Uka Tarsadia University (Diwaliba Polytechnic)
Diploma in Mechanical Engineering
Assignment (Estimating Costing and Contracting-020020505)

Unit-1 Introduction

1. Differentiate between costing and estimating.
2. Define:- (a) Obsolescence (b) Book value
3. What are the objectives of estimating?
4. What are the qualities of a good estimator?
5. Enlist and explain briefly various methods of overhead allocation.
6. Write down short note on ‘straight line method’ and ‘sinking fund method’ of depreciation calculation.
7. What is ‘scrap value’ and ‘salvage value’?
8. Write down various elements of costing.
9. The catalogue price of motor driven mixture is Rs. 1800 and allowable discount to distributor is 20%. The total administrative & selling expenses and factory cost are in the ratio of 1 : 1. If material cost, labour cost & factory overhead are in the ratio of 1 : 3 : 2 and if the cost of labour is Rs.330.00,/determine the profit on each mixture.
10. A small firm is producing 100 pens per day. The direct material cost is found to be Rs. 160, direct labour cost is Rs.200 and factory overheads chargeable to it are Rs. 250. If the selling on-cost is 40% of the factory cost, what must be the selling price of each pen to realise a profit of 14.6% of the selling price?
11. Discuss Man Hour Rate and Machine Hour Rate.
12. What are the different conditions of engineering contract?
13. Define:- (a) Depreciation (b) Market value
14. Purchase price of a machine is Rs. 1,00,000 and its expected useful life is 10 years. Its scrap value is Rs. 25,000. If 9% interest is charged on depreciation fund, compute the depreciation rate by straight-linemethod and sinking fund method.
15. The market price of a drill machine is Rs. 50,000 and the discount allowed to the distributor is 25% of the market price. It is found that the selling overheads are 1/4 of the prime cost and if the material cost is Rs. 5000 and labour cost Rs. 3000. What profit is made on each drill machine? Neglect other overheads.
16. What is estimating?
17. Define term:- (a) Book value (b) Market value
18. Draw a block diagram for elements of cost.
19. Explain the need and scope of contracting.
20. State the qualities of good estimator.
21. Purchase price of a machine is Rs.90,000 and its expected useful life is 15years. Its scrap value is Rs.30,000. If 5% interest is charged on depreciation fund. Compute the depreciation rate by straight line method and sinking fund method.
22. How is estimating different from costing?

23. Market price of a pattern is Rs. 600. Discount offered on market price is nil. Material cost, labour and overheads are in proportion of 1:3:2. If labour cost is Rs. 80 per pattern then calculate the profit per pattern.
24. Define:- (a) Market value (b) Factory cost
25. Explain the need of costing in brief.
26. What are the functions of estimator?
27. What are the different conditions of engineering contract?
28. A Casting is produced in a batch of 100 castings. The various elements of costs are as under: Direct material cost Rs. 1500, Direct labour cost Rs. 700 and total overheads costs 20% of prime cost. Calculate the selling price per castings to earn a profit of Rs. 264.
29. Purchase price of a drilling machine is Rs. 1,00,000 and transportation cost Rs. 10000 and its expected useful life is 20 years. Its scrap value is Rs. 40,000. Compute the depreciation rate by straight line method.
30. What are the different elements of costing?
31. The market price of a drill machine is Rs. 60,000 and the discount allowed to the distributor is 20% of the market price. It is found that the selling overheads are 1/4 of the prime cost and if the material cost is Rs. 3000 and labour cost Rs. 2500. What profit is made on each drill machine? Neglect other overheads.
32. A machine is purchased for Rs. 40,000 and transportation cost Rs. 5000. The estimated life of machine is 15 years and scrap value Rs.15,000. If the rate of interest on the depreciation fund is charged at 5%, calculate the rate of depreciation by sinking fund method.
33. What are the different types of overhead? Explain any one in detail.
34. Explain Costing in detail.

