



C14-M—503

4651

BOARD DIPLOMA EXAMINATION, (C-14)

OCT/NOV—2016

DME—FIFTH SEMESTER EXAMINATION

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. List any three qualities of estimator. 1+1+1
2. Draw the block diagram of components of cost. 3
3. Write any three causes of depreciation. 1+1+1
4. Write the formulae to calculate the volume of (a) sphere, (b) rectangular solid and (c) frustum of pyramid. 1+1+1
5. List any six machining operations. $\frac{1}{2} \times 6$
6. Calculate the machining time to turn MS rod from 4 cm to 3.5 cm diameter for a length of 15 cm in a single cut. Assume feed as 0.4 mm/rev. and speed as 300 r.p.m. 3
7. List any three types of welded joint. 1+1+1
8. List any three forging losses. 1+1+1

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9. List any six ^{*} forging operations. 1+1+1

10. Define foundry and list any two pattern allowances. 1+2

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) List any five objectives of estimation. 5

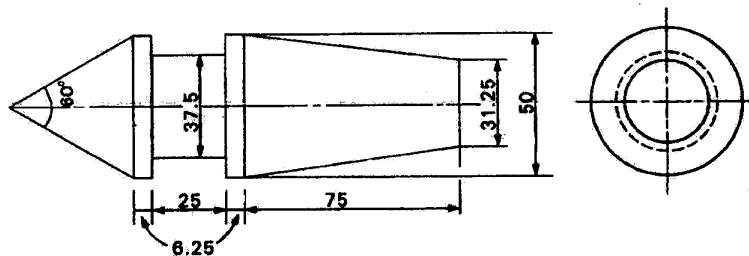
(b) A car was purchased for ₹ 96,000. Its estimated life period is ten years. The residual value of the car after its useful life is ₹ 24,000.

(i) Calculate depreciation rate using diminishing balance method. 2

(ii) Calculate the depreciation fund at the end of two years. 3

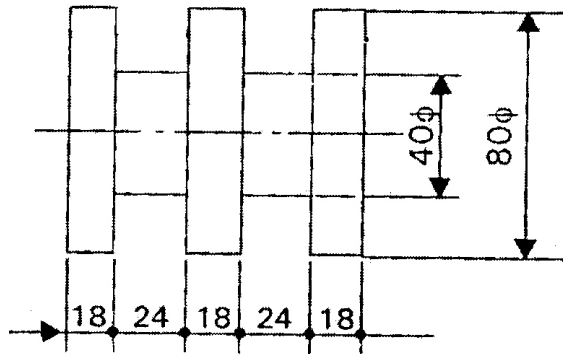
12. The market price of a machine is ₹ 60,000 and the distributor is allowed a discount of 20% of the market price. It is found that the selling expenses are 50% of factory cost. The material cost, labour cost and factory overheads are in the ratio of 1 : 3 : 2. If the labour cost is ₹ 12,000, determine the profit on each machine. Neglect other overheads. 10

^{*} 13. The dimensioned figure below shows a lathe centre. Estimate the weight and cost of material for the same if the material weighs 7.787 gm/cc and the material cost is ₹ 10 per kg. All dimensions are in mm. 10



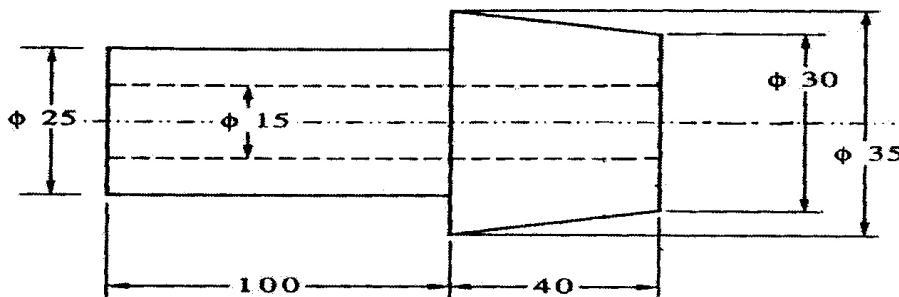
14. The shaft shown in figure below is to be manufactured by turning out an 85 mm steel rod. Find out the minimum machining time if the job is to be turned at 320 r.p.m. with feed 0.6 mm/rev. and depth of cut 3 mm. Find the machining time taking into account personal allowance and fatigue allowance and neglecting the time of approach, over run and time taken to return the tool. Consider the time taken for facing and parting also. All dimensions are in mm.

