Reg. No. :

Question Paper Code: 49810

B.E. / B.Tech. DEGREE EXAMINATION, DEC 2021

Elective

Mechanical Engineering

14UME910- PROCESS PLANNING AND COST ESTIMATION

(Regulation 2014)

Duration: Three hours   Maximum: 100 Marks

PART A - (10 x 1 = 10 Marks)

1. In time study, the rating factor is applied to determine

   (a) Standard time of a job   (b) Merit rating of the worker

   (c) Fixation of incentive rate   (d) Normal time of a worker

2. 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

3. 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

4. In Batch Production, the products are made in ----------------

   (a) Small batches and in Less variety   (b) Small batches and in Large variety

   (c) Large batches and in Large variety   (d) None of the above

5. 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. The work study is done by means of

   (a) Planning chart   (b) Process chart

   (c) Stop watch   (d) Travel chart

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

<div align="center">PART – B (5 x 2= 10Marks)</div>

11. What is SIMO chart?

12. What are the functions of process planning?

13. Distinguish between cost estimation and cost accounting

14. Write the aims of cost estimation.

15. Define Overhead Cost

<div align="center">PART – C (5 x 16= 80Marks)</div>

16. (a) (i) Define Ergonomics; Come out with its objectives and applications.   (8)

    (ii) Design a consideration of Work place layout.   (8)

    <div align="center">Or</div>

    (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)

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17. (a) Explain the two approaches commonly used in CAPP system bringing out (16) their advantages and limitations

Or

(b) What factor should be considered while selecting the best process planning (16) system? .

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) Examine the purpose of costing? Besides the various methods involved in (10) costing.

19. (a) (i) List the data requirements and sources of information for cost estimation. (8)
(ii) In a manufacturing process, the observed time for 1 cycle of operation is (8)
    0.75 min.
        The rating factor is 110%. The following are the various allowances as
    % of normal time :
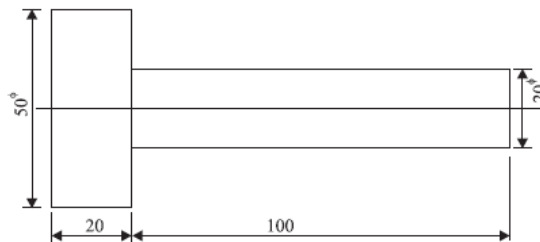   Personal allowance = 3%
     Relaxation allowance = 10%
     Delay allowance = 2%

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 (8)
bar.
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

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(b) Calculate the cost of forging a crank shaft as shown in Fig. The forging is to be   (16)
made out of a bar stock of 50 mm f and following data is available :
(*i*) Material price = Rs. 80 per kg
(*ii*) Direct labour charges = Rs. 23 per piece
(*iii*) Overhead charges = 150 percent of material cost
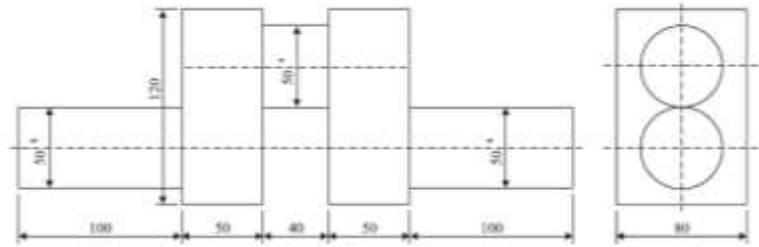(*iv*) Density of material = 7.5 gms/cc
(*v*) Losses = 28 percent of net weight

Figure – crank shaft(All dimensions are in mm)

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