



C09-M-603

3781

BOARD DIPLOMA EXAMINATION, (C-09)

OCT/NOV—2017

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. Write any three aims of method study.
2. What are the uses of PMTS?
3. Write the techniques of SQC.
4. List out the various objectives of inspection.
5. Write any three objectives of estimation.
6. List out the different types of overheads. Mention one example for each type.
7. Determine the volume of solid of revolution of circular fillet of radius R about X-X axis at a distance of Y from CG.
8. Define the term cutting speed and write its formula.
9. How do you estimate the gas welding cost?
10. Write about tong hold loss and scale loss.

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. Explain in detail the procedure of method study.
12. What is work sampling? Write its advantages and uses. 4+4+2
13. What is centralized inspection? Write its advantages and disadvantages. 4+4+2
14. Explain the functions of estimation.
15. (a) What do you mean by obsolescence? 3
 (b) A small firm is producing 100 pens per day. The direct material cost is found to be ₹ 160, direct labour cost ₹ 200 and factory overhead charges are ₹ 250. If the selling on cost is 40% of the factory cost, what must be the selling price of each pen to realize a profit of 14.6% of the selling price? 7
16. Estimate the number of rivets as shown in Fig. 1, which can be made from 4.5 kg of mild steel. Take the density of mild steel as 7.87 gr/cm³. All dimensions are in mm :

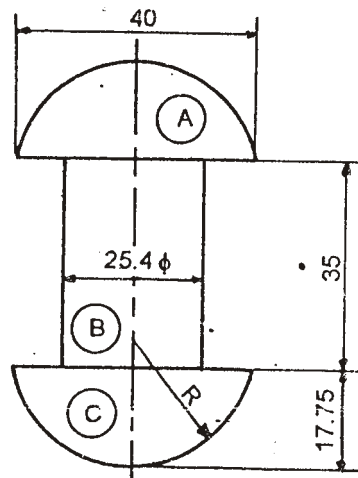


Fig. 1

- * 17. Estimate the time required to turn a 50 mm bar to the dimensions as shown in Fig. 2, with cutter speed 20 m/min and feed 0.7 mm/rev. Assume that all cuts are 2.5 mm deep. Neglect the facing time. All dimensions are in mm :

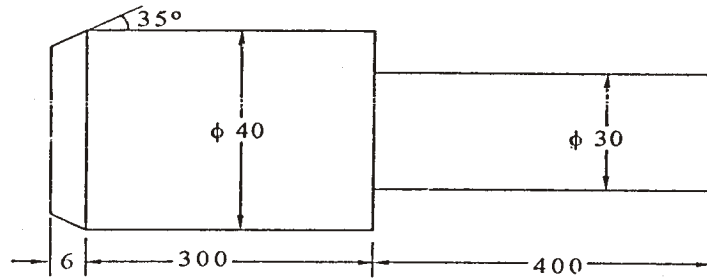


Fig. 2

18. A drum made from 12.5 mm thick mild steel plate is open at one side. The length of the drum is 3 m and its diameter is 1.5 m. The bottom is made by welding a circular plate to the drum while the cylindrical portion is welded along the longitudinal seam. The welding at the longitudinal seam as well as the bottom is to be done both from in and outside.

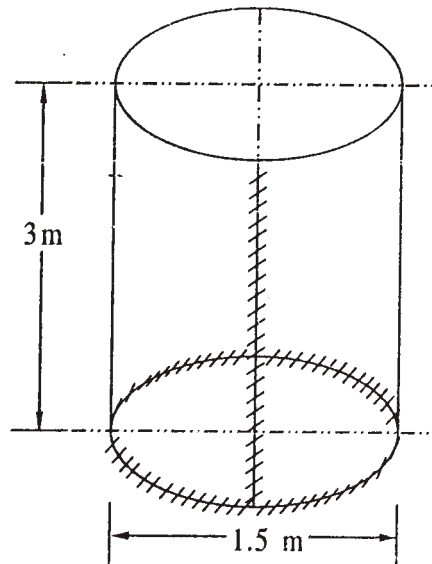


Fig. 3

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Calculate the cost of welding the drum with details as given below :

- (i) Time taken per meter of weld = 32 min
- (ii) Length of electrode consumed = 1.5 m per meter of weld
- (iii) Cost of electrode = ₹ 50 per m
- (iv) Power consumption = 3.4 kWh/m of weld
- (v) Power cost = ₹ 20 per kWh
- (vi) Overhead expenses = 300% of labour cost
- (vii) Labour charges = ₹ 50 per hour
