DipIETE – ET (OLD SCHEME)

Code: DE1 **JUNE 2009** **Subject: INDUSTRIAL ENGINEERING**
Time: 3 Ho **Max. Marks: 100**

NOTE: There are 9 Questions in all.

- **Question 1 is compulsory and carries 20 marks. Answer to Q. 1. must be written in the space provided for it in the answer book supplied and nowhere else.**
- **Out of the remaining EIGHT Questions answer any FIVE Questions. Each question carries 16 marks.**
- **Any required data not explicitly given, may be suitably assumed and stated.**

Q.1 Choose the correct or the best alternative in the following: (2×10)

a. The first Ph.D. granted in the USA in the field of Industrial Engineering was the result of research done in the area of

(A) Time study **(B)** Motion study
(C) Fatigue study **(D)** Work study

b. The efficiency of a machine =

(A) The ratio of output to input is greater than equal to 1
(B) The ratio of output to input is less than equal to 1
(C) The ratio of output to input is equal to 1
(D) The ratio of output to input is greater than 1

c. Statistical forecasting is based on _____

(A) Present data. **(B)** Past data.
(C) Future data. **(D)** Past & Present data.

d. The purpose of C-chart is to find

(A) Number of defects per unit for sample of constant size.
(B) Number of non conformities per unit for a sample of not constant size.
(C) Number of units non-conforming.
(D) Proportion of units non-conforming.

e. Motivation is an element of

(A) Planning function **(B)** Organization function
(C) Control function **(D)** Direction function

f. Linear programming identifies

(A) the optimum quantity of variables
(B) the maximum profit or minimum cost that can be expected
(C) both **(A)** and **(B)**
(D) None of the above

g. Significance testing can consider the variations

(A) Testing two random samples as regard their sample means.

(B) Testing a random sample mean against a lot mean.
(C) Testing sample means of two samples of existing process and modified process.
(D) All of above.

h. Productivity improvement implies

(A) a more efficient use of resources
(B) less waste per unit of input supplied
(C) higher levels of output for fixed levels of input supplied
(D) All of the above

i. The method that uses algebraic equations

(A) Graphical technique **(B)** Simplex method
(C) Both of the above **(D)** None of the above

j. If 'F' is fixed cost, 'V' is total variable cost and 'P' selling price of each unit, then Breakeven point =

(A) $\frac{F}{1-V/P}$ **(B)** $\frac{V}{1-F/P}$
(C) $\frac{P}{1-F/V}$ **(D)** $\frac{F}{1-P/V}$

Answer any FIVE Questions out of EIGHT Questions.
Each question carries 16 marks.

Q.2 a. Identify the factors contributed to the development of Industrial Engineering. **(6)**

b. What do you understand by production? Also state the factors of production. **(4)**

c. Enlist the different types of productivity measures. **(6)**

Q.3 a. Describe the steps involved in developing a product. **(6)**

b. Explain Heuristic method of line balancing? **(5)**

c. Explain the merits & demerits of urban plant sites over rural plant sites. **(5)**

Q.4 a. Differentiate between ISO-9000 and TQM. **(5)**

b. What is Zero Defect concept? Describe the steps in implementing Zero Defect programme. **(6)**

c. Find Mean, Median, Mode for the data set of patients treated on 8 consecutive days. **(5)**

Day No.	1	2	3	4	5	6	7	8
No. of Patients treated	86	52	49	42	35	31	30	11

Q.5 a. What do you understand by corrective maintenance? State the reasons for equipment breakdown. **(4)**

b. What are objectives of preventive maintenance? **(4)**

c. Compare Annual Cost method and Rate of Return method in selecting alternatives. **(8)**

Q.6 a. Explain the different motivation theories. **(8)**

b. State the significance of grievances redressal procedure. **(4)**

c. What do you understand by MRP? Explain primary output of MRP. **(4)**

Q.7 a. What is PERT and CPM? How they differ from each other? **(6)**

b. State the different applications of network techniques. **(4)**

c. What are the objectives of Job Evaluation? Also state its limitations. **(6)**

Q.8 a. A company produces two products, A and B, and has a total production capacity of 9 units per day, A and B requiring the same production capacity. The company has a permanent contract to supply 2 units of A and at least 3 units of B per day to another company. Each unit of A requires 20 machine hours production time and each unit of B requires 50 machine hours of production time. The daily maximum possible number of machine hours is 360. The company makes a profit of Rs.80 per unit of A and Rs.120 per unit of B. It is required to determine the production schedule for maximum profit. **(5)**

b. State the qualities of good information. **(3)**

c. What is multiple activity chart? How it is constructed and analyzed. Also states its applications. **(8)**

Q.9 a. 2500 observations were conducted and it was found that the activity under study occurred 1200 times. Determine the limits of accuracy and limits of error. **(5)**

b. Draw a diagram determining the EOQ based on the fact that it is the point where total costs are the minimum. **(5)**

c. What are the objectives of material management? **(6)**