



SHRI ANGALAMMAN COLLEGE OF
ENGINEERING AND TECHNOLOGY
(An ISO 9001:2008 Certified Institution)
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FS81 504

Department of Mechanical Engineering

GE1452-Process Planning & Cost Estimation

UNIT I WORK STUDY AND ERGONOMICS Part-A

1. What are the bligs?
2. What is meant by Method Study?
3. What is Process Charts?
4. What is SIMO Charts?
5. What is multiple activity charts?
6. What is meant by Work Study?
7. Where string diagram is used?
8. What is travel chart?
9. What is meant by work measurement?
10. What are the techniques of work measurement?
11. Define performance rating?
12. What is allowance?
13. What do you mean by standard time?
14. How do you calculate the standard time?
15. What is meant by ergonomics?
16. State some application of ergonomics?

Part-B

1. Define the terms 'work study', 'method study' and 'work measurement'. Also briefly explain how use of work study leads to higher productivity in a manufacturing unit. (16)
2. List the objectives, purpose, and scope of work study. (16)
3. (i) Explain briefly the various steps involved in conducting the work study. (8)
(ii) State and explain in brief the steps involved in method study procedure. (8)
4. What are the various symbols of process chart? Write and explain briefly. (16)
5. Explain the significance, construction and applications of the following recording techniques:
 - (i) Outline process chart (4)
 - (ii) Flow process chart (4)
 - (iii) Two handed process chart and (4)
 - (iv) Multiple activity chart. (4)
6. Differentiate between
 - (i) Outline process chart and flow process chart. (4)
 - (ii) Two-handed process chart and SIMO chart. (4)

- (iii) Multiple activity chart and SIMO chart (4)
- (iv) Flow diagram and string diagram. (4)
- 7. Differentiate between
 - (i) Cyclegraph and chronocyclegraph (5)
 - (ii) Travel chart and string diagram (5)
 - (iii) Flow process chart and flow diagram (6)
- 8. What are therbligs? Give any five therbligs with symbols (16)
- 9. List the principles of motion economy as applied to:
 - (i) The use of human body, (5)
 - (ii) Arrangement of work place, and (5)
 - (iii) Design of tool and equipment (6)
- 10. Define work measurement and state its objectives. (16)
- 11. Briefly explain the various techniques of work measurement. (16)
- 12. Define time study List down the various steps in conducting a stop watch time study.(16)
- 13. Why the job is divided into elements? State the general rules to be followed while breaking the job into elements. (16)
- 14. Explain the difference between:
 - (i) Observed time and normal time. (6)
 - (ii) Normal time and standard time. (5)
 - (iii) Cumulative timing and fly back timing (5)
- 15. Write short notes on performance rating and allowances. (16)
- 16. What is meant by ergonomics? Describe the objectives of the study of ergonomics (16)
- 17. Discuss the importance of ergonomics by mentioning various areas of application. (16)
- 18. Write short notes on:
 - (i) Design of man-machine systems, and (8)
 - (ii) Design of working environment. (8)
- 19. Write a brief about the following:
 - (i) Ergonomic display designs, (6)
 - (ii) Ergonomic design of controls, and (6)
 - (iii) Optimal use of physical efforts. (4)

UNIT II PROCESS PLANNING

Part-A

1. What is meant by process planning?
2. What are the factors affect process planning?
3. What are the reasons for process documentation?
4. State the general approaches to process planning?
5. What is CAPP?
6. What are the advantages of CAPP?
7. What is Flow Chart?
8. What are the disadvantages of flow charts?
9. What is decision table?
10. State the benefits of decision table?
11. What are the tools for acquiring documentation knowledge?

Part-B

1. (i)What is process planning? (8)
(ii)What are the activities associated with it? (8)
2. Explain the technological framework of process by using a block diagram. (16)
3. List the information required for process planning. (16)
4. What are the factors that influence process planning? (16)
5. Explain in detail the process planning activities. (16)
- 6.(i) Explain the manual approach to process planning. (8)
(ii) What are advantages and limitations? (8)

7. (i) What is meant by CAPP? (4)
(ii) List out the benefits of CAPP systems. (12)
8. Explain the two approaches commonly used in CAPP system bringing out their advantages and limitations. (16)
9. Compare and contrast the features of a variant and generative CAPP system. (16)
10. Write short notes on 'tools for developing manufacturing logic and knowledge'. (16)
11. What are the advantages and limitations of using?
(i) Flow charts (8)
(ii) Decision tables (8)
12. What factor should be considered while selecting the best process planning system? (16)

UNIT III INTRODUCTION TO COST ESTIMATION

Part-A

1. Define Cost Estimation
2. What are the types of Estimation?
3. What are the methods of Estimation?
4. State the importance of realistic estimates.
5. What is design cost?
6. What is labour cost?
7. What do you mean by overhead cost?
8. Define costing.
9. What are the methods of costing?
10. What is direct cost?

