

17557

14115

3 Hours / 100 Marks

Seat No.

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- Instructions* –
- (1) All Questions are *Compulsory*.
 - (2) Illustrate your answers with neat sketches wherever necessary.
 - (3) Figures to the right indicate full marks.
 - (4) Assume suitable data, if necessary.
 - (5) Use of Non-programmable Electronic Pocket Calculator is permissible.
 - (6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

- 1. Attempt any FIVE of the following: **20****
- a) Define costing. State its objectives.
 - b) What is valuation of material issued from store? Differentiate between average price method and fixed price method.
(Any 2 points)
 - c) What is depreciation? Write its causes.
 - d) List down qualities required by an estimator.
 - e) Find the time required to drill 4 holes in a cast Iron flange each of 20 mm depth, if the hole diameter is 20 mm. Assume cutting speed as 21.8 m/min and feed as 0.2 mm/rev.
 - f) What is forging loss? Explain any four forging losses.
 - g) Write the procedure of job order costing.

P.T.O.

2. Attempt any TWO of the following:

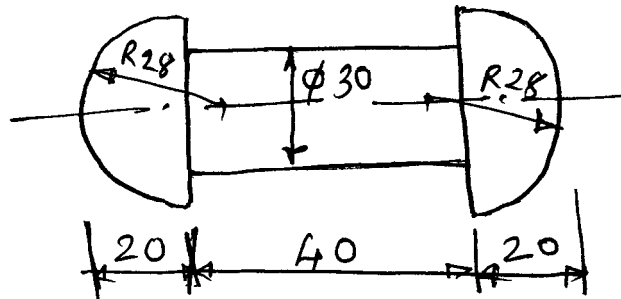
16

- a) A manufacturing concern produces a certain product in batches of 100. The direct material cost, direct labour cost and direct expenses per batch of products are Rs.2100, Rs.2500 and Rs.2400 respectively. If 80% of direct labour cost is charged to cover factory overheads, determine the 'factory cost' of each product.
- b) A factory manufactures steel bolts and nuts and makes an estimate as shown below on the basis of lots of 2000 bolts and nuts.
- | | | |
|-------|--|-----------|
| (i) | Direct material cost | Rs.7500/- |
| (ii) | Direct labour cost | |
| | 1) Forging shop | |
| | – Cutting to length | Rs.300/- |
| | – Setting up | Rs.1200/- |
| | 2) Machine shop | |
| | – Milling heads. | Rs.1000/- |
| | – Threading | Rs.750/- |
| | – Drilling | Rs.500/- |
| | – Chamfering | Rs.450/- |
| (iii) | Direct expenses | |
| | Cost of tools | Rs.750/- |
| (iv) | On costs | |
| | 1) Forging shop 150% of labour cost. | |
| | 2) Machine shop 100% of labour cost. | |
| | 3) Office establishment 20% of factory cost. | |
| | 4) Packing and transport = Rs.500/-. | |
- If selling price of each nut and bolt is Rs.15/-, determine whether the factory is making a profit or loss. If so, by what amount per piece?
- c) State importance of estimating and describe estimating procedure.

3. Attempt any TWO of the following:

16

- a) The elevation of a workpiece is shown in Figure No.1. Calculate the number of rivets as per the dimensions shown in Fig. No.1, Which can be manufactured from 4 kg of mild steel. Assume that there is no wastage of material. Density of M.S. is 8 g/cc.



All dimensions in mm

Fig. No. 1

- b) Find the time required for doing rough grinding of a 160 mm long steel shaft to reduce its dia. from 42 mm to 40 mm in a grinding wheel of 20 mm face width. Assume cutting speed as 16 m/min and depth of cut as 0.25 mm.
- c) Write procedure of sheet metal shop estimation. State importance and effect of blank layout on estimation.

4. Attempt any TWO of the following:

- a) What is capacity of power presses. How it is expressed? Give examples.
- b) Write factors affecting welding costs and welding cost estimation. How gas welding cost is calculated?
- c) A cylindrical boiler drum $2.5 \text{ m} \times 1 \text{ m}$ dia is to be made from a 15 mm thick M.S. plate. The ends are closed by welding circular plates to the drum Figure No.2. The cylindrical portion is welded along the longitudinal seam. Welding is done on both inner and outer sides. Calculator the electric welding cost using following data –

- Rate of welding = 2 m/hr on inner side.
2.5 m/hr on outer side.
- Cost of electrodes = Rs.12/m
- Length of electrodes required = 1.5 m/m weld
- Power = 4 KWh/m of weld
- Power charges = Rs.3/KWh
- Labour charges = Rs.16/m.
- Overhead cost = 200% over prime cost.
- Discarded electrodes = 5%
- Fatigue and setting up time = 5% of welding time.

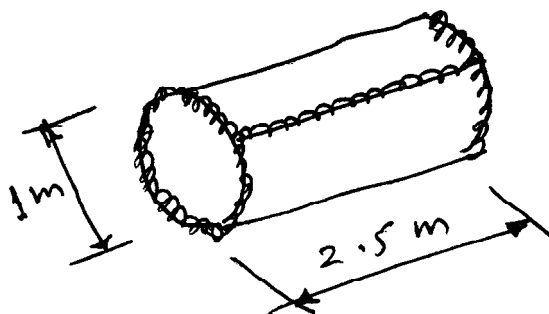


Fig. No. 2

- 5. Attempt any TWO of the following:** **16**
- a) Explain elements of erection costing and write procedure of estimating erection cost.
 - b) Write characteristics of process cost accounting. Explain material and overhead costing.
 - c) A square bar of 30 mm side and 250 mm length is to be converted by hand forging into a bar of hexagonal section of side 15 mm. Calculate the length of the hexagonal bar produced. Consider a scale loss of 8% of the total.
- 6. Attempt any TWO of the following:** **16**
- a) (i) Differentiate between costing and estimating.
(ii) Write steps/ways of waste control of materials.
 - b) A machine is purchased for Rs.100000/- and scrap value estimated as Rs.20,000/- after 6 years of useful service. Determine depreciation fund, in reserve, at the end of 4th year basing on the sum of year's digits method.
 - c) Explain in brief –
 - (i) Importance of mensuration.
 - (ii) Machining time calculation for turning operation.
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