

7E7015

Roll No. _____

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B. Tech. VII Sem. (Main/Back) Exam., Nov.-Dec.-2016

**Mechanical Engineering
7ME5A Operation Management**

Time: 3 Hours

Maximum Marks: 80

Min. Passing Marks Main : 26

Min. Passing Marks Back: 24

Instructions to Candidates:

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.

Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination.

(Mentioned in form No. 205)

1. Calculator _____

2. _____

UNIT - I

Q.1 (a) What do understand by operations management? What is operations strategy? [8]

Explain various types of operation strategies. [8]

(b) Explain the strengths, weakness, opportunities and threats [SWOT] analysis of your organization. What strategic did you gain? [8]

OR

Q.1 (a) What is forecasting? Discuss and differentiate simple moving average method and weighted moving average methods. [6]

(b) A firm uses simple exponential smoothing with $\alpha = 0.2$ to forecast demand. The forecast for the first week of January 400 units, whereas actual demand turned out to be 450 units.

(i) Forecast the demand for the second week of January.

(ii) Assume that the actual demand during the second week of January turned out to be 460 units, forecast the demand up to February third week, assuming the subsequence demands as 465, 434, 420, 498, and 462 units. [4+6=10]

UNIT - II

Q.2 (a) Define product and service? Explain the types of production system and briefly discuss their characteristics. [8]

(b) What is meaning of capacity planning? Explain the steps involved in capacity planning process. [8]

OR

Q.2 (a) What is process matrix? Explain. A manufacturing firm has four work stations A, B, C, and D in services with individual capacities of 480, 395, 375 and 410 units per day, find the system and the system efficiency. [3+5=8]

(b) A turning department wants to install enough semi automatic lathes to produce 2,50,000 good components per year. The turning operation takes 1.5 minutes per component. But it is observed that the output of lathe will have 3 percent defectives. How many lathes will be required if one isn available for 2000 hours of capacity per year? [8]

UNIT - III

Q.3 (a) Discuss the objectives and functions of production planning. [8]

(b) What is aggregate planning strategy? Explain the various aggregate planning strategic techniques. [8]

OR

- Q.3 (a) What is meaning of MRP? Explain difference between MRP and MRP - II with a suitable example. [8]
[3+3+2=8]
- (b) Write short notes on followings:
- (i) Line balancing
 - (ii) Master scheduling
 - (iii) Introduction of ERP

UNIT - IV

- Q.4 (a) Explain the term scheduling and discuss different factors affecting scheduling. [8]
- (b) What is Bellman - Johnson Algorithm method? Consider two machines and five jobs as follows: Find out the optimum scheduling and priority by using the Bellman and Johnson algorithm. [8]

Jobs →	A	B	C	D	E
Machine ↓					
I	14	5	7	3	10
II	2	6	1	9	4

OR

- Q.4 (a) What is term Just-in-Time (JIT) production? Explain its aims and applications. [8]
[2+3+3=8]
- (b) Write short notes on following:
- (i) Routing
 - (ii) Expending and follow up
 - (iii) Lean operations system

UNIT - V

- Q.5 (a) What is meaning of material management? Explain its objectives. [8]
- (b) What is scope of material management? Explain the procedure of material procurement. [8]

OR

- Q.5 (a) What is meaning of terms PERT and CPM techniques? [6]
- (b) A Limited company produces a product which has monthly demand of 4000 units. The product required the component A which is purchased at ₹ 20. For every finished product, 1 unit of product is required. The ordering cost ₹ 120 per order and the holding cost is 10% per annum. You are required to calculate:
- (i) EOQ [3]
- (ii) If the minimum lot size to be supplied is 4000 units, what is the extra cost the company has to incur? [4]
- (iii) What is the minimum carrying cost the company has to incur? [3]
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