C09–M–**603**

3781

BOARD DIPLOMA EXAMINATION, (C–09)
OCT/NOV—2015
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. Define method study. Write any two aims of method study.

2. Observed time for an operation is 5 min. If rating factor is 110%, then find normal time. If allowance of 15% is allowed for operation, then determine standard time.

3. Write any three advantages of control charts.

4. What are meant by *(i)* first piece inspection, *(ii)* pilot piece inspection?

5. Write six objectives of estimation.

6. Give any six examples of administrative overheads.

7. Write the formulae for finding volume of—

(a) cone;

(b) frustum of cone.

8. Define cutting speed and write the formula.

9. How do you estimate the cost of gas welding?

10. What are different types of loss in forging?

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 the procedure for method study. 10

12. Write the procedure for conducting work sampling. Write six advantages and six disadvantages of work sampling. $4+3+3=10$

13. In a production process, a lot of 250 products have been manufactured in a day. Five samples have been collected at random in that day as an S.Q.C. measure. Each sample size is 5. Five samples *A, B, C, D, E* have been as shown in the table below for a particular dimension of a product :

Sample					
A	43	42	42	44	43
B	45	40	39	39	46
C	40	40	41	42	43
D	43	42	40	40	46
E	40	41	43	46	43

Calculate the control limits and plot $\overline{X}$ and R charts. Take A_2 for control limits of $\overline{X}$-chart as 0 577, D_4 and D_3 for control limits of R-chart as 2 11 and 0 respectively. $5+5=10$

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

15. A small firm is producing 100 pens per day. The direct material cost is found to be ₹ 160, direct labour cost ₹ 200 and factory over heads chargeable to it, ₹ 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? 10

16. Estimate the volume of material required for manufacturing 100 pieces of shaft as in figure. The shafts are made of m.s. weighs 8 gm/cc and costs ₹ 10 per kg. Calculate also the material cost for such shaft : 10
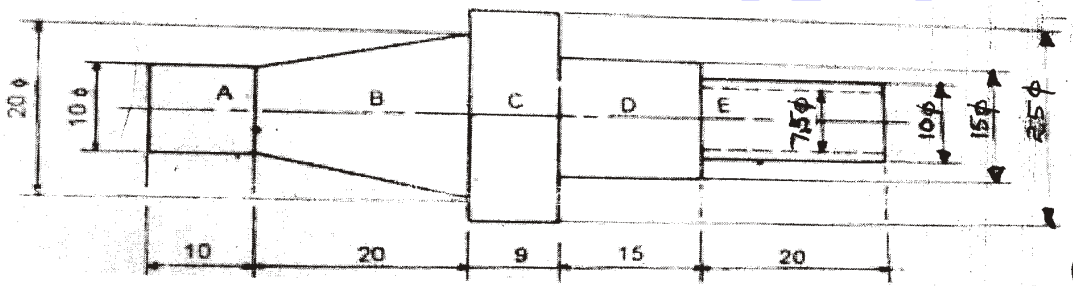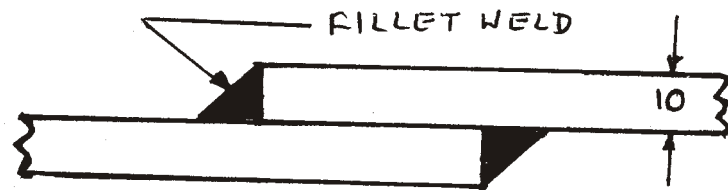

17. Estimate the time required to reduce a 42 mm bar to the dimensions shown in figure below with a cutting speed of 16 5 m/min and feed of 1 mm/rev. Assume all cuts are 3 5 mm deep. All dimensions are in mm : 10
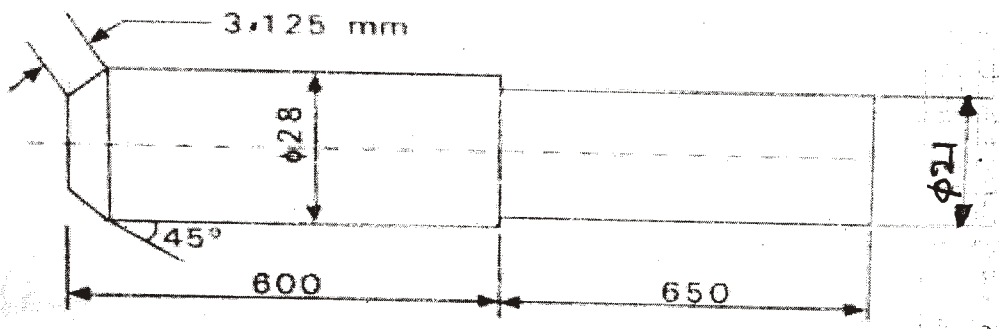
18. Two 1 m long MS plates of 10 mm thickness are to be welded by a lap joint with the help of 6 mm electrode. Assuming following data, calculate the cost of welding : 10

   (i) Current used = 250 amp

   (ii) Voltage = 30 V

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(iii) Welding speed = 10 m/hr

(iv) Electrode used = 0·5 kg/m of welding

(v) Labour charges = ₹ 15 per hour

(vi) Power charges = ₹ 1 per kWh

(vii) Cost of electrode = ₹ 15 per kg

(viii) Machine efficiency = 60%

FILLET WELD

10

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