

Reg. No. :

| | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|
| | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|

Question Paper Code: 49810

B.E. / B.Tech. DEGREE EXAMINATION, APRIL 2019

Elective

Mechanical Engineering

14UME910- PROCESS PLANNING AND COST ESTIMATION

(Regulation 2014)

Duration: Three hours

Maximum: 100 Marks

PART A - (10 x 1 = 10 Marks)

- Which process chart symbol is used to Process Chart Symbols for permanent storage
(a) Equilateral triangle (b) Circle
(c) Square (d) Rectangle
- Which techniques are commonly used in work measurement
(a) Time study
(b) Work sampling
(c) Pre-determined Motion Time System (PMTS)
(d) All of the above
- Which one of the following chart gives simultaneously information about the progress of work and machine loading?
(a) Process chart (b) Machine load chart
(c) Man-machine chart (d) Gantt chart
- Production of books in printing presses is -----type of process
(a) Job Shop Production (b) Batch Production
(c) Mass production (d) Continues flow
- What does the symbol 'o' imply in work study
(a) Operation (b) Inspection (c) Delay (d) Transport

6. Direct labour cost includes
- (a) supervisors (b) Foreman
(c) storekeeper (d) Direct worker on Machines
7. Standard Time is equal to
- (a) Normal Time + Allowances (b) Observed time x Rating factor
(c) Normal Time + Rating factor (d) None of the above
8. If one wanted to double the volume of an investment casting turbine blade from 4 to 8 cubic centimeters, what would be the increase in cost?
- (a) 2.5 times (b) 1.5times (c) 2 times (d) 3.5 times
9. Break even analysis consists of
- (a) Fixed expenses (b) Variable cost
(c) Sales revenue (d) All of these
10. Set-up time includes the time taken to :
- (a) Study the component drawing
(b) Draw tools from tool crib
(c) Install and adjust the tools, jigs and fixtures on the machine
(d) All of the above

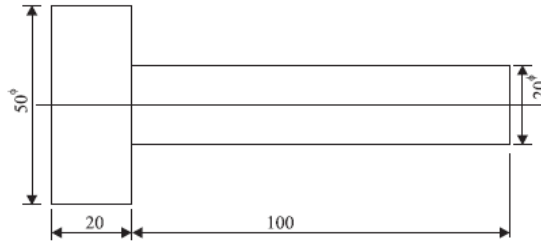
PART – B (5 x 2= 10Marks)

11. What are the benefits of Ergonomics?
12. What are the functions of process planning?
13. Distinguish between cost estimation and cost accounting
14. Write the aims of cost estimation.
15. Explain overhead expenses

PART – C (5 x 16= 80Marks)

16. (a) (i) Enumerate the basic procedure of work study and describe the methods involved in the process. (8)
(ii) Explain the basic procedure involved in Method study. (8)
- Or
- (b) (i) Explain in detail about various recording techniques used in Method study. (10)

- (ii) What are the advantages and disadvantages of Work sampling compared to Time study? (6)
17. (a) Explain the two approaches commonly used in CAPP system bringing out their advantages and limitations (16)
- Or
- (b) Write the steps involved in process planning. (16)
18. (a) (i) List down step by step procedure for estimating the direct material cost. (8)
- (ii) Explain the Methods of costing can be classified. (8)
- Or
- (b) (i) Write the difference between Financial Accounting and Cost Accounting. (6)
- (ii) Calculate the selling price per unit from the following data : (10)
- Direct material cost = Rs. 8,000
- Direct labour cost = 60 percent of direct material cost
- Direct expenses = 5 percent of direct labour cost
- Factory expenses = 120 percent of direct labour cost
- Administrative expenses = 80 percent direct labour cost
- Sales and distribution expenses = 10 percent of direct labour cost
- Profit = 8 percent of total cost
- No. of pieces produced = 200
19. (a) (i) List the data requirements and sources of information for cost estimation. (8)
- (ii) In a manual operation, observed time for a cycle of operation is 0.5 minute and therating factor as observed by the time study engineer is 125%. All allowances put together is 15% of N.T. (Normal Time). Estimate the Standard Time. (8)
- Or
- (b) What is allowance? Explain various types of allowances. (16)
20. (a) (i) 150 components, as shown in Fig. 1 are to be made by upsetting a f 20 mm bar. (8)
- Calculate the net weight, gross weight and length of f 20 mm bar required. The density of material may be taken as 7.86 gms/cc. (All dimensions are in mm)



(ii) Explain various cost elements involved of a casting components. (8)

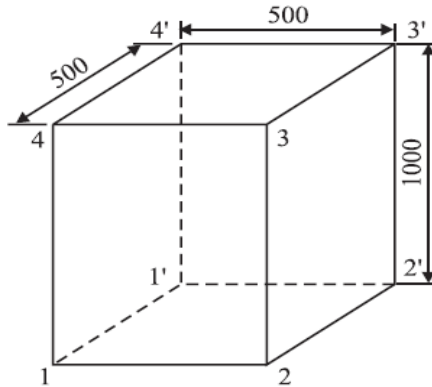
Or

(b) A container open on one side of size $0.5 \text{ m} \times 0.5 \text{ m} \times 1 \text{ m}$ is to be fabricated from 6 mm thick plates Figure. The plate metal weighs 8 gms/cc. If the joints are to be welded, make calculations for the cost of container. The relevant data is :

Cost of plate = Rs. 10 per kg

Sheet metal scarp (wastage) = 5 percent of material

Cost of labour = 10 percent of sheet metal cost



All dimensions in mm