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BOARD DIPLOMA EXAMINATION, (C-16)

MAY/JUNE—2023

DME - FIFTH SEMESTER EXAMINATION

INDUSTRIAL ENGINEERING — 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 increasing industrial productivity?

2. What are the uses of string diagram?

3. List out the applications of PMTS.

4. Write the differences between chance variation and assignable cause variation.

5. Write the procedure for single sampling plan.

6. Draw a cost structure diagram showing the relation between elements of cost and components of cost.

7. Define the terms *(a)* obsolescence and *(b)* depreciation.

8. Locate the Centroid (x, y coordinates; x, y axes pass through centre of the circle) of semicircle of radius 30 mm.

9. Define cutting speed, feed and depth of cut with respect to turning.

10. How do you estimate the total cost of a casting in foundry?

Instructions : (1) Answer *any* **five** questions.

(2) Each question carries **ten** marks.

(3) Answers should be comprehensive and criterion for valuation is the content but not the length of the answer.

11. Draw the symbols of any 10 out of 17 therblings and furnish the details of name, explanation and abbreviation. 10

12. *(a)* Briefly explain cycle graph and chrono cycle graph. 5

(b) What is work sampling? List out any three advantages. 5

13. Discuss about various allowances that are being considered in calculating standard time in time study procedure. 10

14. Draw a neat sketch of an OC curve. Explain its different regions and also salient points on the curve. 10

15. Calculate the cost of making 125 brass castings as shown in the figure. Density of brass may be taken as 8.6 gm/cc. The cost of brass material is ₹ 60 per kg. All dimensions are in mm. 10
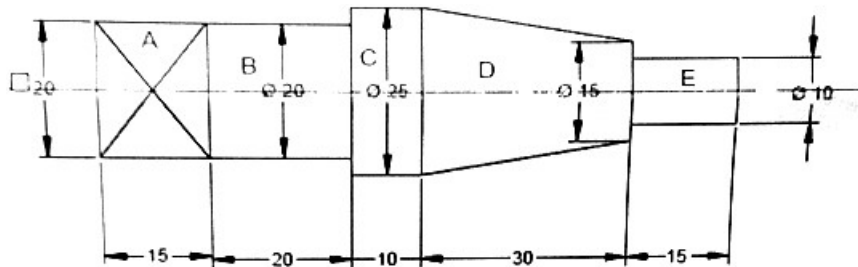
16. *(a)* Find the time required to turn 3.5 cm diameter bar to the dimensions shown in the figure. Cutting speed is 17.6 m/min and feed is 1 mm/rev. All cuts are 3.5 mm deep. All dimensions are in mm. 7
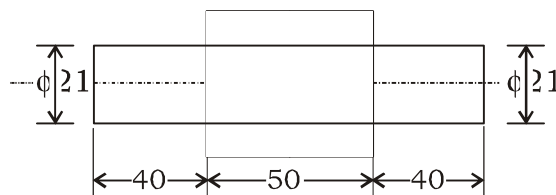
(b) Find the time required to produce 8 holes on a casting each of 10 cm depth, if the hole diameter is 2 cm. Cutting speed is taken as 20 m/min and feed as 0.02 cm/rev.   3

17. Estimate the welding cost for butt welding two mild steel plates each 300 mm × 200 mm × 4 mm. Assume the following data :

Consumption of oxygen	: 0.55 m^3/hr
Rate of oxygen	: ₹30/m^3
Consumption of acetylene	: 0.27 m^3/hr
Rate of acetylene	: ₹150/m^3
Welding time per meter of weld	: 20 min
Length of filler rod consumed	: 3.4 m/m of welding
Filler rod diameter	: 3 mm
Filler material lost during welding	: 20%
Density of filler rod	: 7.2 gm/c.c.
Cost of filler rod	: ₹45/kg

Welding is done on both the sides.   10

18. *(a)* Briefly discuss about the forging losses.

(b) Determine the volume of solid of revolution of a circular fillet of radius 7 mm about xx axis at a distance of 22 mm as shown in the figure.   10

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