**QUESTION 1:**

(3 marks) A Company purchased equipment for $20,000. Management estimates that the equipment will have a useful life of five years and salvage value of $5,000. Calculate a) net book value of the equipment at the end of the third year using the straight-line method of depreciation; and b) depreciation expense for the second year using the double-declining balance method of depreciation.

**SOLUTION 1a:**

***Straight Line Depreciation = (Cost of Equipment - Salvage Value) / Life of Equipment***

Straight Line Depreciation = ($20,000 - $5,000) / 5 years

Straight Line Depreciation = $3,000

Depreciation in 3 years = $3,000 \* 3 years

Depreciation in 3 years = $9,000

***Net Book Value = Cost of Equipment - Accumulated Depreciation***

Net Book Value = $20,000 - $9,000

Net Book Value = $11,000

**SOLUTION 1b:**

***Rate of Depreciation = (1 / Life of Asset) \* 2***

 Rate of Depreciation = (1 / 5years) \* 2

Rate of Depreciation = 40%

|  |  |  |
| --- | --- | --- |
| **Year** | **Depreciation** | **Balance** |
| 1 | $ 8,000.00 | $ 12,000.00 |
| 2 | $ 4,800.00 | $ 7,200.00 |

**QUESTION 2:**

Analyze accounts receivable and the allowance for doubtful accounts for the following company, and draw some inferences:

                  2012                                    2011

                  Sales                  $6,700                                    $7,500

                  Accounts receivable, net                       202                                         320

                  Allowance for doubtful accounts                  3                                           12

**SOLUTION 2:**

The accounts receivable balance in comparison to sales is quite low, thus it implies that company makes more sale on cash basis in comparison to credit sales. The allowance for doubtful accounts is 1.46% and 3.61% of the gross receivables during the year 2012 and 2011 respectively. This means that there are very less bad debts and company is able to recover money from its customers easily.

**QUESTION 3:**

Analyze the following common size balance sheet:

                  2012                  2011

Current assets:

Cash             3%           5%

Accounts receivable           20           18

Inventory              35              30

   Total current assets           58           53

Property, plant and equipment           30           40

Other assets              12               7

   Total assets           100%           100%

Current liabilities:

Accounts payable             25%           20%

Short-term debt              38              33

   Total current liabilities             63           53

Long-term debt              22              17

Total liabilities             85             70

Stockholders’ equity:

Common stock and paid in capital             14             20

Retained earnings               1             10

                        15            30

Total liabilities and stockholders' equity           100%           100%

**SOLUTION 3:**

The company maintains reasonable balance between current assets, fixed assets and other assets. But the proportion of inventory in its current assets is quite high and the percentage of cash maintained is low. The percentage of current assets and other assets increased from 2011 to 2012. The Current Asset of the company in 2011 and 2012 is 53% and 58% and Current Liability of the company in 2011 and 2012 is 63% and 53% .Both the time the company is having negative working capital which indicates that the company liquidity condition is not good.

The percentage of liabilities in company's debt structure is very high. In 2011, it was 70% and increased to 85% during the year 2012. In total liabilities, the percentage of current liabilities is 53% and 63% during the year 2011 and 2012 respectively. The proportion of long term debt increased from 17% to 22% during the year 2012. The retained earnings of the company in 2011 were 9% and in 2012 is 1% which is indicating the worst signal about the financial condition of the company.

**QUESTION 4:**

Consider the following information:

Net income                  $200

Purchase of property and plant                  90

Depreciation expense                  50

Payment of cash dividends                  25

Cash dividends received on shares recorded as

   Equity investments                  15

Increase in cash loaned to another company                  30

Increase in long-term debt                  110

Decrease in inventories                  10

Decrease in accounts payable                  20

Repurchase of company’s shares from a

  Major stockholder for cash                  100

Calculate cash flow from (used by) operating, investing, and financing activities.

