Reg. No. : | | | | | | | | | | |

**Question Paper Code: 49710**

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2018

Elective

Mechanical Engineering

14UME910- PROCESS PLANNING AND COST ESTIMATION

(Regulation 2014)

Duration: Three hours Maximum: 100 Marks

Answer All Questions

PART A - (10 x 1 = 10 Marks)

1. Which process chart symbol is used to Process Chart Symbols for permanent storage

   (a) Equilateral triangle (b) Circle (c) Square (d) Rectangle

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. 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

4. A diagram showing the path followed by men and materials while performing a task is known as

   (a) String diagram (b) Flow process chart (c) Travel chart (d) Flow diagram

5. Factory cost is equal to

   (a) Prime cost + Factory expenses

   (b) Production cost + Factory expenses

   (c) Direct material cost + Direct labour cost

   (d) Production cost + Administration expenses

6. Direct labour cost includes

(a) supervisors (b) Foreman

(c) storekeeper (d) Direct worker on Machines

7. A diagram showing the path followed by men and materials while performing a task is known as

(a) Travel chart (b) Flow process chart

(c) String diagram (d) Flow diagram

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 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

10. The work study is done by means of

(a) Planning chart (b) Process chart

(c) Stop watch (d) Travel chart

PART – B (5 x 2= 10Marks)

11. What is SIMO chart?

12. List the process planning activities?

13. Define costing.

14. Give any two functions of cost estimation

15. Define Overhead Cost.

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) A factory owner employed 50 workers during the month of November 2004, whose detailed expenditure is given below : (8)

*(i)* Material cost = Rs. 30,000
*(ii)* Rate of wage for each worker = Rs. 6 per hour
*(iii)* Duration of work = 8 hours per day
*(iv)* No. of holidays in the month = 5
(*v*) Total overhead expenses = Rs. 15,000

If the workers were paid over time of 400 hours at the rate of Rs. 12 per hour, calculate
(*a*) Total cost, and
(*b*) Man hour rate of overheads.

(ii) Explain the Methods of costing can be classified. (8)

Or

(b) (i) Examine the purpose of costing? Besides the various methods involved in costing. (16)

19. (a) (i) List the data requirements and sources of information for cost estimation. (8)

(ii) Explain the terms prime cost, factory cost, total cost and selling price. Show the relationship between various components of cost with the help of a block diagram. (8)

Or

(b) (i) In a manufacturing process, the observed time for 1 cycle of operation is 0.75 min.The rating factor is 110%. The following are the various allowances as % of normal time : (12)

Personal allowance = 3%
Relaxation allowance = 10%
Delay allowance = 2%

(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. (4)

20. (a) (i) 150 components, as shown in Fig. 1 are to be made by upsetting a f 20 mm 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) (8)

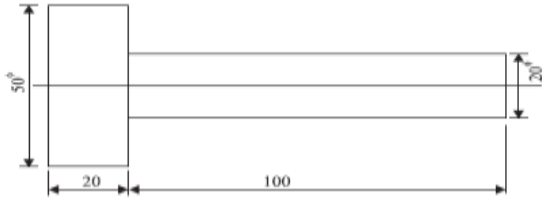


Figure 1

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

Or

(b) (i) A container open on one side of size 0.5 m × 0.5 m × 1 m is to be fabricated from 6 mm thick plates Figure. The plate metal weighs 8 gms/cc. If the jointsare to be welded, make calculations for the cost of container. The relevant data is : (16)

Cost of plate = Rs. 10 per kg

Sheet metal scarp (wastage) = 5 percent of material

Cost of labour = 10 percent of sheet metal cost(16)