Unit-2 Break Even Analysis

1. Explain limitations of break-even analysis.
2. An establishment having fixed cost of Rs. 2,50,000, is selling a product at the price of Rs.3.50. Unit material cost is Rs. 1.00. Other variable cost is Rs. 1.50 per unit. Find the break-even point for this concern. Also find the effect of 10% reduction in material cost on break-even point.
3. The fixed cost of a company is Rs. 5,00,000. Selling price of unit is Rs. 400 and variable cost of unit is Rs. 200. Determine total profit and safety margin, when total production is 8000 units.
4. Explain in brief 'break-even analysis' with its benefits.
5. Which assumptions are made for construction of break-even chart?
6. Write down any two examples of 'Fixed cost' and 'Variable cost'.
7. If the variable cost of the product is increased, what will be its effect on BEP?
8. A factory has fixed cost of Rs. 25,000. Variable cost/product is Rs. 5. Selling price/product is Rs. 10. Find break-even point. Calculate margin of safety if net actual sales is of 12000 units.
9. In a company for manufacturing of automobile parts has labour cost Rs. 35 and material cost Rs. 110 per product. Its fixed cost is Rs.95,000. Total variable cost of each part is Rs. 150. If the selling price of each part is Rs. 200 per unit, then find the number of parts this company has to produce on "no profit no loss" basis?
10. Why break-even analysis is important of industries?
11. What is meant by Break even point ?
12. Define fixed cost and give its examples.
13. How will the break-even analysis help in taking make or buy decision?
14. What will be the effect of reduced variable cost on BEP? Show using break-even chart.
15. What are the limitations of break-even analysis?
16. Explain break even point in brief and give its equation.
17. What is the cost that remains constant irrespective of the amount of business done and not affected by volume of production? Give its examples.
18. State the importance of BEP in industries.
19. Derive an expression for BEP analytically and draw a break even chart.
20. Fixed costs of a firm are estimated as Rs. 5.0 lacs. The firm is selling a product manufactured by it at a rate of Rs. 50 per item. The variable cost/unit are estimated as Rs. 25. Determine: a) break-even point; b) break-even point in rupees.
21. Enlist the assumptions for construction of break-even graph.
22. Write down the equation for margin of safety.
23. If the fixed cost of a product is decreased, what will be its effect on break-even point?
24. What will be the effect of decreasing sales revenue of a product on BEP? Show using break-even chart.
25. When the sales revenue of a product is increased, what will be the change in break-even quantity?Explain using BEP graph.
26. The fixed cost of a company is Rs. 10,00,000. Selling price of unit is Rs. 600 and variable cost of unit is Rs. 360. Find the BEP. Determine total profit and safety margin, when total production is 5000 units.
27. A company has fixed cost of Rs. 1,75,000, is selling its product at a rate of Rs. 40 per unit. If material cost is Rs. 10/unit and other variable cost is Rs. 20/unit, then find out break-even point.

Company has the production capacity of 20,000 units. If company produces at 80% of its capacity, then find the profit earned by this company.

28. A factory has fixed cost of Rs. 10,000. Variable cost/product is Rs. 2. Selling price/product is Rs. 4. Find break-even point. Calculate margin of safety if net actual sales is of 8000 units. Also calculate sales target if the factory has to earn a profit of Rs. 6000.
29. What is Break even point?
30. Identify the type of cost of the following examples:- (a) Rent of building, (b) Cost of electrical power.
31. Explain margin of safety in brief using graph.
32. Draw and explain break even chart.
33. What is the effect of increasing the fixed cost of a product? Explain it on a break-even chart.
34. The fixed cost of an industry is Rs. 75000, the variable cost of each product is Rs.700. If the break-even number is 750. Find the selling price of each product. What will be profit, if industry produces 1200 products?
35. The fixed cost of a company is Rs. 5,00,000. Selling price of unit is Rs. 450 and variable cost of unit is Rs. 270. Find the BEP. Determine the margin of safety, when total production is 9000 units.

