

Code: DE-16

Subject: INDUSTRIAL ENGINEERING

JUNE 2007

Time: 3 Hours

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 best alternative in the following: (2x10)

a. Calculation of Productivity is

- | | |
|--|---|
| <p>(A) $\frac{\text{Output} - \text{Input}}{\text{Input}}$</p> <p>(C) $\frac{\text{Input}}{\text{Output}}$</p> | <p>(B) $\frac{\text{Output}}{\text{Input}}$</p> <p>(D) $\frac{\text{Input} + \text{Output}}{2}$</p> |
|--|---|

b. Nearness to raw materials is one of the factors affecting:

- | | |
|--------------------|---------------------|
| (A) Line Balancing | (B) Line of Balance |
| (C) Process Layout | (D) Plant Layout |

c. \bar{X} chart is a

- (A) control chart for variables
 (B) control chart for attributes
 (C) chart used in production control
 (D) chart used in process control

d. PMTS in work study is

- (A) Practiced Motion Time System
 (B) Practical Motion Time System
 (C) Pre-determined Motion Time system
 (D) Pre-determined Material Transit sheet

e. _____ was first used in 1957 as a method of planning and controlling the Polaris missile programme in US Naval Dept

- (A) Critical Path Method (CPM)
 (B) Resource Allocation & Multiproject Scheduling (RAMS)
 (C) Graphical Evaluation Review Technique (GERT)
 (D) Programme Evaluation Review Technique (PERT)

- f. Historically the term OR originated during
- (A) First World War (B) Korean War
(C) Second World War (D) Vietnam War
- g. A stitch-in-time procedure is
- (A) predictive Maintenance (B) corrective Maintenance
(C) preventive Maintenance (D) none of the above
- h. Laissez faire style of leadership is also known as
- (A) Democratic Leadership (B) Free – rein Leadership
(C) Authoritarian Leadership (D) Autocratic Leadership
- i. _____ analysis is widely used approach for classifying inventories on the basis of cost and use.
- (A) VED (B) FSN
(C) ABC (D) SDE
- j. Factor Comparison method is one of the methods used in _____
- (A) Merit Rating (B) Job Description
(C) Job Evaluation (D) Work Measurement

Answer any FIVE Questions out of EIGHT Questions.

Each question carries 16 marks.

- Q.2** a. Industrial Engineers are important link in an organization for design, operation, control and decision making activities of firm. Justify this statement?
(8)
- b. Hardly any location is ideal or perfect. One has to strike a balance between various factors affecting plant location. Briefly discuss these factors? (8)
- Q.3** a. Describe the concept of Inspection. Write about 'Inprocess Inspection' in a manufacturing process. (8)
- b. Describe the concept and characteristics of a Quality Circle. Briefly explain the steps involved in starting a Quality Circle. (8)
- Q.4** a. Describe Motion Analysis and the steps involved in it. What are the rules concerning human body in motion economy? (8)
- b. Two types of standard data are used and each is calculated by a different method. Discuss these

and describe the steps involved in developing a standard data.

(8)

Q.5 a. Describe briefly CPM. What is methodology used for Critical Path Analysis (CPA)? **(8)**

b. The relationship for nine activities in a project is given below. Draw a net work. **(8)**

Activity	A	B	C	D	E	F	G	H	I
Duration	9	9	10	4	7	3	8	7	2
Preceding Activity	-	-	-	A	B	C	D,E,F	C	G,H

Q.6 a. Describe the concept of OR. Narrate the steps involved in OR? **(8)**

b. Job Evaluation is a systematic process of evaluating different jobs of an organization. Give its objectives and briefly explain the various methods or systems of job evaluation. **(8)**

Q.7 a. Discuss the factors to be considered for replacement of equipments. **(8)**

b. From the data given below suggest whether to purchase the new machine or not, using Annual Cost Method. **(8)**

Old Existing Machine

New Proposed Machine

(i) Market value	Rs. 30,000
(ii) Overhaul cost to make it work for another 5 years	Rs. 25,000
iii) Resale value	Rs. 40,000
(iv) Maintenance cost	Rs. 300 per year

(i) Installed cost	Rs. 1,00,000
(ii) Expected life	15 years
(iii) Resale value	Rs. 10,000
(iv) Maintenance cost	Rs. 100 per year

(Assume interest rate of 10% where the CRF for 5 yrs is 0.2638 and CRF for 15 years is 0.1314)

Q.8 a. Define Leadership. Describe the characteristics of Authoritarian Leadership vis-a-vis Democratic Leadership. **(8)**

b. A good grievance procedure is essential to develop sound labour relationship. What are the essentials of a good grievance procedure and the steps involved in handling a grievance? **(8)**

Q.9 a. Why stock taking of stores is a must in a company? Describe the methods used for physical verification of stores. **(8)**

- b. (i) Draw a diagram determining the EOQ based on the fact that it is the point where total costs are the minimum. **(4)**
- (ii) Find the EOQ and the number of orders per year from the following data: - **(4)**
- Annual use – Rs. 10,000
 - Procurement cost per order – Rs. 100
 - Cost per piece – Rs. 10
 - Inventory carrying cost – 20%