**SOLUTION 4:**

|  |  |
| --- | --- |
| **Particulars** | **Amount** |
|  |  |
| *Cash from Operating Activities:* |  |
| Net Income | $ 200.00 |
| Add: Depreciation Expense | $ 50.00 |
| *Working Capital Adjustments* |  |
| *Add: Decrease in Current Assets* |  |
| Decrease in Inventories | $ 10.00 |
| *Less: Decrease in Current Liabilities* |  |
| Decrease in Accounts Payable | $ (20.00) |
| **Cash Flows from Operating Activities** | **$ 240.00** |
|  |  |
| *Cash from Investing Activities:* |  |
| Cash Loaned to another company | $ (30.00) |
| Cash Dividends Received | $ 15.00 |
| Purchase of property and plant | $ (90.00) |
| **Cash Flows from Investing Activities** | **$ (105.00)** |
|  |  |
| *Cash from Financing Activities:* |  |
| Payment of Cash Dividends | $ (25.00) |
| Increase in long-term debt | $ 110.00 |
| Repurchase of shares | $ (100.00) |
| **Cash Flows from Financing Activities** | **$ (15.00)** |

**QUESTION 5:**

Consider the following information:

Current assets         $150,000

Current liabilities         50,000

Accounts receivable, net           80,000

Inventories           40,000

Accounts payable           25,000

Net sales         425,000

Cost of goods sold         258,000

Calculate the company’s cash conversion cycle.

**SOLUTION 5:**

***Cash Conversion Cycle = Days Inventory Outstanding + Days Sales Outstanding - Days Payables Outstanding***

Days Inventory Outstanding = (365 days \* Inventory) / Cost of goods sold

Days Inventory Outstanding = (365 \* $40,000) / $258,000

Days Inventory Outstanding = 56.59 days

Days Sales Outstanding = (365 days \* Accounts Receivable) / Net Sales

Days Sales Outstanding = (365 \* $80,000) / $425,000

Days Sales Outstanding = 68.71 days

Days Payables Outstanding = (365 days \* Accounts Payable) / Cost of goods sold

Days Payables Outstanding = (365 \* $25,000) / $258,000

Days Payables Outstanding = 35.37 days

Cash Conversion Cycle = 56.59 days + 68.71 days - 35.37 days

**Cash Conversion Cycle = 89.93 days**

**QUESTION 6:**

Beijing Limited has three divisions: North, Central and South. The following results were for the year ending December 31, 2012:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | North |  | Central |  | South |
| Sales | $600,000 |  | $750,000 |  | $500,000 |
| Variable manufacturing costs | 240,000 |  | 315,000 |  | 150,000 |
| Variable selling and administrative costs | 132,000 |  | 135,000 |  | 130,000 |
| Contribution margin | 228,000 |  | 300,000 |  | 220,000 |
| Avoidable fixed costs | 150,000 |  | 180,000 |  | 135,000 |
| Unavoidable fixed costs | 125,000 |  | 85,000 |  | 40,000 |
| Operating income (loss) | ($47,000) |  | $35,000 |  | $45,000 |

The Vice-President of Operations is concerned about the North Division’s performance and considering whether it should be closed. If the North Division is closed, sales in the Central and South Divisions will drop by 10%. By how much will the company’s overall operating income change if the North Division is closed?

**SOLUTION 6:**

Present Operating Income of Company = ($47,000) + $35,000 + $45,000

Present Operating Income of Company = $33,000

*Calculation of Change in Operating Income:*

|  |  |  |  |
| --- | --- | --- | --- |
| **Particulars** | **Central** | **South** | **Total** |
| Contribution Margin | $ 300,000.00 | $ 220,000.00 | $ 520,000.00 |
| Decrease | 10.00% | 10.00% | 10.00% |
| Decrease in Contribution Margin | $ 270,000.00 | $ 198,000.00 | $ 468,000.00 |
| Avoidable Fixed Costs | $ 180,000.00 | $ 135,000.00 | $ 283,500.00 |
| Unavoidable Fixed Costs | $ 85,000.00 | $ 40,000.00 | $ 125,000.00 |
| Operating Profit | $ 5,000.00 | $ 23,000.00 | $ 28,000.00 |

