

6638

## BOARD DIPLOMA EXAMINATIONS

OCT/NOV-2019

DME – FIFTH SEMESTER

INDUSTRIAL ENGINEERING - ESTIMATING AND CASTING

Time: 3 hours

Max. Marks: 80

## PART – A

3 X 10 = 30

- Instructions:**
1. Answer **all** questions.
  2. Each question carries **Three** Marks.
  3. Answer should be brief and straight to the point and should not exceed Five simple sentences.

1. Differences between Productivity and Production.
2. What are the various charts used in method study?
3. Define the following terms
  - a) Normal time b) Observed time and c) Standard time.
4. Write any three differences between Variable charts and Attributes charts.
5. Draw flow chart for a single sampling plan?
6. Write any three objectives of estimation.
7. Define the following terms
  - a) Scrap value and b) Book value.
8. Write the formulae for finding the volume of
  - a) Sphere b) Circular ring and c) Cone.
9. 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 20m/min and feed as 0.02 cm/rev.
10. List out the various forging operations?

[Cont.,

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**PART – B**

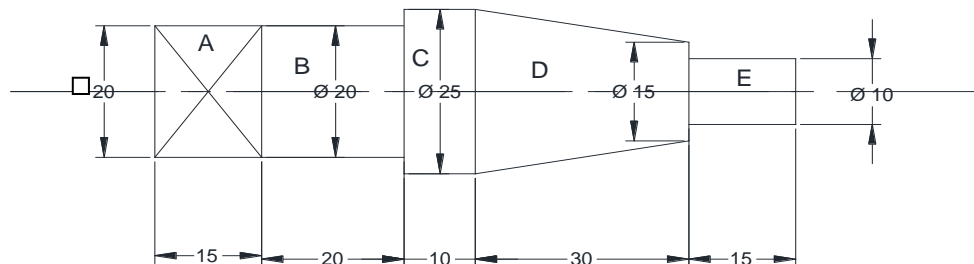
**5 X 10 = 50**

- Instructions:**
1. Answer any **Five** questions
  2. Each question carries **TEN** Marks.
  3. Answer should be comprehensive and a criterion for valuation is the content but not the length of the answer.

11. What is an operational process chart? Explain with an example?
12. a) What is SIMO chart? State its uses.  
b) What are the advantages and disadvantages of work sampling?
13. Explain the procedure for work measurement by PMTS method.
14. The daily production in machine shop is 1000 items. These items are inspected by GO and NO-GO gauges. Draw control charts for a) Fraction defectives b) Number of defectives and c) Percent defectives on the basis of given data collected for 10 days. The sample size is 100.

Days	1	2	3	4	5	6	7	8	9	10
Number of items found defectives	2	10	6	20	18	14	15	12	8	6

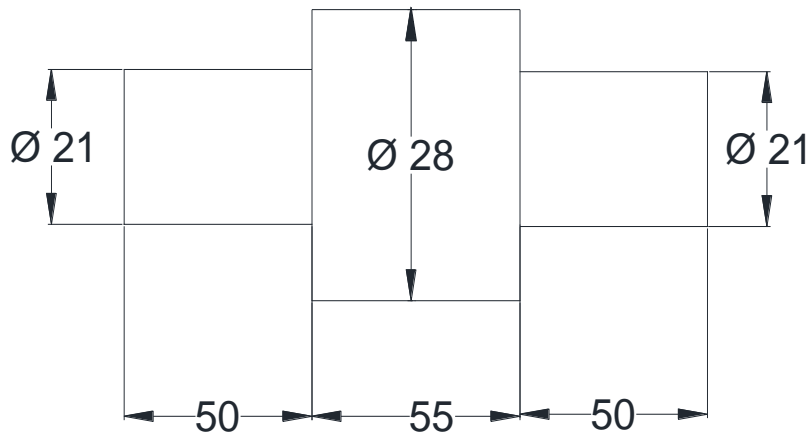
15. Calculate the cost of brass casting shown in the fig. Density of brass may be taken as 8.6 gm/cc. The cost of brass material is Rs. 60 per kg. All dimensions are in mm.



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16. a) Explain the procedure step by step to calculate the weight of material for a component.  
 b) Briefly explain the components for estimating forging costs.
17. Estimate the time required to turn 35 mm diameter bar to the dimensions shown in fig. Cutting speed is 15.4 m/min and feed is 2 mm/rev. All cuts are 3.5 mm deep. All the dimensions are in mm.



18. Estimate the welding cost for butt welding two mild steel plates each 300 mm x 200 mm x 4 mm. Assume the following data: Consumption of oxygen:  $0.55\text{m}^3/\text{hr}$ ; Rate of oxygen; Rs.  $30/\text{m}^3$ ; Consumption of acetylene:  $0.27\text{m}^3/\text{hr}$ ; Rate of acetylene: Rs.  $150/\text{m}^3$ ; Welding time per meter of weld = 20 min; Length of filler rod consumed : 3.4 m/m of Welding; Filler rod diameter : 3mm; Filler material lost during welding =20%; Density of filler rod :  $7.2\text{gm}/\text{c.c}$ . Cost of filler rod: Rs. 45kg. Welding is done on both sides.

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