Name : ....

Roll No. : ....

Invigilator's Signature : ....

CS/B.Tech (ME)/SEM-8/ME-801/2010

2010
INDUSTRIAL ENGINEERING

Time Allotted : 3 Hours   Full Marks : 70

The figures in the margin indicate full marks.

*Candidates are required to give their answers in their own words
as far as practicable.*

GROUP – A
(Multiple Choice Type Questions)

1. Choose the correct alternatives for the following :   10 × 1 = 10

   i)   Gantt chart is used for

   a)   Inventory control   b)   Material handling

   c)   Production schedule   d)   None of these.

   ii) Which of the following is not correct ?
        In contrast of inventory management, the following need
        to be addressed

   a)   How much to order ?

   b)   When to order ?

   c)   How much safety stock to keep

   d)   Maximum of the total inventory cost.

iii) Who introduced the concept of statistical quality control to the industry ?

a) Walter Schewhart   b) F.W. Taylor

c) Gantt   d) Henry Ford.

iv) In Break-even analysis, the total cost consists of

a) Fixed cost + Variable cost

b) Fixed cost + Sales revenue

c) Fixed cost

d) Variable cost.

v) Product layout is best suited where

a) one type of product is produced

b) product is standardised

c) product is manufactured in large quantities

d) all of these.

vi) Motion study involves analysis of

a) actions of operator

b) tooling and equipment

c) layout of work place

d) All of these.

vii) In which type of layout is plant grouped according to its function ?

    a) Product layout

    b) Fixed position layout

    c) Process layout or functional layout

    d) S-flow pattern.

viii) Just-in-time is most suitable in

    a) Small batch production

    b) Repetitive manufacturing

    c) Project situation

    d) All of these.

ix) Which of the following is a technique for forecasting ?

    a) Exponential smoothing

    b) PERT/CP

    c) Gantt chart technique

    d) Control chart.

x) If the unit ordering cost is doubled, then the E.O.Q. will

    a) be halved

    b) be doubled

    c) increase by 1·414 times

    d) decrease by 1·414 times.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following.　　　3 × 5 = 15

2. Define motion study. State the different charts which are used as a tool of motion study.

3. What do you mean by group technology ? Write down the advantages of Group Technology.

4. What are the method of Job Evaluation ? Explain the Point Ranking method of Job Evaluation.

5. A concern is manufacturing a product which is sold for Rs. 10·50 per unit and the fixed cost of the assets is Rs. 50,000 with a variable cost of Rs. 6·50 per unit. How many units should be produced to break-even ?

6. Distinguish between Continuous production system and Intermittent production system.

7. How does MRP differ from MRP-II ? Briefly explain RCCP.

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. 3 × 15 = 45

8. a) Explain the various costs associated with inventory. 4

b) Explain the concept of the '*Q*' System and '*P*' System. 5

c) A company uses 75 Nos. of items per month. Each item costs Rs. 25/-. Cost of putting through each order and inventory carrying cost per month are stipulated as Rs. 36/- and 1·5% of the average inventory investment respectively. What is Economic Order Quantity ? 6

9. a) What is Value Engineering ? 2

b) What are the benefits of Value Engineering ? 2

c) How is Value Engineering applied ? 4

d) What do you understand by maintenance management ? 2

e) Discuss the various maintenance systems being practiced. 5

10. a) What are the major objectives of plant layout. 3

b) What are the types of plant layout ? Explain. 4

c) What are the principles of good plant layout ? 4

d) When to use product and process layouts ? 4

11. a) Briefly describe the basic considerations in a new product design. 4

b) What are the problems due to the absence of proper scheduling ? 3

c) M/s R.E. Works at Kolkata has been given a contract to make seven components by M/s B.M. Company. Each of these components requires processing on two machines M1 and M2 in the order of M1, M2. The time (in hours) required by each of these jobs for processing on the two machines is given in the table. Find the optimal sequence for processing the seven jobs and idle time of machines. 8

Job	M1	M2
A	9	2
B	5	4
C	8	10
D	3	5
E	4	6
F	1	11
G	7	6

12. a) What are the main functions of forecasting ? 3

   b) The following data on the exports of an item by company during the various years fit in a straight line. Give a forecast for the years 1990 and 1991 using Least Square method. 12

Year	No of items
1981	13
1982	20
1983	20
1984	28
1985	30
1986	32
1987	33
1988	38
1989	43

13. Write short notes on the following :

   a) Bathtub curve. 5

   b) Productivity 5

   c) Line Of Balance (LOB) 5

═══════════