Total Profit / (Loss) = $28,000 - $125,000 (unavoidable cost of North division)

Total Loss = $97,000

Change in Operating Income = ($97,000) - $33,000

Change in Operating Income = -$130,000

**QUESTION 7:**

Light Manufacturing produces a single product that sells for $16. Variable (flexible) costs per unit equal $11.20.  The company expects the total fixed (capacity-related) costs to be $7,200 for the next month at the projected sales level of 20,000 units. In an attempt to improve performance, management is considering a number of alternatives. Suppose Light management believes that a 10% reduction in the selling price will result in a 30% increase in sales. If this proposed reduction in selling price is implemented, what will be the change in profit?

**SOLUTION 7:**

|  |  |  |
| --- | --- | --- |
| **Particulars** | **Old** | **New** |
| Selling Units | 20000.00 | 26000.00 |
| Selling Price | $ 16.00 | $ 14.40 |
| Sales | $ 320,000.00 | $ 374,400.00 |
| Less: Variable Cost | $ 224,000.00 | $ 291,200.00 |
| Contribution Margin | $ 96,000.00 | $ 83,200.00 |
| Less: Fixed Cost | $ 7,200.00 | $ 7,200.00 |
| Profit | $ 88,800.00 | $ 76,000.00 |

**The net profit will decrease by $12,800. Therefore, the new scheme shall not be accepted.**

**QUESTION 8:**

Able Inc. is considering replacing its existing photocopier with a new one. The new system offers considerable operational savings. Information about the existing and new systems is as follows:

|  |  |  |
| --- | --- | --- |
|  | Existing | New |
| Original cost | $12,000 | $15,000 |
| Annual operating expenses | 3,500 | 2,500 |
| Accumulated depreciation at present | 7,000 | 0 |
| Current salvage value | 2,000 | 15,000 |
| Remaining life | 5 years | 5 years |
| Salvage value in 5 years | 0 | 5,000 |
| Annual depreciation | 1,000 | 3,000 |

Should Able Inc. replace the existing photocopier with the new system?

**SOLUTION 8:**

*Calculation of Operating Cost of both systems:*

|  |  |  |
| --- | --- | --- |
| **Particulars** | **Existing** | **New** |
| Annual Operating Expenses | $ 3,500.00 | $ 2,500.00 |
| Annual Depreciation | $ 1,000.00 | $ 3,000.00 |
| Total Operating Costs | $ 4,500.00 | $ 5,500.00 |

The annual operating cost of new system is greater than existing system; therefore Able Inc. shall not replace the existing photocopier with the new system.

**QUESTION 9:**

Smith Manufacturing Ltd. applies manufacturing overhead costs to products at a predetermined rate of $100 per direct labor hour. One customer has requested a bid on a special order of 2,000 units of a product.  Estimates for this order are: direct materials $100,000; direct labor of 1,000 labor hours @ $25 per hour.  What is the bid price for one unit of this special order, including Smith’s standard mark-up of 20%?

**SOLUTION 9:**

*Calculation of bid-price:*

|  |  |
| --- | --- |
| **Particulars** | **Amount** |
| Direct Materials | $ 100,000.00 |
| Direct Labor (1,000 \* $25) | $ 25,000.00 |
| Overheads (1,000 \* $100) | $ 100,000.00 |
| Total Cost | $ 225,000.00 |
| Add: Mark-Up @ 20% | $ 45,000.00 |
| Total Price to be charged | $ 270,000.00 |
| Number of units | 2000.00 |
| **Bid-Price per unit** | **$ 135.00** |

**QUESTION 10:**

Ball TV Ltd. currently sells small televisions for $180 per unit. This product has variable costs of $140. Another company is bringing a competing television to market that will sell for $170. Ball management believes it must lower its price to the same amount to compete in the market. Ball’s marketing division believes that the new entrant will also cause Ball’s sales in this market segment to decrease by 10%. Ball’s sales are currently 100,000 televisions per year. What is the target cost per unit if the company wants to maintain its same profit margin in total dollars before the change, and the Marketing division is correct?

