No. of Printed Pages : 3

BME-035

B.Tech. MECHANICAL ENGINEERING (COMPUTER INTEGRATED MANUFACTURING)

Term-End Examination

00570

June, 2015

BME-035 : INDUSTRIAL ENGINEERING AND OPERATIONS RESEARCH

Time : 3 hours *Maximum Marks : 70*

Note :

(i) *Answer any **seven** questions.*

(ii) *Use of calculator is allowed.*

(iii) *Assume missing data, if any.*

1. (a) What are the various measures to improve productivity of a firm ? 5

(b) Describe in brief the tools and techniques of Industrial Engineering. 5

2. (a) Differentiate between method study and work measurement. State the objectives of each. 5

(b) Last week a company produced 150 units in 200 hours of labour. This week the company produced 180 units in 220 hours of labour. What is the growth rate in productivity ? 5

3. (a) What are the principles of motion economy related to the use of human body, work place, and tools and equipments ? *5*

(b) What is two-handed process chart ? Explain through an example. *5*

4. Discuss the various factors affecting product design. *10*

5. (a) Explain the impact of noise, temperature humidity and lighting on the working of an operation. *5*

(b) Describe the features of man-machine system. *5*

6. (a) What do you mean by unbounded solution and infeasible problem in LPP ? *3*

(b) Use Simplex method to solve the following problem : *7*

Maximize : $z = 2x_1 + 5x_2$

subject to : $x_1 + 4x_2 \leq 24$

$3x_1 + x_2 \leq 21$

$x_1 + x_2 \leq 9$

$x_1, x_2 \geq 0$

7. Find the optimal solution to the following transportation problem in which the cells contain the transportation cost in rupees/unit : *10*

	W_1	W_2	W_3	W_4	W_5	Available
F_1	7	6	4	5	9	40
F_2	8	5	6	7	8	30
F_3	6	8	9	6	5	20
F_4	5	7	7	8	6	10
Required	30	30	15	20	5	100 (Total)

8. Solve the following game by dominance property : *10*

	B_1	B_2	B_3	B_4	B_5
A_1	2	3	4	8	4
A_2	5	6	3	7	8
A_3	6	7	9	8	7
A_4	4	2	8	4	3

9. Write short notes on any ***four*** of the following : $4 \times 2\frac{1}{2} = 10$

(a) Product Life Cycle

(b) Goal Programming

(c) Design for Assembly (DFA)

(d) Transhipment Problem

(e) Predetermined Motion Time Standard (PMTS)

(f) Simulation