



C16-M-502

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BOARD DIPLOMA EXAMINATION, (C-16)

NOVEMBER—2020

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. Distinguish between production and productivity.
2. Draw an outline process chart for changing refill of a ballpoint pen, by arranging the following events in sequential order : unscrew the cap, screw the cap, check if the ballpoint pen writes, screw the neck, place the refill in the barrel, unscrew the neck, remove the old refill, assemble the spring on new refill.
3. What are the advantages of PMTS?
4. List out various ways of expressing central tendency and measures of dispersion.
5. Compare single sampling plan with double sampling plan.
6. What are the various methods of calculating depreciation?

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7. Compare estimation with costing.
8. Calculate the volume of a regular hexagonal prism whose height is 100 mm and length of one side of hexagon is 30 mm.
9. List out any 6 machining operations that are generally performed in workshop.
10. How do you estimate the total cost of gas welding?

PART—B

10×5=50

- Instructions :** (1) Answer *any five* questions.
(2) Each question carries **ten** marks.
(3) Answers should be comprehensive and the criteria for valuation are the content but not the length of the answer.

11. Describe the procedure for method study and write its advantages. 7+3=10
12. (a) Write short notes on SIMO chart and micro motion study. $2\frac{1}{2}+2\frac{1}{2}=5$
(b) What is work sampling? List out any three advantages. 2+3=5

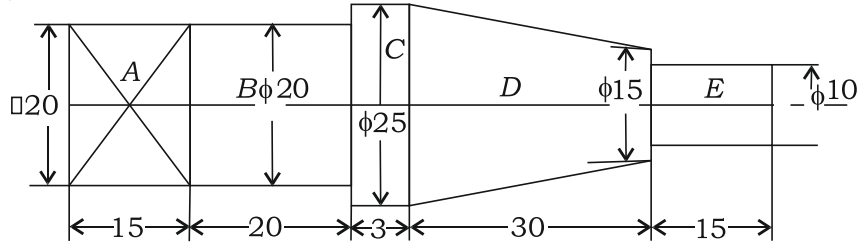
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13. Describe about the general procedure adopted for work measurement.
14. The daily production in machine shop is 1000 components. These components are inspected by go and no go gauges. A sample of 100 is inspected daily for continuously ten days. The samples are taken at Random. Compute the control limits for (a) *p* chart and (b) *np* chart. Draw those charts.

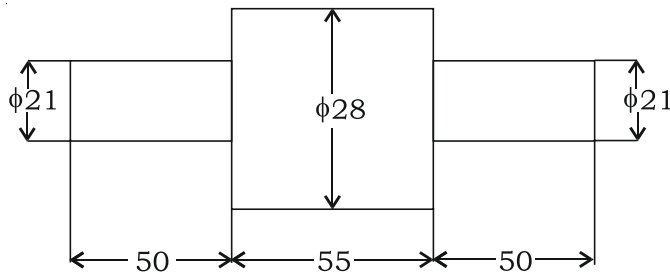
Day : 1 2 3 4 5 6 7 8 9 10

* Rejections : 2 10 6 20 18 14 15 12 8 6

15. Calculate the cost of making 150 CI castings as shown in the figure. Density of CI may be taken as 7.2 gm/cc. The cost of material is ₹ 5 per kg. All dimensions are in mm.



16. (a) Find the time required to turn 3.5 cm diameter bar to the dimensions shown in figure. Cutting speed is 15.4 m/min and feed is 2 mm/rev. All cuts are 3.5 mm deep. All dimensions are in mm.

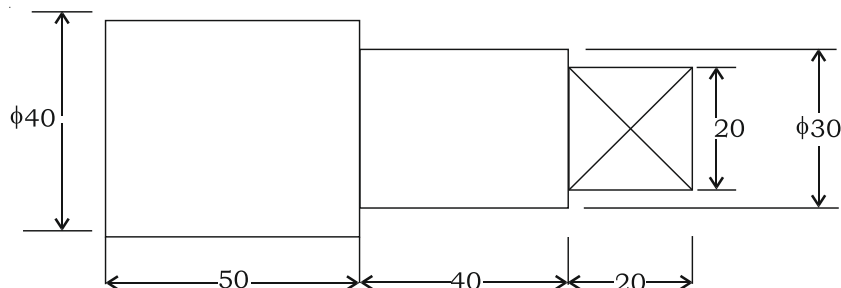


- (b) Estimate the time for reaming 25 mm diameter hole, having 35 mm depth to make 25.05 mm diameter hole. Assume cutting speed as 12 m/min and feed as 0.3 mm/rev.

7+3=10

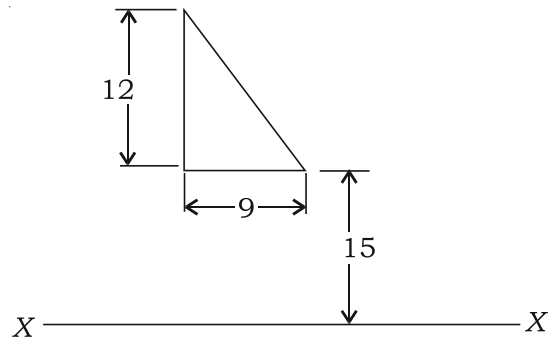
17. 120 MS, pieces of a component as shown in figure are to be drop forged from a 4 cm diameter bar stock. Estimate the cost of manufacturing Given that, cost of material = ₹100 per meter, forging charges = ₹ 0.05/cm² surface area, on cost = 10% of material cost. Consider all possible losses during operations.

Note : All dimensions are in mm.



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- 18.** (a) Discuss about various patterns making allowances.
- (b) Determine the volume of solid of revolution of triangle about XX-axis as shown in the figure.



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