**SOLUTION 10:**

*Calculation of Profit Margin before change:*

|  |  |
| --- | --- |
| **Particulars** | **Amount** |
| Sales Revenue (100,000\*$180) | $ 18,000,000.00 |
| Variable Cost (100,000\*$140) | $ 14,000,000.00 |
| Profit | $ 4,000,000.00 |

|  |  |
| --- | --- |
| **Particulars** | **Amount** |
| New Sales (in units) | 90000.00 |
| Sales Revenue (90,000 \* $170) | $ 15,300,000.00 |
| Variable Cost | $ 11,300,000.00 |
| Profit | $ 4,000,000.00 |

Target Cost per unit = $11,300,000 / 90,000

**Target Cost per unit = $125.56**

**QUESTION 11:**

Do-Right Industries developed the following standard costs for direct materials and direct labor to produce gadgets?

|  |  |  |
| --- | --- | --- |
|  | Standard quantity | Standard price |
| Direct materials | 0.60 kg. | $25 per kg. |
| Direct labor | 0.20 hours | $18 per hour |

During May, Do-Right produced and sold 8,000 gadgets using 5,000 kg. of direct materials at an average cost per kg. of $22.50, and 1,560 direct labor hours at an average wage of $18.20 per hour. What are the direct material and direct labor price and quantity variances for May and what are possible causes of these?

**SOLUTION 11:**

***Direct Material Price Variance = (Standard Price – Actual Price) \* Actual Quantity***

Direct Material Price Variance = ($25 - $22.50) \* 5,000

Direct Material Price Variance = $12,500 Favorable

The direct material price variance is favorable because the actual price at which materials are purchased is lower than standard price.

***Standard Quantity = Standard Quantity per unit \* Actual Units***

Standard Quantity = 0.6 kg \* 8,000

Standard Quantity = 4,800 kgs

***Direct Material Quantity Variance = (Standard Quantity – Actual Quantity) \* Standard Price***

Direct Material Quantity Variance = (4,800 – 5,000) \* $25

Direct Material Quantity Variance = $5,000 Unfavorable

The direct material quantity variance is unfavorable because the actual quantity used in production is greater than standard quantity.

***Direct Labor Price Variance = (Standard Price – Actual Price) \* Actual Hours***

Direct Labor Price Variance = ($18 - $18.20) \* 1,560

Direct Labor Price Variance = $312 Unfavorable

The direct labor price variance is unfavorable because the actual labor rate is greater than standard labor rate.

***Standard Hours = Standard Hours per unit \* Actual Units***

Standard Hours = 0.2 hours \* 8,000

Standard Hours = 1,600 Hours

***Direct Labor Quantity Variance = (Standard Hours – Actual Hours) \* Standard Price***

Direct Labor Quantity Variance = (1,600 – 1,560) \* $18

Direct Labor Quantity Variance = $720 Favorable

The direct labor quantity variance is favorable because the actual hours used in production are lower than standard hours.

The other reason for above variances can be wrong estimation, less knowledge about market and some natural calamities.

**QUESTION 12:**

Complete the following flexible budget and suggest one possible explanation for each of the variances.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Master Budget |  | Flexible budget |  | Actual Results |  | Variance  (Fav/Unfav) |
| Sales volume (in units) | 20,000 |  | **18,500** |  | 18,500 |  | **Unfav** (Actual Sales < Budgeted Sales) |
| Sales Revenue | $1,050,000 |  | **$971,250** |  | $972,000 |  | **Fav** (Actual Selling price per unit > Budgeted Selling Price per unit) |
| Variable costs | 500,000 |  | **$462,500** |  | 477,000 |  | **Unfav** (Actual variable cost per unit > Budgeted variable cost per unit) |
| Contribution margin | 550,000 |  | **$508,750** |  | 495,000 |  | **Unfav** (Increase in actual selling price per unit < Increase in actual variable cost per unit) |
| Capacity-related (fixed) costs | 380,000 |  | **$380,000** |  | 385,000 |  | **Unfav** (Actual Cost > Budgeted Cost) |
| Operating profit | $170,000 |  | **$128,750** |  | $110,000 |  | **Unfav** (Actual Profits < Budgeted Profits) |