Part-B

1. (i)What is cost estimating? (8)
(ii)State the objectives of cost estimating. (8)
2. List the functions of estimating. (16)
3. Explain the type of cost estimates, that are used in estimating. (16)
4. List and discuss the different methods of cost estimating. (16)
5. List the various data required to make a cost estimate (16)
6. List the various types and sources of data required by the cost estimator. (16)
7. Describe the various constituents of estimation. (16)
8. What shall be the effects of the following on an enterprise?
(i) Under estimating, (8)
(ii) Over estimating. (8)
9. (i)What do you mean by a realistic estimate? (8)
(ii) Describe its importance in production. (8)
10. Explain the procedure followed for estimating the cost of an industrial product. (16)

11. Explain in detail the procedure for estimating the cost of water supply fitting in residential building. (16).
12. (i) Define costing or cost accounting (6)
 . (ii) Why costing is essential to industrial control? (10)
13. (i) What is the purpose of costing? (8)
 (ii) Differentiate between estimating and costing. (8)
14. Explain the various methods of costing. (16)

UNIT IV COST ESTIMATION

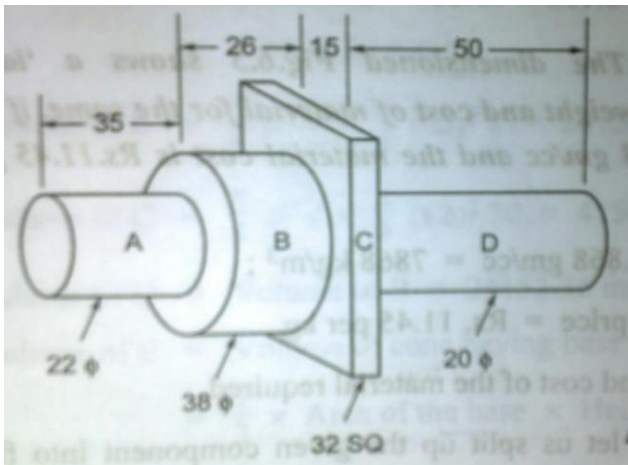
Part-A

1. What are the elements of cost?
2. What are the types of cost?
3. What is meant by direct material?
4. What are the types of direct material?
5. State some examples for direct material.
6. What is meant by indirect material?
7. Who are called direct labour?
8. State some examples for direct labour?
9. Who are called indirect labour?
10. What is meant by factory on cost?
11. Defining selling expenses.
12. What is total cost?
13. What is ladder of cost?

