B 1000MET463122203 Pages: 3

Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Seventh Semester B.Tech Degree (S, FE) Examination May 2023 (2019 Scheme)

Course Code: MET463

Course Name:OPERATIONS MANAGEMENT

Max. Marks: 100 **Duration: 3 Hours**

PART A

Answer all questions, each carries 3 marks. Marks

1 Define operations management. (3)

2 What is make or buy decisions? (3)

3 Distinguish between design capacity and system capacity. (3)

4 State the basic differences between construction type and improvement type layout algorithms (3)

5 Explain different types of demand patterns (3)

6 What are the different uses of forecasting? (3)

7 What do you meant by aggregate planning? (3)

8 Explain bill of materials structure . Give an example. (3)

9 Differentiate between single machine scheduling and flow shop scheduling (3)

10 Write steps of McNaughton's algorithm (3)

PART B

Answer any one full question from each module, each carries 14 marks.

Module I

11 a) There are five existing facilities which are to be served by a single new facility. The details of existing facilities are shown in the table (7)

Existing Facility	1	2	3	4	5
Coordinates	5, 10	20, 5	15, 20	30, 25	25, 5
No of trips of loads/year	100	300	200	300	100

Find optimum location of the new facility based on gravity location concept

b) Explain different types of production system. Write the advantages and disadvantages of each production system. (7)

OR

12 a) Write in detail any seven factors influencing plant location. (7)

b) Explain the system concept of production with suitable diagram. (7)

Module II

13 a) Explain Systematic Layout Planning with suitable diagram. (7)

b) Write different steps of CRAFT Algorithm. (7)

OR

14 a) Write different steps of ALDEP Algorithm. (7)

b) Write different steps of CORELAP Algorithm. (7)

Module III

15 a) A Firm uses simple exponential smoothing with smoothing constant = 0.3 to forecast demand. The forecast for first week of January was 500 units, where actual demand turned out to be 450 units, (14)

i) Forecast demand for second week of January.

ii) Assume the actual demand during second week of January turned out to be 550 units, forecast the demand up to February third week assuming subsequent demands as 475, 450, 470, 525, 470 units.

OR

16 a) Given below is a series of weekly demand data that a company collected on one of its product and forecast for corresponding weeks, made by a forecast method which company is testing. Compute mean absolute deviation and mean squared error based on six weeks of data (10)

Week	1	2	3	4	5	6
Demand	142	181	144	174	192	176
Forecast	155	157	159	161	163	165

b) Explain the measures of forecast accuracy. (4)

Module IV

17 a) List and explain various pure and mixed strategies. (7)

b) Explain different methods available for lot sizing in Material Requirement Planning (MRP) (7)

OR

18 a) Explain Master Production Schedule(MPS) with flowchart showing relationship of MPS with other manufacturing and control activities. (10)

b) What do you meant by Aggregate planning? (4)

Module V

19 a) Explain different measures of performance in a single machine scheduling problem with independent jobs. (4)

b) Consider following problem in single machine scheduling with independent jobs (10)

Job	1	2	3	4	5	6	7	8
Processing time	5	12	8	10	3	15	8	6
Due Date	10	16	11	16	6	25	12	14
Weight	2	1	1	2	3	4	2	3

Obtain optimal schedule for each of following performance measures:

i)To Minimize mean flow time

ii) To Minimize maximum lateness

iii) To Minimize weighted mean flow time.

OR

20 a) Find the sequence that minimizes the total time required in performing the following jobs on three machines in order *ABC*. Check whether Johnson's rule can be extended to this problem. Also find makespan and draw Gantt chart . Processing times (in hours) are given in the following table (10)

Job	1	2	3	4	5
Machine A	11	13	15	12	20
Machine B	10	8	6	7	9
Machine C	12	20	15	19	7

b) Explain Palmer Heuristic. (4)

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