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## Sixth Semester B.E. Degree Examination, July/August 2022 Operations Management

Time: 3 hrs.

Max. Marks: 100

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

### Module-1

- 1 a. Explain the important steps in the history of operations management. (10 Marks)
- b. Explain the environmental factors that influence the productivity. (10 Marks)

**OR**

- 2 a. Explain the contribution of Fredrick Winslow Taylor and Henry Laurence Gantt to the operations management. (10 Marks)
- b. Mention the factors affecting productivity and explain. (10 Marks)

### Module-2

- 3 a. Mention the forecasting methods and explain. (10 Marks)
- b. A paper box company makes carry out pizza boxes. If the sales of the company is a function of the advertising expenditure, forecast the sales for the 11<sup>th</sup> Quarter, when the budget for advertising is fixed Rs.1,30,000/- by using regression analysis.

Quarter	1	2	3	4	5	6	7	8	9	10
Advertising expenditure is (X Rs. 10,000/-)	4	10	15	12	8	16	5	7	9	10
Sales revenue in (X Rs. 1,00,000/-)	1	4	5	4	3	4	2	1	4	2

(10 Marks)

**OR**

- 4 a. Explain the forecasting objectives. (08 Marks)
- b. A firm uses simple exponential smoothing with  $\alpha = 0.1$  to forecast sales. The forecast for week ending Feb 1 was 500 units, whereas actual demand turned out to be 450 units.
  - (i) Forecast the demand for week ending Feb.8
  - (ii) Assume the actual demand during the week ending Feb 8 turn out to be 505 units. Forecast the demand for week ending Feb 15. Continue the forecasting through March 15, assuming that the subsequent demands were actually 516, 488, 467, 554 and 510 units. (12 Marks)

### Module-3

- 5 a. Mention and explain the framework for decision making. (10 Marks)
- b. Explain the Decision support systems with economic and statistical probability model. (10 Marks)

**OR**

- 6 a. Mention the Aggregate planning guidelines. (08 Marks)
- b. Mention and explain Master Scheduling methods. (12 Marks)

### Module-4

- 7 a. Mention and explain the concepts and terminology in material requirement planning. (10 Marks)
- b. Explain the capacity requirement planning. (10 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.

OR

- 8 a. Explain production activity control. (10 Marks)  
 b. Explain the data requirements for well organized data base for effective working of production activity control. (10 Marks)

**Module-5**

- 9 a. Explain the concepts of single machine scheduling. (06 Marks)  
 b. Consider the following single machine scheduling:

Job (j)	1	2	3	4	5
Processing time ( $t_j$ ) in days	7	4	3	2	8

Find (i) Optimal SPT rule sequence (ii) Completion time of all jobs (iii) Mean flow time, (iv) Mean tardiness, if due date for all jobs is 10 days from now, (v) Number of tardy jobs. (14 Marks)

OR

- 10 a. Explain Johnson's algorithm for 'n' jobs on '2' machines. (05 Marks)  
 b. A machine operator has to perform two operations, turning and threading on a number of different jobs. The times required to perform these operations are given. Determine the order in which the jobs should be processed in order to minimize the total time required to finish all the jobs. Also find the total minimum elapsed time and the idle time on each machine.

Jobs (j)	1	2	3	4	5	6
Machine A (Time for turning in hours)	3	12	5	2	9	11
Machine B (Time for threading in hours)	8	10	9	6	3	1

(15 Marks)

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