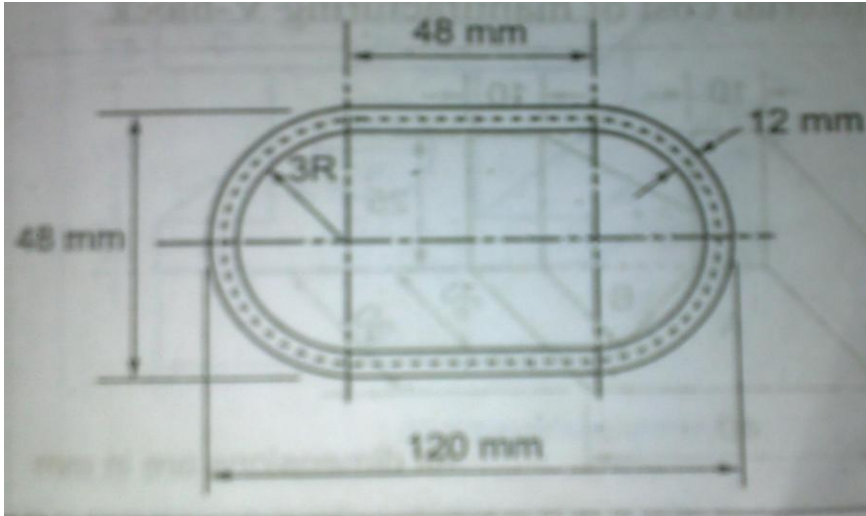
Part-B

1. (i) Name the various elements of cost. (8)
 (ii) Explain each element in detail giving suitable examples. (8)
2. (i) Contrast between direct materials and indirect materials. (8)
 . (ii) What do you understand by the term 'overhead expenses'?
 List few items of overhead expenses in a factory. (8)
3. What items of expenditure are included in administrative overheads? (16)
4. Describe in brief:
 - (i) Selling expenses, (8)
 - (ii) Distribution expenses. (8)
5. List various components of cost (16)
 .
6. 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. (16)
7. Describe with a block diagram how the selling price of a product is arrived at? (16)
8. Illustrate the relationship between 'elements of cost' and 'components of cost' with the help of a block diagram. (16)
9. Write down the step by step procedure for estimating the direct materials cost? (16)
10. Define the following terms:
 - (i) Set up time, (4)
 - (ii) Handling time, (4)
 - (iii) Machining time, and (4)
 - (iv) Tear down time. (4)
11. What are the various time allowances which should be considered for calculating

- labour cost? (16)
12. Write short notes on:
- Personal allowance, (8)
 - Contingency allowance. (8)
13. How will you estimate direct labour cost for mass production of an item?(16)
- 14.(i) 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)
- Allocation by percentage on direct labour cost. (4)
 - Allocation by percentage on direct material cost (4)
15. When do you prefer allocation of overhead expenses by unit rate? (16)
16. What do you understand by allocation of overhead expenses? (16)
17. Describe and compare the various methods of allocation of overhead expenses.(16)
18. Under what situations, you can use the allocation of overhead expenses by percentage on prime cost method. (16)
19. An isometric view of a work piece is shown in figure. What will be the weight Of the material required to produce it. The density of material is 2.681 gm/cc. Find also the material cost if its rate is Rs 13.60 per kg. All dimensions are in mm. (16)



20. Calculate the weight of 60 meters of a steel chain, one link of which is shown in figure. Assume weight of steel rod of 12mm diameter as 0.75 gm/mm length. (16)



UNIT V PRODUCTION COST ESTIMATION

Part-A

1. Define forging.
2. Differentiate hot forging and cold forging.
3. Contrast smith forging and drop forging.
4. In what ways, press forging and upset forging are different?
5. Define man hour and machine hour rate.
6. What is unit rate?
7. What is scale loss?
8. What are the types of welding?
9. What is the pattern?
10. What is shrinkage allowance?

Part-B

1. A factory has a capacity to produce 1000 shapers/annum. But at present 'it is working at its 70% capacity. The sales income at this level is Rs.52,50,000. The fixed cost of the factory is Rs.20,00,000 and variable cost per piece is Rs.2500. There is a proposal for mechanization but this will increase the fixed cost by Rs.40,000 and will reduce the variable cost by Rs.500 per unit.

Estimate: (i) Whether the proposal is economical? (8)

(ii) If a reduction in selling price by Rs.200 per unit make the factory to run at 85 % of its full capacity, would this be a better proposal than the first one. (8)

2. A C.I. factory employees 25 persons It consumes material worth Rs. 35,000 pays workers at the rate of Rs. 5 per hour and incurs total overheads of Rs.20,000. In a

particular month (25days) workers and an overtime of 150 hours and were paid double than the normal rate.

Find (i) the total cost, and (8)

(ii) the man hour rate of overheads. Assume 8 hours working days. (8)

3. What is the material cost of welding two plates of size 300 mm length and 150 mm width and 8 mm thickness to make a piece 300 x 300 mm approximately. Use rightward technique with no edge preparation cost, Take overall cost of oxygen as Rs 0.70 per cu.meter, cost of acetylene as Rs 7 per cu. meter, cost of filler metal Rs 2.50 per kg and 1cu.cm of filler metal weighs 11.28 gms.Assume diameter of filler rod= 4 mm. Filler rod used per meter of weld= 3.4 meter. Rate of welding= 2.1 meter/hour. Consumption of oxygen=Consumption of acetylene= 7.1 cu.metre/hr. (16)

4. A 3 cm deep slot is to be milled with a 8 cm diameter cutter. The length of the slot is 30 cm. What will be the total table travel to complete the cut? If the cutting speed is 20 meters/ min and feed per tooth is 0.2 mm. Estimate the milling time. The cutter has 24 teeth and one cut is sufficient for the slot. (16)

5. Estimate the time required for tapping a hole with 25 mm tap(3 mm pitch tap) to a length of 50 mm. For return stroke the speed is 1.5 times the cutting speed. Take the cutting speed as 8 m/ min. (16)
