

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/
MANAGEMENT/COMMERCIAL PRACTICE, APRIL-2021

INDUSTRIAL ENGINEERING

[Maximum marks: 75]

(Time: 2.15 Hours)

PART – A

I. Answer any **three** questions in one or two sentences. Each question carries 2 marks

1. Define Industrial Engineering
2. Differentiate Production and Productivity
3. List any four THERBLIGS
4. Mention any four objectives of Quality control
5. Briefly explain the concept of acceptance sampling (3 x 2 = 6)

PART – B

II. Answer any **four** of the following questions. Each question carries 6 marks

1. Explain the advantages of Production planning and Control
2. Explain (a) Break down (b) Scheduled and (c) Preventive maintenance
3. Explain the procedure for conducting method study
4. Find out the standard time using the following data.
Average time for machine elements = 7 mins.
Average time for manual elements = 5mins, Performance rating = 110%
Allowances = 10%
5. Calculate Standard deviation from the following data 9,14,22,15,20,17,11,12
6. Mention the benefits of Quality control Programmes
7. Explain the Double sampling plan (4 x 6= 24)

PART – C

Answer **any of the three units** from the following. Each full question carries 15 marks

UNIT –I

- III (a) Explain (1) Job order Production and (2) One time large production (8)
(b) Explain a master schedule in the form of GANTT chart (7)

OR

- IV (a) Explain the various factors to be considered in locating industrial plants (8)

(b) Explain (1) Product layout (2) Fixed position layout (7)

UNIT-II

V (a) With a neat diagram Explain a two handed process chart (8)

(b) Explain the procedure for making a work sampling study (7)

OR

VI (a) Explain SIMO chart with an example (8)

(b) Explain the various steps to develop standard data (7)

UNIT-III

VII (a) Ten samples of size five where subjected to inspection. Sample mean and Sample range are as given below. Construct \bar{X} chart. Also comment on it (8)

on the state of control. Take $A_2=0.58$, $D_3=0$, $D_4=2.11$

Sample No	1	2	3	4	5	6	7	8	9	10
Sample Range	3	5	2	4	3	3	4	5	4	2
Sample Mean	11.0	11.3	11.2	11.6	11.8	10.6	10.8	11.4	11.2	11.1

(b) Explain the concept of variability in measurements and the types of variations (7)

OR

VIII (a) Plot a 100p chart(percentage defective chart) with the following data and comment on it

No.of pieces inspected each day = 500

No.of defectives found in each day – 4,5,0,3,12,3,7,18,8,10 (8)

(b) Compare floor inspection and centralized inspection (7)

UNIT-IV

IX (a) In a factory products are manufactured in batches of 50. The direct material cost per batch is Rs.250 and the direct labour cost is Rs.400. Direct expenses are Rs.100 and overheads amount to be Rs.300/- batch. Selling cost is 45% of factory cost. If the profit is 10% of selling price. Find the selling price of each product (8)

(b) Illustrate an Operating characteristic curve with a neat sketch (7)

OR

X (a) The cost of a machine is Rs.20,000 and its scrap value is Rs.4000. Determine the depreciation charges for each year by sum of years digit method, if the estimated life of the machine is 4 years (8)

(b) State the objectives of Estimating (7)
