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C09-M-603

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BOARD DIPLOMA EXAMINATION, (C-09)

OCT/NOV—2016

DME—SIXTH SEMESTER EXAMINATION

INDUSTRIAL ENGINEERING AND ESTIMATING AND COSTING

Time : 3 hours] [*Total Marks* : 80

PART—A 3×10=30

Instructions : (1) Answer all questions.

(2) Each question carries **three** marks.

(3) Answers should be brief and straight to the point and shall not exceed *five* simple sentences.

1. What are the various charts used in method study?

2. Write any six objectives of work measurement.

3. Write any three differences between inspection and quality control.

4. What are the advantages of statistical quality control?

5. Define the terms *(a)* estimating and *(b)* costing.

6. List out the methods of calculating depreciation.

7. Write the formulae for finding volume of *(a)* sphere and *(b)* segment of sphere.

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8. Differentiate between feed and depth of cut.

9. Write the principle of oxyacetylene gas welding.

10. How do you estimate the foundry cost?

PART—B

10×5=50

Instructions : (1) Answer *any* **five** questions.

(2) Each question carries **ten** marks.

(3) Answers should be comprehensive and the criterion for valuation is the content but not the length of the answer.

11. *(a)* What are therbligs? Mention any six therbligs and give their symbols. 2+3

(b) Explain about cyclegraph and chronocyclegraph. 2½+2½

12. Explain the procedure to collect PMTS data. Write its advantages and disadvantages. 5+3+2

13. The daily production in machine shop is 1000 items. These items are inspected by GO and NO GO gauges. A sample of 100 is inspected daily for 10 days. The samples are taken at random. Compute the control limits for *(a)* P-chart and *(b)* nP-chart, and draw the charts : 5+5

Date	1	2	3	4	5	6	7	8	9	10
Rejection	2	10	6	20	18	14	15	12	8	6

14. What are the constituents of estimation? Explain them. 10

15. Explain in detail the various elements which make up the total cost of any product. 10

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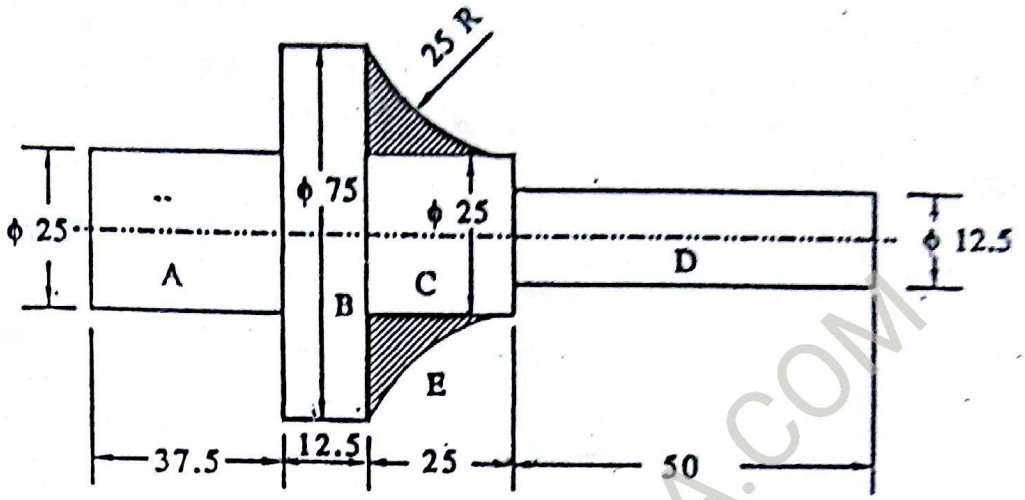
16. Estimate the weight of material required for producing 1000 parts as shown in Fig. 1. Assume that 15% of the finished material is wasted during finishing. Density of material is 7·8 gm/cc : 10

