B. Tech.

(SEM. IV) EXAMINATION, 2006-07

INDUSTRIAL ENGINEERING

Time : 3 Hours] [Total Marks : 100

Note : Attempts all questions. Graph paper may be used for solving problem no. 5 (b).

1. Attempt any two parts of the followings : \(10 \times 2 = 20\)
   (a) Define productivity. Describe following techniques of improving productivity of an organization:
      (i) Employee based techniques
      (ii) Technology based techniques.
   (b) What is work sampling? Write down the steps of performing work sampling in an organization. Compare work sampling with stopwatch time study.
   (c) Discuss any two methods of job evaluation in detail.

2. Attempt any two parts of the followings : \(10 \times 2 = 20\)
   (a) Name various kinds of layouts. Describe, with example, principles of a good plant layout.
   (b) Plant location is a recurring problem involving business survival. Evaluate the statement.
   (c) Discuss the following functions of PPC:
      (i) Dispatching
      (ii) Follow-up.
3 Attempt any **four** parts of the followings: \(5 \times 4 = 20\)

(a) Discuss the 'present worth method' of equipment replacement.

(b) Explain the factors responsible for replacement of existing machine.

(c) Define inventory. Why is it necessary to keep inventory? Explain various costs associated with inventory.

(d) Derive Wilson’s formula for determining Economic order quantity. State clearly the assumptions made.

(e) Discuss the significance of 36 Limits in \(\bar{X}\) and Ra chart.

(f) Write a short note on M.R.P.

4 Attempt any **four** parts of the followings: \(5 \times 4 = 20\)

(a) Define organization. Discuss the concept of 'Span of control' at various levels of management.

(b) Describe the method of formation of a public limited company.

(c) Discuss the salient features of a cooperative type of business organization.

(d) Write short note on human relations in a business.

(e) Explain the followings:-
   (i) Master budget
   (ii) Rolling budget.

(f) Discuss briefly ‘Payment of Wages Act’.

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5  Attempt any two parts of the followings :  \( 10 \times 2 = 20 \)

(a) How the three floats of a network are determined? Name these floats and explain the conclusions drawn from these floats.

(b) Fixed cost of an enterprise is Rs.60000 in a period. The sales for this period is Rs.150,000. Variable cost per unit is Rs.5. The unit sales price for each product is Rs.15. Construct the break-even chart and determine
   (a) break-even point
   (b) minimum number of products to be sold for earning profit
   (c) Profit earned for sales volume of Rs.1,20000
   (d) Margin of safety. Assume that no. of units sold consider with the volume of production (Graph paper may be used)

(c) Describe big-M method for solving a linear programming problem.

OR

(c) Explain with an example how two variable linear programming problems can be solved with graphical method.