DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/ COMMERCIAL PRACTICE, NOVEMBER – 2023

INDUSTRIAL ENGINEERING

[Maximum Marks : 100]   [Time : 3 hours]

PART – A
(Maximum Marks : 10)

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

1. Define dispatching in production planning and control.
2. Define TMU.
3. List the statistical terms which measures central tendancy.
4. Define depreciation.
5. Write any two examples for attribute data.   (5x2=10)

PART – B
(Maximum Marks : 30)

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

1. Write the comparison of route sheet and process sheet.
2. Explain operation process chart with an example.
3. Illustrate OC curve for an ideal plan.
4. Define the following
   (i) First piece inspection   (ii) Operation inspection   (iii) Functional inspection
5. Find the mean of the frequency table

Reading	10	8	11	9
Frequency	2	4	3	5

6. List the various causes of depreciation.
7. Draw and name any six therblig symbols.   (5x6=30)

PART – C
(Maximum Marks : 60)
(Answer **one full** question from each unit. Each full question carries 15 marks)

UNIT – I

III.   (a) Explain the break even analysis for the choice of machine in process planning.   (8)

(b) Explain value engineering, its applications and advantages.   (7)

OR

IV.   (a) Explain any three types of production.   (6)

(b) Illustrate different types of plant layout with example.   (9)

UNIT – II

V. (a) Explain various process chart symbols with examples. (7)

(b) A cycle of operation consists of six elements. The observed time for six elements are 1 min, 2 min, 1.5 min, 1 min, 3 min, 2 min respectively. Third element is a machining element. If the rating factor is 110, calculate normal time and standard time for operation. Allowances are 10% of the normal time. (8)

OR

VI. (a) Define P.M.T.S and list its advantages. (7)
(b) Explain the procedure for method study. (8)

UNIT –III

VII. (a) Find the standard deviation of the following data
20.2, 20, 22.5, 23.1, 21.7, 23, 22.6 (6)

(b) Plot the X bar and R chart from the following data of measurement of dimension and comment on the result. Sample size is 5.

Sample No.	1	2	3	4	5	6	7	8	9	10
X bar	15	14.8	15.3	14.9	15	15.2	15.1	15.1	15.3	14.9
R	0.2	0.3	0.1	0.2	0.4	0.3	0.2	0.1	0.3	0.4

Take A2 = 0.58, D3 = 0, D4 = 2.11 (9)

OR

VIII. (a) A container of cricket bats is to be accepted or rejected based on inspection result. Ten samples have been inspected, each sample containing 20 bats and number of defectives shown below. Use a proper control chart and comment on the result. (8)

Sample No	1	2	3	4	5	6	7	8	9	10
No. of defectives	2	3	1	4	3	1	3	2	2	3

(b) Ten castings produced by a company are inspected and the number of defects identified is listed below. Draw a suitable control chart and comment on result. (7)

Sample No.	1	2	3	4	5	6	7	8	9	10
No. of defects	5	6	4	2	2	7	5	6	4	4

UNIT – IV

IX. (a) Explain different types of overhead expenses with examples. (8)
(b) Differentiate between estimating and costing. (7)

OR

X. (a) A machine was purchased for Rs.20000. Expected life is 10 years and scrap value after life period is Rs.5000. Calculate the fixed percentage of depreciation per annum and depreciation fund after 4 years. Use reducing balance method. (8)

(b) Total overhead for a company for a particular financial year were 3 lakh and prime cost were 7 lakhs. Find the on-cost of the two products of the company by percentage on prime cost method.
Product A – Direct material cost = 200   Direct labour cost = 300
Product B – Direct material cost = 100   Direct labour cost = 150 (7)

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