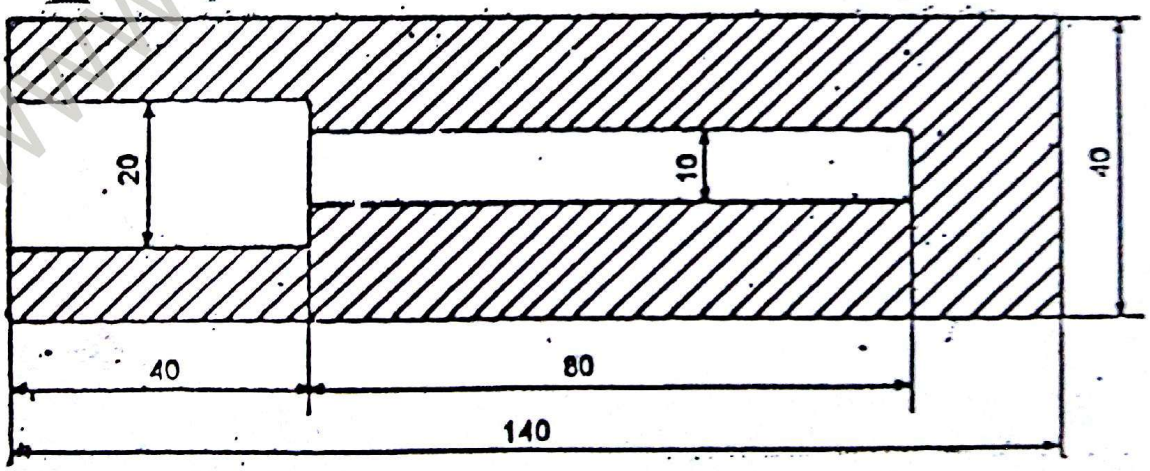


All dimensions are in mm

Fig. 1

17. (a) You are required to cut 4 threads/cm on a steel shaft 3 cm in diameter and 10 cm in length. Calculate the time required for threading, assuming the speed of thread cutting to be 33 m/min and number of cuts to be 4. 3

(b) Calculate the time required for drilling a component as shown in Fig. 2. Cutting speed is assumed as 20 m/min and feed as 0·02 cm/rev : 7



All dimensions are in mm

Fig. 2

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18. A cylindrical boiler drum 3 m × 1 m diameter (as shown in Fig. 3) is to be made from 15 mm thick MS plates. Both the ends are closed by welding circular plates to the drum. Cylindrical portion is welded along the longitudinal seam. Welding is done both on inner and outer sides. Calculate electric welding cost using the following data : 10

(i) Rate of welding = 2 m/hr on inner side and 2·5 m/hr on outer side

(ii) Length of electrode required = 1·5 m/m of welding

(iii) Cost of electrodes = ₹ 6 per m

(iv) Power consumption = 4 kWh/m of weld

(v) Power charges = ₹ 15 per kWh

(vi) Labour charges = ₹ 10 per hr

(vii) Other overhead charges = 200% of prime cost

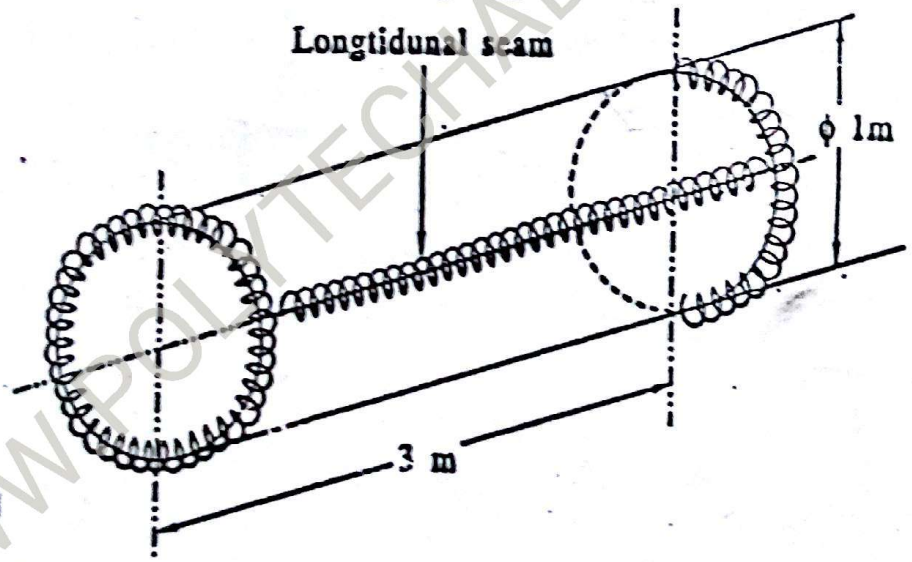

Fig. 3

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