16117

3 Hours / 100 Marks Seat No. ☐☐☐☐☐☐☐☐

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.*

(7) *Use of Steam tables, logarithmic, Mollier's chart is **permitted**.*

Marks

1. Attempt **any five** of the following : **(5×4=20)**
   a) Define : i) Costing ii) Overheads.
   b) Explain any four causes of Scrap.
   c) What is depreciation ? Write its causes.
   d) List some functions of estimation department.
   e) Differentiate between rectangle, parallelogram and trapezium with neat sketches giving their areas and perimeter.
   f) Explain the shaping and planning operations giving their time estimate determination method.
   g) Define forging loss. Explain any four forging losses.
   h) Write the procedure of job order costing.

2. Attempt **any two** of the following : **(2×8=16)**
   a) The elevation of a work piece is shown in fig. find no. of rivets as per the dimensions shown in fig. which manufactured from 4 kg of mild steel. Assume that there is no wastage of material. Density of mild steel is '8' g/cc.
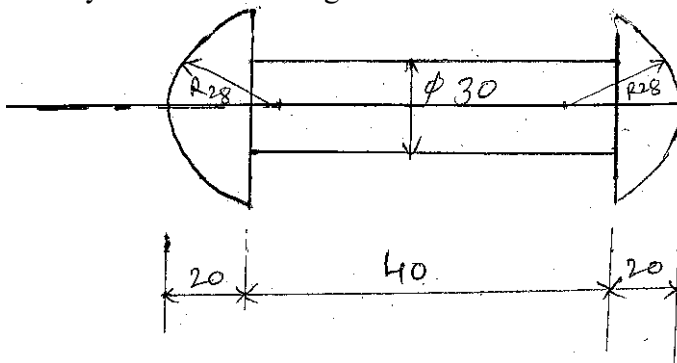
   b) State importance of estimating and describe estimating procedure.
   c) A certain piece of work is produced by a firm in batches of 100. The direct materials cost for that 100 piece work is Rs. 160 and the direct labour cost is Rs. 200 factory on cost is 35% of the total material and labour cost. Overhead charges are 20% of the factory cost. Calculate prime cost and factory cost. If the management wants to make a profit of 10% on the gross cost, determine the selling price of each article.

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3. Attempt **any two** of the following : **(2×8=16)**

   a) A factory is producing 1000 bolts and nuts per hour on a machine. Its material cost is Rs. 375/-, labour cost is Rs. 245/- and the direct expense is Rs. 80/-. The factory on-cost is 150% of the total labour cost and office on-cost is 30% of the total factory cost. If the selling price of each bolt and nut is Rs. 1.30/-. Calculate whether the management is going in loss or gain and by what amount ?

   b) Explain procedure of sheet metal shop estimation. State importance and effect of blank layout on estimation.

   c) Find the time required for rough grinding of a 165 mm long steel shaft to reduce its diameter from 45 mm to 42 mm on a grinding wheel of 20 mm face width. Considering cutting speed as 16 m/min and depth of cut as 0.3 mm.

4. Attempt **any two** of the following : **(2×8=16)**

   a) What is a welding and gas cutting operation ? Explain the various cost element in the estimation of welding and gas cutting operation.

   b) Explain the important operations and processes carried out in a sheet-metal shop.

   c) A circular drum 3 m × 1 m dia. is manufactured from a 15 mm thick mild steel plate. The ends are welded with circular plates. The cylindrical portion is welded along the longitudinal seam. Welding is done on both inner and outer sides. Calculate 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. 13/m
Length of electrodes reqn.	=	1.5 m/m weld
Power	=	4 kWh/m of weld
Power charges	=	Rs. 4/kWh
Labour charges	=	Rs. 20/m
Overhead cost	=	200% over prime cost
Discarded electrodes	=	5%
Fatigue and setting up time	=	5% of welding time

5. Attempt **any two** of the following : **(2×8=16)**

   a) Explain a general estimation procedure for a forging operation with respect to the following :

   i) Estimation of net weight of worged comp.

   ii) Estimation of losses

   iii) Estimation of time.

   b) Write characteristics of process cost accounting. Explain material and overhead costing.

   c) Explain elements of erection costing and write procedure of estimating erection cost.

6. Attempt **any two** of the following : **(2×8=16)**

   a) List characteristics of good wage system.

   b) A machine is buy for Rs. 1,50,000/- and scrap value estimated as Rs. 25,000/- after 6.5 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 the procedure for estimation of time taken by a machinist on a lathe for a turning operation. For calculation of wages, list some other important time considerations along with the above.

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