C09–M–**603**

3781

BOARD DIPLOMA EXAMINATION, (C–09)

SEPTEMBER/OCTOBER - 2020

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. What is the role of work study in raising productivity?

2. What are the different time study techniques?

3. Write the procedure for single sampling plan on a flow diagram.

4. Draw normal curve for frequency distribution.

5. List out the different types of overheads.

6. What are the main elements of cost?

7. Write the formulae for finding the volumes of *(a)* frustum of cone, *(b)* circular ring and *(c)* cylinder.

8. Define *(a)* cutting speed, *(b)* feed and *(c)* depth of cut.

9. What are the components of gas welding cost?

10. What are forging operations?

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PART—B 10×5=50

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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)* Write a short note on therbligs.

(b) Write improved SIMO chart (LH-RH chart) for bolt and nut assembly.

12. Briefly describe the various allowances provided to a worker for work measurement.

13. Describe briefly *(a)* centralized inspection, *(b)* sampling inspection and *(c)* pilot piece inspection.

14. *(a)* What will be the effects of *(i)* over-estimating and *(ii)* under-estimating?

(b) Write any three differences between estimating and costing.

15. The initial cost of an equipment is ₹ 11,000 and estimated salvage value is ₹ 1,000. Life of equipment is assumed as 10 years. The rate of interest is 6%. Calculate the rate of depreciation and the book value after two years using sinking fund method.

16. Estimate the number of rivets as shown in Fig. 1 which can be made from 5·5 kg of mild steel. Take the density of mild steel as 7·87 g/cm^3 :
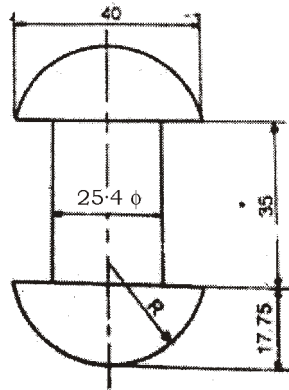

Fig. 1

17. Find the time required to turn a 60 mm diameter rod to the dimensions shown in Fig. 2. Take cutting speed as 20 m/min, feed as 1·2 mm. All cuts are 3 mm deep :
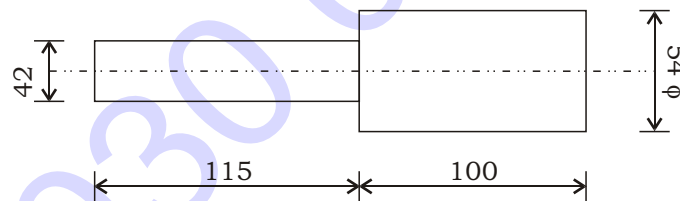

Fig. 2

18. A container of size 2 m length × 1 m width × 0·5 m height is to be fabricated from 6 mm thick plates. The plate metal density is 8 g/c.c. The top of the container is open and joints are to be welded. Calculate the cost of the container. Assume the following data :

Cost of plate = ₹ 10 per kg

Metal scrap = 5% of metal

Cost of labour = 10% of material cost

Cost of welding material = ₹ 5 per meter weld

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