01017

BACHELOR OF TECHNOLOGY IN MECHANICAL ENGINEERING (COMPUTER INTEGRATED MANUFACTURING)

Term-End Examination

June, 2013

BME-035 : INDUSTRIAL ENGINEERING AND OPERATIONS RESEARCH

Time : 3 hours *Maximum Marks : 70*

Note : *All questions carry* ***equal*** *marks. Assume any missing data suitably. Attempt* ***four*** *from section 'A' and* ***three*** *from* ***Section 'B'****.*

SECTION - A

1. Describe major contributions of F.W Taylor in the area of the Industrial Engineering. **10**

2. "Work study is powerful tool for management while it is a boon for workers". Critically appreciate the statement. **10**

3. For a particular task 15 observations were taken by a time study observer. Check whether the number of observations is sufficient for 5% limit of accuracy and 95% confidence level. Indicate the minimum number of observations required. **10**

Time (x in min)	Frequency (f)
1	2
2	3
3	3
4	4
5	5

4. Discuss the concepts of the following : **10**

   (a) Concurrent Engineering

   (b) Reverse Engineering

   (c) Re - Engineering

5. Explain the characteristics of man-machines system. Explain the functions of the following in a man-machine system. **10**

   (a) Man element (b) Machine element

6. Write short notes on **any two** : **10**

   (a) Therbligs

   (b) Errors in product designing.

   (c) Productivity

SECTION - B

7. Food X contains 6 units of vitamin A per gram and 7 units of vitamin B per gram and costs 12 paise per gram. Food Y - contains 8 units of vitamin A per gram and 12 units of Vitamin B and costs 20 paise per gram. The daily minimum requirements of Vitamin A and Vitamin B are 100 units and 120 units respectively. Formulate the L.P problem and find the min. cost of product mix using simplex method . **10**

8. Use North-West Corner rule and MODI methods to optimize the following transportation matrix. **10**

	D_1	D_2	D_3	D_4	Supply
O_1	1	2	1	4	30
O_2	3	3	2	1	50
O_3	4	2	5	9	20
Demand	20	40	30	10	

9. Describe Markov chain with the help of suitable example. Give the applications of Markov process. **10**

10. Describe steps involved in method of simulation. Give its applications. **10**

11. Children Srija and Himaja play a game who have some 25 paise coins and 50 paise coins. Each draw a coin from their bags without knowing other's choice. If the sum of coins drawn by both is even Srija wins them, other wise Himaja wins. Find the best strategy for each player and also find value of the game. **10**