

MMS-III (Operations) (Uni Exam.)
Operations Planning & Control

27.11.2013.

15 : 2nd half.13-Avi(az)

Con. 9542-13.

(FURTHER REVISED COURSE)

VT-14760

(3 Hours)

[Total Marks : 60

- N.B. :** (1) Answer any **three** questions from **Section I**.
(2) **Section II** is **compulsory**.
(3) **Maximum marks** for **each** question are indicated on the **right side** of the question.
(4) Assume if **necessary** any additional **data**.

Section I

I.

- a) What is forecasting? Why is it necessary in production function? State various types of forecasting methods based on time frame. (4 marks)
- b) Following data is available for last 6 years. Find the forecast for the 7th year by using 2 years moving average and also find out by single exponential smoothing method assuming the forecast for 1st year is 2300 units. Assume smoothing constant is 0.2. Also find out which of the two forecasts is more reliable using MSE.

(6marks)

YEARS	ACTUAL SALES IN UNITS
1	2300
2	2200
3	2250
4	2600
5	3300
6	3500

II.

- a) What is the broad difference between scheduling in manufacturing and service organizations? (4marks)
- b) ABC Ltd is involved in manufacturing of a product. The company got the orders from 5 customers A,B,C,D & E in the same order in the beginning of the month. The processing time and due dates of the jobs are given below. Develop the order in which the jobs are to be processed by following FCFS and SPT dispatching rules. (6marks)

JOB	PROCESSING TIME IN DAYS	JOB DUE DATE
A	6	8
B	2	6
C	8	18
D	3	15
E	9	23

Calculate:

- a. Average completion time per job
b. Average job delay

Suggest the best decision for scheduling under above performance criteria.

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III.

- a) Line balancing is arranging a production line so that there is an even flow of production from one work station to the next-Critically Discuss.

(4marks)

- b) A producer of electronic equipment needs to add a component sub assembly operation that can produce 80 units during 8 hours shift. The operations have been designed for three activities as shown:

(6marks)

Operation	Activity	Standard time (minutes)
A	Mechanical Assembly	12
B	Electric Wiring	16
C	Testing	3

- a) How many workers will be required for each activity?
- b) Assuming that the workers at each station cannot be used for other activities in the plant, what is the approximate percentage of idle time for this assembly operation?
- c) Compute the balance efficiency.

- IV. Explain product-process matrix and analyze the role of operations planning and control in operations. (10marks)

- V. Write short notes on any two of the following: (10marks)

- a) Enterprise Resources Planning (ERP).
- b) Master Production Schedule (MPS).
- c) Factors to be considered in Equipment Selection.
- d) Flexible Manufacturing Systems.

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Section II

VI.

a) Case Study “A”:

(15marks)

A product is produced by 5 stage processes- 1) Shearing 2) pressing 3) welding 4) painting and 5) packing. The time taken for each of these operations is 20, 30, 15, 12, and 6 minutes respectively. Each stage has only one machine for operations presently. Map the process and analyse the capacity with respect to the following:

- a) If the shop works for 8 hours shift we have effective time of 450minutes. What is the production capacity of the shop?
- b) Where is the bottle-neck in the system? If we want to add one machine, where we should make an investment?
- c) Identify the additional capacity required for daily production target of 25 units. Compute the utilization of the machines as per the revised capacity calculations.
- d) What are the key inferences of these exercises?
- e) Explain the above case with reference to ‘Theory of Constraints’.
- f) Explain the above situation with reference to capacity utilization and scheduling.

b. Case Study “B”:

(15marks)

A Production Planning and Control Manager recently discussed an example from his early career, prior to his full understanding of inventory as a symptom of the way the business was being run. The company he worked for had experienced a slowdown in sales. The General Manager of the company, concerned about profitability asked the Production Planning and Control Manager to cut 15% of the inventory in order to bring inventory expense in line with the lowest level of sales.

Without understanding, the Production Planning and Control Manager did what was asked of him – except that without a good understanding of the relationships between managerial approaches and inventory, he merely cut the inventory level without making any changes in the business processes.

[TURN OVER

About 3 months after the initial request from the General Manager, the Planning and Control Manager was again approached by the General Manager. The conversation went something like this:

General Manager: "What are you doing to my production facility?"

Planning and Control Manager: "What do you mean?"

General Manager:: "We have all kinds of new problems-lots of premium freight shipments from suppliers in response to all kinds of part shortages, split lots being frequently run on the equipment which are drastically increasing our setup costs, a major falloff in labor efficiency, and other similar problems-what *are* you doing?"

Planning and Control Manager: "I'm getting rid of 15% of the inventory."

General Manager: "Well, then, put it BACK!"

Answer the following questions:

1. In the above case, explain what did the Production Planning and Control Manager do wrongly?
2. How would you tackle the inventory reduction issue?
