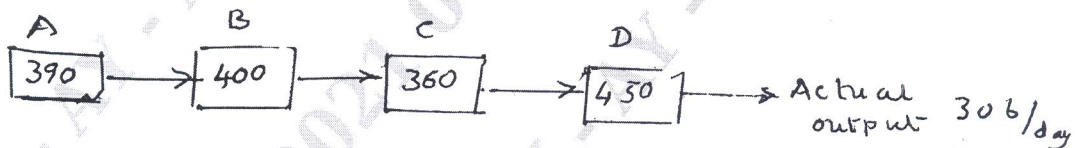 i) system capacity
  ii) system efficiency.

Fig.Q3(c) **(04 Marks)**

OR

4 a. What is forecasting? Discuss the components of time series. **(08 Marks)**
  b. The moving average forecast and actual demand for a hospital drug are shown in Table Q4(b). Compute the tracking signal and comment on the forecast accuracy.

Month	Actual demand	Forecast demand
17	81	88
18	90	85
19	111	93
20	94	94
21	70	98
22	83	95

TableQ4(b) **(08 Marks)**

Module-3

5 a. What are the pure strategies and mixed strategies? Explain any three strategies. **(08 Marks)**

b. A local manufacturing of water heater has estimated its quarterly demand as shown in Table.Q5(b). It expects the next demand cycle to be similar to this one and wishes to restore ending inventory, employment etc. to beginning levels accordingly.

Demand TableQ5(b)

Quarter	Units
1	5000
2	9000
3	7000
4	3000

i) If labour costs group by Rs.20,000 for every change (plus or minus) in 2000 water heaters produced what is the cost associated in varying work force size.

ii) If overtime(OT) usage of labour is allowed coasting at Rs. 50 per unit and idle time charges costing Rs.200 per unit. What would be overtime and idle time costs. If constant work force has to be maintained to produce 6000 units per quarter. **(08 Marks)**

OR

6 a. Discuss briefly master scheduling implementation for various strategies.
i) Make – to – stock   ii) Assemble – to – order   iii) Make – to – order. **(09 Marks)**

b. An appliance manufacturer produces a motor assembly (x) that is used in several hand held appliances. They currently have 60 units in stock and will manufacture more in production runs (lots) of 90 units develop a tentative master schedule for the demand shown below :

Initial inventory = 60	Week									
Production run = 90	1	2	3	4	5	6	7	8	9	10
Customer forecast		5	30	40	50	40	50	50	50	50
Inter plant forecast			5			5		5		
Customer orders	40	40	30	10	10	5				
Warehouse orders	15	10		5						

(07 Marks)

Module-4

7 a. Explain the different MRP inputs. **(08 Marks)**

b. Given the following product structure tree. Compute the net requirements for A, B, C and D to produce 20 units of product Z.

Components	Inventory on hand and on order
A	10
B	5
C	10
D	10
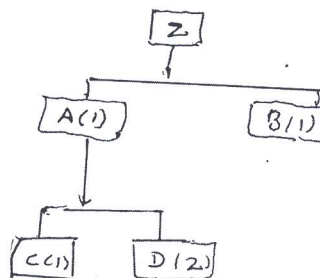
Fig.Q7(b)

(08 Marks)

OR

8 a. Explain the steps in capacity management. **(07 Marks)**

   b. A work center operates 6 days per week on a two shift per day basis 8 hrs shift and has four machines with the same capability. If the machines are utilized 75% of the time at a system efficiency of 90 percent .What is the rated output n standard hours per week. **(05 Marks)**

   c. What are the inputs for CRP, and outputs of CRP? **(04 Marks)**

Module-5

9 a. Discuss about forward and backward scheduling. **(08 Marks)**

   b. Shown here are the time remaining (number of days until due) and work remaining (number of days) for five jobs which were assigned a letter as they arrived sequence the jobs by priority rules i) FCFS ii) EDD iii) LS iv) SPT v) LPT.

Job	No. of days until due	No. of days of work remaining
A	8	7
B	3	4
C	7	5
D	9	2
E	6	6

(08 Marks)

OR

10 a. A shop has eight job orders that must be processed sequentially through three work centers. Each job must be finished the same sequence in which it was started. Times (in hours) required at the various work centers are as shown below. Use Johnsons rule to develop the job sequence that will minimize the computation time.

Jobs	A	B	C	D	E	F	G	H
WC1	4	8	5	9	3	4	9	6
WC2	6	4	7	1	4	2	5	2
WC3	8	7	9	7	9	8	9	7

(08 Marks)

   b. The time spent (in min) in processing of two jobs on six machines A, B, C, D, E and F and the necessary technological ordering of machines are as follows :

Job 1 :	A – 20	C – 10	D – 10	B – 30	E – 25	F – 15
Job 2 :	A – 10	C – 10	E – 15	D – 10	F – 15	B – 20

Use graphical method to determine an optimal sequence of jobs which minimizes the total elapsed time. Also determine which job is done first on each of the machined. **(08 Marks)**

* * * * *