Roll No. | | | | | | | | | |

B.E/B.Tech (FULL-TIME) DEGREE END SEMESTER EXAMINATIONS – APRIL/MAY 2012

INDUSTRIAL ENGINEERING

SIXTH SEMESTER

20

(REGULATIONS 2008)

IE9355 PRODUCTION PLANNING AND CONTROL

Answer ALL Questions

Time: 3 Hours Max.Marks:100

PART – A (10 X 2 = 20 Marks)

1. What are the various types of value addition?
2. What are the distinction between a manufacturing system and service system?
3. What is a moving average? What is the effect of increasing the number of periods in the moving average?
4. State the steps involved in Forecasting process.
5. State the features of Graphical method in aggregate planning problem
6. State the guidelines for generating MPS.
7. What are the objectives of Production Activity Control?
8. Differentiation between finite loading and infinite loading.
9. State the objectives of Production Planning and Control.
10. What are the activities of PPC department?

PART – B (5 X 16 = 80 Marks)

11. What are the uses of Line of Balance? Explain the steps involved in the development of Line of Balance chart with an illustration.

12a. Using trend adjusted exponential smoothing to generate one period shead forecasts for the following data and estimate the forecasting error.Assume S (o) = X_1 ; $\alpha = 0.10; \beta = 0.2$ and initial trend =0

Period (T)	1	2	3	4	5	6	7	8	9	10
Demand (X_T)	250	213	195	180	170	150	135	110	90	75

(OR)

12b. The tensile strength of paper is related to the amount of hard wood in the pulp. The samples are produced in the pilot plant and the data obtained are shown below:

Strength	160	171	175	182	184	181	188	193	195	200	250	290
% of hard wood	10	15	15	20	20	20	25	25	28	30	40	41

Fit a simple linear regression model to the above data. Also determine co efficient of correlation and co efficient of determination and comment.

13a. A company produces calculators and has forecast demand over the next four quarters as shown below. Each quarter has 60 working days.the company maintains constant work force of 40 employees and there are no subcontractors available who can meet its quality standards. The company can, however, go on overtime if necessary and encourage customer to back-order calculators. Production and cost data are as follows:

Quarter	1	2	3	4
Units	2000	1500	1700	2000

Production capacity:

Initial Inventory: 400 units (final included in last period's demand)

Regular time hours: 40 employees x (60 days/quarter)x 8 hr/day= 19200 hr/period

Overtime hours= 40 employees x (60 days/quarter) x (4 hr/day)=9600 hr/day

Standard labor hr/unit= 15hrs

Labor : Regular time cost = Rs. 10/ hr

Overtime cost = Rs. 15/hr

Material and Overhead (Regular time) = Rs.100/unit

Material and overhead (Over time) = Rs. 60/ unit

Cost of unutilized capacity during regular time = Rs. 60/unit

Back order cost: apportioned at Rs. 5/unit/period.

Inventory carrying cost = Rs. 10/unit/period.

Formulate this problem as a transportation problem and Solve.

(OR)

13b.

A company manufactures Iron Box. The MPS of the final assembly is as shown below.

Month	1	2	3	4	5	6	7	8
Projected Requirements	-	3500	3000	4500	-	1000	4000	5500

Initial Stock on Hand is 1150 units, carrying cost is Rs 2.5 per unit/month and the lead time is one month. The ordering cost per order is Rs.6000. Develop an MRP schedules with following lot sizing policies

i. MRP solution using Part period balancing
ii. Least unit cost Method

14a.

(i) Skylark outfitters produces shirts for races. They need to acquire some new stamping machines to produce 30,000 good shirts per month. Their plant operates 200 hours per month, but the new machines will be used for these shirts only 60 percent of the time and the output usually includes 5 percent that are unusable. The stamping operation takes one minute per shirt and the machines are expected to have 90 percent efficiency when considering adjustments and unavoidable down time. How many stamping machines are required?

(ii) Discuss the essential features, uses and application of MRP II system. (8+8)

(OR)

14b. Explain the various Capacity Planning models with appropriate examples.

15a. Classify and explain the salient features various types of Production systems with examples.

(OR)

15b.'Operations Management is a central function in any organization' – Justify this statement.

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