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BOARD DIPLOMA EXAMINATION

JUNE - 2019

DIPLOMA IN MECHANICAL ENGINEERING

INENNDUSTRIAL ENGINEERING ESTIMATING AND COSTING

FIFTH SEMESTER EXAMINATION

Time: 3 Hours **Total Marks: 80**

PART - A (3m x 10 = 30m)

Note 1:Answer all questions and each question carries 3 marks

2:Answers should be brief and straight to the point and shall not exceed 5 simple sentences

1. Three employees work for five days (08 working hours a day) to produce 720 components, calculate the labor hour productivity?
2. Define Therbligs? And give its importance
3. State the advantages and disadvantages of work sampling
4. What is Six Sigma? Briefly explain
5. Write various reasons for the process being out of control
6. What do you understand by direct expenses? Give example
7. Differences between depreciation and obsolescence
8. Write the formula for finding the volume of (a) Cylinder (b) Rectangular solid ring and (c) Segment?
9. Calculate the time taken for shaping a slot of depth 5mm in a 40 cm long and 25 cm wide cast iron block. The depth of cut is not to exceed 2.5mm. Feed is taken to be 0.8mm per stroke and cutting speed 10 m/min. Assume cutting ratio, k=0.667
10. Mention various elements involved in calculating the fabrication cost of a product by (a) Arc welding and (b). Gas welding

PART - B (10m x 5 = 50m)

Note 1:Answer any five questions and each carries 10 marks

2:The answers should be comprehensive and the criteria for valuation is the content but not the length of the answer

11. Explain a man machine chart with an example
12. Explain the methods of conducting work sampling with an example

13A. List out method study activities and give example for each activity

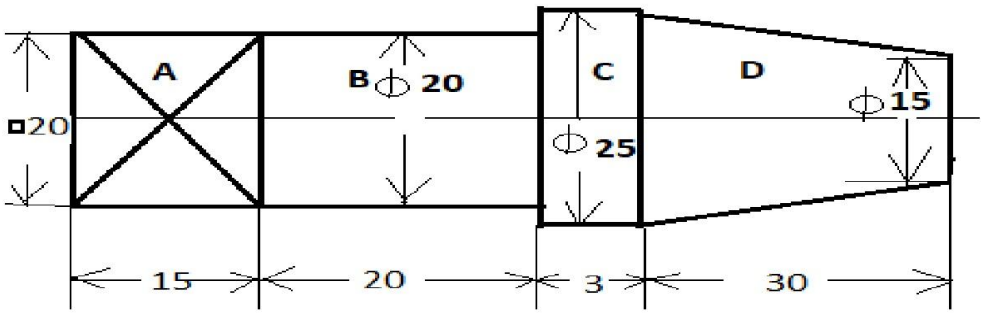
B. Explain the following terms used in M-T-M

a) Time measurement unit
b) various classes of search

14. The following data shows the defects found in sample of 150 items each. The observations for 12 days are shown in the below table. (a) Upper & Lower control limits (b) Draw P and np charts and (c) Comment on the result.

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12
Number of Defects	25	26	42	16	6	13	3	11	23	15	14	17

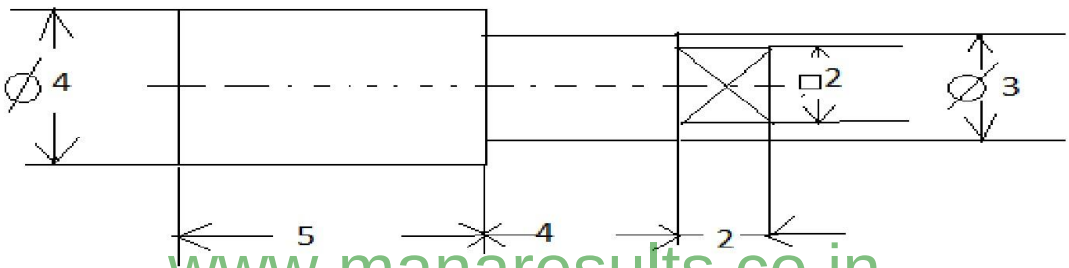
15. Calculate the cost of brass casting shown in the fig. Density of brass may be taken as 8.6gm/cc.The cost of brass material is Rs.60 per kg. All dimensions are in mm.



Fig

16. Calculate the time required to rough grind a steel shaft of 3.75 cm diameter to 3.7 cm diameter size using grinding wheel of 5 cm face. Assume cutting speed 12m/min and depth of cut 0.0025cm. Length of the shaft to be ground is 25cm

17. 200 pieces of a component as shown in the figure. are to drop forged from a 4cm diameter bar stock. Calculate the cost of manufacturing if (a) Material cost is Rs.100 per meter length. (b). Forging charges @ Rs.10 per cm^2 of surface area to be forged. (c) On cost is 10% of material cost. Assume all possible forging losses and all dimensions are centimeter.



Fig

18A. Determine the volume of solid of revolution of circular fillet about X-X axis at a distance of R from C.G

B. How do you calculate net weight and grass weight of the given product?

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