Code: DE16 **Subject: INDUSTRIAL ENGINEERING**
Time: 3 Hours **Max. Marks: 100**

DECEMBER 2010

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.**
- **The answer sheet for the Q.1 will be collected by the invigilator after half an hour of the commencement of the examination.**
- **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. Productivity improvement implies

(A) More efficient use of resources
(B) Less waste per unit of input supplied
(C) Higher levels of output for fixed level of input.
(D) All the above

b. Input- output model is the basic model of the

(A) Production system **(B)** Management system
(C) Equipment system **(D)** Control system

c. Checking the acceptability of the manufactured product is known as

(A) Planning **(B)** Inspection
(C) Production **(D)** Management

d. Normal time =

(A) $\text{Standard performance level expected} \times \frac{\text{Observed time}}{\text{Performance level of worker}}$

(B) $\text{Performance level of worker} \times \frac{\text{Observed time}}{\text{Standard performance level expected}}$

(C) $\text{Observed time} \times \frac{\text{Performance level of worker}}{\text{Standard performance level expected}}$

(D) $\text{Observed time} \times \frac{\text{Standard performance level expected}}{\text{Performance level of worker}}$

e. Total float =

(A) LST-EFT **(B)** LST-EST
(C) EST-LST **(D)** LFT-EST

f. While calculating E.O.Q then Q =

(A) $Q = \sqrt{\frac{2U.P}{C.I}}$ **(B)** $Q = \sqrt{\frac{2C.P}{U.I}}$

(C) $Q = \sqrt{\frac{2U.I}{C.P}}$ **(D)** $Q = \sqrt{\frac{2U.C}{P.I}}$

g. Modulars are common components grouped together in -------interchangeable sub assembly

(A) Ten **(B)** One
(C) Five **(D)** Two

h. Pick out the wrong sentence

(A) Leadership is the ability to influence and persuade others.
(B) Leadership is the ability to bind & motivate the group.
(C) Leadership is only for namesake.
(D) Leadership is the involvement of a group of people.

i. Different types of maintenance are

(A) Inspection maintenance
(B) Preventive maintenance
(C) Predictive maintenance
(D) Both B & C

j. Different methods of job evaluation are

(A) Ranking method **(B)** Classification method
(C) Point method **(D)** All the above

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

Q.2 a. What are the various applications of industrial engineering? **(4)**

b. Explain the various kinds of productivity measures. **(6)**

c. Define production and productivity. What are the four factors of production? **(4+2)**

Q.3 a. What are the requirements of a good product design? **(5)**

b. Write a note on line balancing. **(5)**

c. Define merit rating. What are the objectives of merit rating? **(2+4)**

Q.4 a. What are the different kinds of inspection? **(5)**

b. Write a note on quality awards. **(5)**

c. Define statistical quality control and explain the same in brief. **(2+4)**

Q.5 a. Explain, why work-study is required. **(4)**

b. What is a flow process chart? Explain a material and equipment flow process chart. **(6)**

c. What is standard data? Explain the two types of standard data. **(2+4)**

Q.6 a. Explain the terms Event, Activity, Critical path and Float or Slack. **(2× 4)**

b. What are the various methods of operation research? Explain linear programming and Queuing theory. **(2+6)**

Q.7 a. What are the reasons and factors to be considered for replacement? **(8)**

b. Briefly explain the different types of maintenance. **(8)**

Q.8 a. Define grievance. Explain the grievance handling procedure, **(2+6)**

b. What are the duties and responsibilities of a supervisor? **(8)**

Q.9 a. What are the main objectives of material management? **(8)**

b. Given that annual usage U = 60 units, procurement cost P = Rs 15 per order, cost per piece C = Rs 100, cost of carrying inventory I, a percentage including expenditure on obsolescence, taxes, insurance, deterioration etc=10% calculate E.O.Q. **(8)**