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(REVISION – 2015)

Reg. No. .....

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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE — OCTOBER, 2019

INDUSTRIAL ENGINEERING

[*Time* : 3 hours

(Maximum marks : 100)

PART — A

(Maximum marks : 10)

Marks

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

1. List any four documents prepared in dispatching.
2. What is analytical estimating ?
3. Differentiate between variables and attributes.
4. List principle constituents of estimation.
5. What is standard data ?

(5×2 = 10)

PART — B

(Maximum marks : 30)

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

1. What are the factors to be considered while locating industrial plants ?
2. List the principles of effective material handling.
3. Illustrate and explain string diagram.
4. Explain the advantages and limitations of work sampling over stop watch time study.
5. What are objectives of quality control ?
6. A machine was purchased for ₹ 30,000. The assumed scrap value at the end of 10 years of assumed useful life of the machine was ₹ 10,000. Determine the depreciation fund accrued at the end of 4 years of its useful life using straight line method.
7. Compare costing and estimation.

(5×6 = 30)

Marks

PART — C

(Maximum marks : 60)

(Answer *one* full question from each unit. Each full question carries 15 marks.)

Unit — I

III (a) Explain various functions of PPC. 8

(b) Explain preventive maintenance and predictive maintenance. 7

Or

IV (a) Define routing. Explain the procedure for routing. 8

(b) Explain the characteristics of continuous production. 7

Unit — II

V (a) Explain the construction of SIMO chart with a simple example. 8

(b) Explain principles of motion economy concerning human body. 7

Or

VI (a) Define method study. Explain the procedure for method study. 8

(b) The elemental times (in minutes) for 4 cycles of an operation using a stop watch time study are presented below.

Elements	*Cycle time in minutes*			
	1	2	3	4
1	1.5	1.5	1.3	1.4
2	2.6	2.7	2.4	2.6
3	3.3	3.2	3.4	3.4
4	1.2	1.2	1.1	1.2
5	0.51	0.51	0.52	0.49

Calculate the standard time of the operation if

(i) Elements 2 and 4 are machine elements.

(ii) For other elements operated is rated at 110 %.

(iii) Total allowance are 15% of the normal time. 7

Unit — III

VII (a) Compare the characteristics of centralized inspection with floor inspection. 7

(b) The following data shows the weight of an automobile part. 5 samples of 4 item each where taken at random interval of one hour each.

Sample No.	*Weight of parts in grams*			
1	10	12	10	12
2	10	12	13	13
3	10	10	9	11
4	11	10	9	14
5	12	12	12	12

Draw × chart and comment on the process. Given $A_2 = 0.729$ 8

Or

Marks

VIII (a) Draw and explain normal distribution curve and mention its significance. 7

(b) A dozen sample cabinets were inspected. The number of defects in each is as given below.

Sample no.	1	2	3	4	5	6	7	8	9	10	11	12
No. of Defects	6	7	3	6	2	4	5	2	1	6	5	4

Prepare a suitable chart and comment on the state of control of the process. 8

UNIT — IV

IX (a) What do you meant by depreciation ? Explain the causes of depreciation. 7

(b) Illustrate and explain OC curve for a general plan. 8

OR

X (a) In a factory certain products is manufactured in batches of 50. The direct material cost per batch is ₹ 200 and direct labour cost is ₹ 350. Direct expenses is ₹ 100 and overhead ₹ 250/batch. Selling price is 40% of the factory cost. If profit is 10% of selling price, find the selling price of each product. 9

(b) Illustrate the various methods of allocation of over heads. 6