Unit-3 Cost Estimation of Welding, Forging and Casting

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Unit-4 Cost Estimation of Machined Part

1. Explain the methods for finding machining time for turning and threading.
2. Explain procedure for estimating labour cost in arc welding.
3. 200 M.S. pins of the 40 mm diameter and 180 mm length are to be produced from a bar stock having 70 mm diameter, by forging. Considering only shear loss of 2 mm, find out the total length of bar stock.
4. Determine the length of 10 mm dia rod required to forge a ring of 50 mm inner dia.
5. A circular plate of 1-meter diameter is to be cut by mechanical gas cutting from a plate of 30 mm thickness. If cutting speed is 25 m/hr and rate of oxygen consumption is 4.5m3/hr and rate of acetylene consumption is 0.40 m3/hr, then calculate (1) Cutting time (2) Oxygen consumption and (3) Acetylene consumption.
6. Using following data find out the cost of cast iron pulley having 1250 cm3 Volume. (Pattern is supplied by the customer)
   a) Material cost Rs. 12/kg
   b) Labour cost Rs. 60/day
   c) Density of C.I. 7.2 grams/cc.
   d) Overhead charges 15% of material cost.
   e) Melting charge 20% of material cost.
   f) No. of mould 20 per day/ mould
7. Explain facing operation with sketch. Find the facing time for M.S. rod of 50mm diameter if cutting speed is 30 m/min and feed rate is 0.2 mm/revolution.
8. What is over travel and tong loss?
9. Find out the facing time to face at one end of 50 mm steel rod. Cutting speed is 25 m/min and cross feed is 0.3 mm/rev.
10. Name the cost elements of arc welding.
11. Enlist the losses associated with forging.
12. Define: a) Depth of cut b) Net weight.
13. A bar stock of 15 mm diameter & 125 mm long is to be converted into square bar of 15 mm side by drop forging. Calculate the length of the square bar. Consider 8% scale loss.
14. Describe the procedure of machining time for milling operation.
15. Define: i) Overtravel, ii) Approach
16. What are the methods of finding machining time for knurling and drilling operations?
17. A circular aluminum rod is to be reduced from 50 mm to 40 mm for a length of 80 mm one cuts. Assuming cutting speed as 20 m/min and feed as 0.1 mm/rev. Estimate the time required for turning.
18. Explain procedure for estimating welding material cost in forging.
19. A square bar of 25 mm sides is to be produced from a round bar of 25 mm diameter and 500 mm length. Considering only 5% scale loss, calculate the length of square bar produced.

20. Calculate cost of C.I. pulley of 1250 cm3 volume, using following data. (Pattern is supplied by customer).
    Material cost - Rs 22/kg;
    Wages paid to workers - Rs. 120/day;
    Overhead charges - 15% of material cost;
    Density of costing - 7.2x 103kg/cc;
    Melting charges - 20% of material cost;
    No. of mould prepared per day/moulder - 20/day/moulder
21. A circular plate of 1-meter diameter is to be cut by mechanical gas cutting from a plate of 20 mm thickness. If cutting speed is 20 m/hr and rate of oxygen consumption is 5.2 m3/hr and rate of acetylene consumption is 0.50 m3/hr, then calculate (1) Cutting time (2) Oxygen consumption and (3) Acetylene consumption.
22. Define terms of forging: (1) Shear loss, (2) Spure loss
23. What are the methods of finding machining time for milling operation?
24. Find out the facing time to face at one end of 30 mm steel rod. Cutting speed is 30 m/min and cross feed is 0.2 mm/rev.
25. Define pattern. List and explain types of pattern allowances.
26. Calculate cost of C.I. pulley of 1250 cm3 volume, using following data. (Pattern is supplied by customer).
    Material cost – Rs. 44/kg;
    Wages paid to workers - Rs. 240/day;
    Overhead charges - 20% of material cost;
    Density of costing - 7.2x 103kg/cc;
    Melting charges - 25% of material cost;
    No. of mould prepared per day/moulder - 20/day/moulder.
27. A bar stock of 20 mm diameter & 100 mm long is to be converted into square bar of 20 mm side by drop forging. Calculate the length of the square bar. Consider 6% scale loss.
28. What are the methods of finding machining time for grinding operation?
29. Define: Tong loss and Scale loss.
30. Estimate the time required to drill 4 holes of 1 cm diameter in a plate. Hole depth is 2 cm, cutting speed is 15 m/min and feed is 0.01 cm/rev.
31. Explain the procedure for estimating material cost in foundry.
32. A circular plate of 1-meter diameter is to be cut by mechanical gas cutting from a plate of 20 mm thickness. If cutting speed is 20 m/hr and rate of oxygen consumption is 4.2 m3/hr and rate of acetylene consumption is 0.37 m3/hr, then calculate (1) Cutting time (2) Oxygen consumption.
33. 200 M. S. pins of size 50 mm diameter and 200 mm long are to be produced from a rod having 80 mm diameter. Consider only sprue losses. Find out total length of bar stock.
34. Four pieces of 1000 x 500 x 5 mm are to be cut by gas cutting from an M.S. plate of 2000 x 1000 x 5 mm size. Calculate material cost using the below information:
    Oxygen consumption = 1.5 m3/hr.
    Acetylene consumption = 0.2 m3/hr.
    Cutting speed = 20 m/hour
    Oxygen cost = Rs. 10/m3
    Acetylene cost = Rs. 25/m3

