

**BACHELOR OF TECHNOLOGY IN
MECHANICAL ENGINEERING
(COMPUTER INTEGRATED
MANUFACTURING)**

**Term-End Examination
December, 2012**

**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
(Answer any four)**

1. What are the changes and developments occurred in the field of industrial Engineering during 19th and 20th centuries ? **10**
2. Describe the procedure of Method study by SREDIM Technique. **10**
3. Calculate the number of observations for an accuracy of 5% and confidence level of 95% if probability of the worker in idle is 0.3. **10**

4. List down some major questions that are to be answered for evaluating a product. What is product re - engineering ? **10**
5. Explain the impact of the following on working of an operation. **2+3+2+3=10**
- (a) Noise.
 - (b) Temperature.
 - (c) Humidity.
 - (d) Lighting.
6. Write short notes on *any two*. **5+5=10**
- (a) Therbligs.
 - (b) Concurrent Engineering.
 - (c) Micro Motion study.

SECTION - B
(Answer any three)

7. Maximise $z = 3x_1 + 4x_2$ by using Graphical Method, Subject to $x_1 - x_2 \leq 1$ 10

$$-x_1 + x_2 \leq 2$$

$$x_1, x_2 \geq 0$$

8. Use Vogel's Approximation 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. Write notes on 10
- (a) Markov chain.
 - (b) Queueing Models.
10. Describe steps involved in Method of Simulation. 10
Give its applications.

11. Children Srija and Himaja play a game who have some 25 paise coins and 50 poise 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, otherwise Himaja wins. Find the best strategy for each player and also find the value of the game. 10
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