**Part D – CASES (232 marks)**

**QUESTION 1:**

Audio File Products Ltd. is a retailer that sells sound systems.  The company is planning its cash needs for the month of January, 2013.  In the past, Audio File has had to borrow money during the post-Christmas season to offset a significant decline in sales.  The following information has been assembled to assist in preparing a cash flow forecast for January.

a.      January 2013 forecasted income statement:

Sales                                    $200,000

Cost of goods sold                                      150,000

Gross profit                                      50,000

Variable selling expenses                  $10,000

Fixed administrative expenses                  20,000                     30,000

Forecast net operating income                                    $ 20,000

b.      Sales are 10% for cash and 90% on credit.

c.      Credit sales are collected over a three-month period with 40% collected in the month of sale, 30% in the following month, and 20% in the second month following sale. November 2012 sales totaled $300,000 and December sales totaled $500,000.

d.     40% of a month’s inventory purchases are paid for in the same month. The remaining 60% are paid in the following month. Accounts payable relate solely to inventory purchases. At December 31, these totaled $400,000.

e.      The company maintains its ending inventory levels at 60% of the cost of the merchandise to be sold in the following month. The merchandise inventory at December 31, 2012 was $90,000. February 2013 sales are budgeted at $150,000. Gross profit percentage is expected to remain unchanged.

f.       The company pays a $10,000 monthly cash dividend to shareholders.

g.      The cash balance at December 31 was $30,000; the company must maintain a cash balance of at least this amount at the end of each month.

h.     The company can borrow on its operating loan in increments of $10,000 at the beginning of each month, up to a total loan balance of $500,000. The interest rate on this loan is 1% per month. There is no operating loan at December 31, 2012.

Required: Prepare a Cash Flow Forecast for AudioFile for the month of January 2013. Include appropriate supporting schedules.

**SOLUTION 1:**

*Cash Flow Forecast for Audio File for the month of January 2013:*

|  |  |
| --- | --- |
| **Particulars** | **Amount** |
| Beginning Cash Balance | $ 30,000.00 |
|  |  |
| ***Cash Receipts:*** |  |
| *Sales:* |  |
| January-Cash ($200,000 \* 10%) | $ 20,000.00 |
| January-Credit ($200,000 \* 40%) | $ 80,000.00 |
| November ($300,000 \* 20%) | $ 60,000.00 |
| December ($500,000 \* 30%) | $ 150,000.00 |
| Total Cash Receipts | $ 310,000.00 |
|  |  |
| ***Cash Payments:*** |  |
| Purchases | $ 451,000.00 |
| Cash Dividends | $ 10,000.00 |
| Total Payments | $ 461,000.00 |
|  |  |
| Cash Decrease | $ (121,000.00) |
| Required Cash Balance | $ 30,000.00 |
| Operating Loan | $ 160,000.00 |
| Ending Cash Balance | $ 39,000.00 |

**QUESTION 2:**

In the past, Acme Inc. allocated indirect manufacturing costs based on direct labour hours. Recently, management has decided to pilot a system of time-driven activity-based costing (TDABC) to allocate these costs. The division produces three engine models: Basic, Sport, and Heavy Duty. Acme employs 300 employees to perform indirect labour functions, consisting of machine setups, engine inspections and shipping. Each employee is paid $50,000 per year on average, including benefits. On average, each employee works 1,600 hours per year. Each automated production machine is used 1,600 hours per year, including set up time. Once a machine is set up, no labour is necessary to oversee it.