Labour charges = Rs. 20/hour

35. 1-meter-long and 8 mm thick two M.S. plates are to be welded on both sides by a lap-joint by arc-welding. Calculate the cost of welding. Assume following data:
    Current = 250 Amp,
    Voltage = 30 Volts,
    Welding speed =10 meters/hour,
    Electrode consumption = 0.2 kg/meter weld,
    Power charges = Rs. 4.50/hour,
    Efficiency of m/c = 80%

Unit-5&6 Budgeting, Industrial Accounting and Contracting

1. Discuss "Balance sheet terminology" in detail.
2. Explain ‘sales budget’.
3. What is a production budget? Explain in brief.
4. Explain budgetary control.
5. Write down a short note on labour budget.
6. Explain financial budget in brief.
7. Which budget estimates the direct man power required to carry out the budgeted output? Which budget gives the summary of money to be received as an income and to be spent during the budgeted period?
8. Define Gross domestic product (GDP).
9. Explain "Administrative budget" in detail.
10. Write a short note on Sales budget.
11. What is a master budget? Explain in detail.
12. Write a short note on balance sheet terminology.
13. Write down advantages of budget.
14. Discuss master budget in brief.
15. Write down the benefits of budget.
16. Enlist different budget types and write short note on any one.
17. Enlist different types of budgets used in the industries.
18. Enlist the types of budgets.
19. Explain ‘Production cost budget’.
20. Define the term ‘Budget’.
21. Define: Book Value.
22. What is budgetary control?
23. Which budget is considered as the key budget in any organization?
24. Explain "Master budget" in detail.
25. What is budget?
26. Explain plant and equipment budget in brief.
27. Which budget is prepared by integrating budgets of all the departments? Why is it prepared?
28. Write a short note on material budget.
29. Draw a diagram of balance sheet and explain it in detail.
30. Explain financial budget in detail.
31. What is the purpose of budget?
32. Who is responsibility to prepare that budget?
33. What is gross domestic product (GDP)?
34. Write a short note on labour budget.
35. Explain the purpose of budget in detail.
36. Write a short note on administrative budget.
37. Explain in brief labour contract.
38. What are the characteristics of contract?
39. Enlist the documents required in an engineering contract.
40. Write short note on rate-contract.

41. What is contract form or deed. Explain in brief.
42. Explain in brief the contract for material supply.
43. Write a short note on contract for material supply.
44. Explain piece-rate contract in detail.
45. Discuss the benefits of contract?
46. Which types of contracts are used in industrial applications?
47. Explain Full contract in detail.
48. Enlist the documents required for the engineering contract. Explain any two in brief.
49. Enlist any four provisional conditions of the contract.
50. Mention the names of various types of contracts.
51. Describe the term "Acceptance" used in contract.
52. Define the term "contract" and state any two of its characteristics.
53. Write a short note on "Percentage rate contract".
54. Explain labour contract in detail.
55. What are the benefits of contract?
56. Why is security deposit collected from the contractor?
57. Explain the conditions to prevent damage to the work in progress and work already complete.
58. Write a short note on "Item-rate contract".
59. What are the labour facilities provided by contractor to his workers?
60. State the benefits of contract.
61. Give the names of any four types of contract.
62. What is legality of purpose in contract?
63. What are the documents required for engineering contract?
64. Explain cost plus contract in detail.
65. What are the advantages of contract?
66. Write a short note on lump sum contract.
67. Explain any three provisions of different conditions in a contract.
68. Define: (a) Contract (b) Tender form
69. Describe the term "competent parties" used in contract.
70. What are the types of contracts? Enlist them.
71. How disputes are solved in contract?