10



15. A product shown in figure below is to be turned from 35 mm diameter and 150 mm long MS bar stock. Calculate the machining time required if depth of cut is not to exceed 5 mm and cutting speed is 20 m/min. Feed is 1 mm/rev. for drilling and facing. Feed for turning is 2 mm/rev.

10



16. A cylindrical boiler drum of 3 m × 1 m diameter is to be made from 15 mm thick MS plates. Both the ends are closed by welding circular plates of same thickness to the drum. Cylindrical portion is welded along the longitudinal seam. Welding is done both on inner and outer sides. Calculate electric arc welding cost using the following data :

- (i) Rate of welding = 2 m/hour on inner side and 2.5 m/hour on outer side

(ii) Length of electrode required = 1.5 m/m of welding

(iii) Cost of electrodes = ₹ 6 per meter

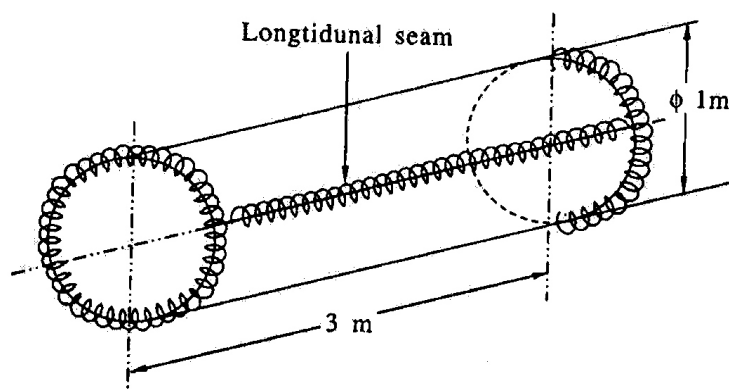
(iv) Power consumption = 4 kWh per meter of weld

(v) Power charges = ₹ 15/kWh

(vi) Labour charges = ₹ 10/hour

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

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17. 100 MS pieces of a component as shown in figure below are to be drop forged from a 4 cm diameter bar stock. Estimate the cost of manufacturing given that

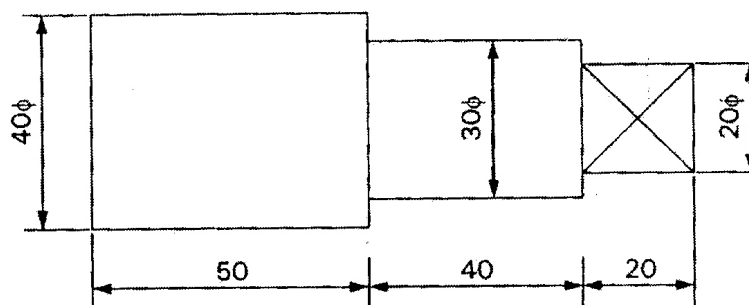
(i) cost of material = ₹ 100 per metre

(ii) forging charges = ₹ 0.05 per cm² surface area

(iii) on cost = 10% of material cost

Consider all possible losses during operations.

10



18. 100 bevel gear blanks are to be cast as per finished drawing shown in figure below. Machine allowance of 2 mm is allowed in the pattern on each side. Calculate the selling price of one-gear blank. Pattern is supplied by the customer. Use the following details :

- (i) Cost of C.I. = ₹ 10 per kg
- (ii) Melting charges = 15% of material cost
- (iii) Administrative overheads = 15% of material cost
- (iv) Profit = 10% of total cost
- (v) Moulding charges = ₹ 2 for each mould

10