The following information has been obtained from the company’s records over the past year:

|  |  |  |  |
| --- | --- | --- | --- |
|  | Basic | Sport | Heavy Duty |
| Units produced | 500,000 | 150,000 | 50,000 |
| Direct material cost per unit | $40 | $50 | $60 |
| Direct labor cost per hour | $30 | $30 | $30 |
| Direct labor hours incurred | 200,000 | 225,000 | 40,000 |
| Inspections per engine | 2 | 3 | 4 |
| Inspection time per engine (hrs.) | .1 | .2 | .3 |
| Engines packed and shipped per batch | 2,000 | 1,000 | 500 |
| Individual engine packing time (hrs.) | .25 | .3 | .4 |
| Additional preparation time per batch (hrs.) | 30 | 20 | 15 |
| Machine set-ups per year | 240 | 180 | 60 |
| Labor hours for each machine set-up | 30 | 40 | 60 |

Required

1. Determine the indirect labor support costs for each engine using time-driven activity-based costing.

**SOLUTION 2a:**

Labor Hours available = 300 employees \* 1,600 hours per year

Labor Hours available = 480,000 hours

Total Indirect Expenses = 300 employees \* $50,000 per year

Total Indirect Expenses = $15,000,000

*Calculation of Total Batches:*

|  |  |  |  |
| --- | --- | --- | --- |
| **Item Name** | **Units Produced** | **Engines packed and shipped** | **Total No. of Batches** |
| Basic | 500000.00 | 2000.00 | 250.00 |
| Sport | 150000.00 | 1000.00 | 150.00 |
| Heavy Duty | 50000.00 | 500.00 | 100.00 |

*Calculation of Total Inspection Time:*

|  |  |  |  |
| --- | --- | --- | --- |
| **Item Name** | **Units Produced** | **Inspection Time per engine** | **Total Inspection Time** |
| Basic | 500000.00 | 0.10 | 50000.00 |
| Sport | 150000.00 | 0.20 | 30000.00 |
| Heavy Duty | 50000.00 | 3.00 | 150000.00 |
| Total |  |  | 230000.00 |

*Calculation of Total Engines Packing Time:*

|  |  |  |  |
| --- | --- | --- | --- |
| **Item Name** | **Units Produced** | **Individual Engines Packing Time** | **Total Inspection Time** |
| Basic | 500000.00 | 0.25 | 125000.00 |
| Sport | 150000.00 | 0.30 | 45000.00 |
| Heavy Duty | 50000.00 | 0.40 | 20000.00 |
| Total |  |  | 190000.00 |

*Calculation of Total Additional Preparation Time:*

|  |  |  |  |
| --- | --- | --- | --- |
| **Item Name** | **Total No. of Batches** | **Additional Preparation Time** | **Total Time** |
| Basic | 250.00 | 30.00 | 7500.00 |
| Sport | 150.00 | 20.00 | 3000.00 |
| Heavy Duty | 100.00 | 15.00 | 1500.00 |
| Total |  |  | 12000.00 |

*Calculation of Total Machine Setup:*

|  |  |  |  |
| --- | --- | --- | --- |
| **Item Name** | **Machine Setups per year** | **Labor Hours for each machine setup** | **Total Time** |
| Basic | 240.00 | 30.00 | 7200.00 |
| Sport | 180.00 | 40.00 | 7200.00 |
| Heavy Duty | 60.00 | 60.00 | 3600.00 |
| Total |  |  | 18000.00 |

b. Determine the per cent of unused indirect labor compared to available indirect labor hours. Draw conclusions from this analysis.

**SOLUTION 2b:**

Labor Hours available = 300 employees \* 1,600 hours per year

Labor Hours available = 480,000 hours

Labor Hours used = 200,000 + 225,000 + 40,000

Labor Hours used = 465,000

Unused Labor Hours in percent = (480,000 – 465,000) / 480,000

Unused Labor Hours in percent = 3.125%

The company utilized almost the entire indirect labor capacity available with the company.