August Exam 2017 - Answers

MULTIPLE CHOICE QUESTIONS (45 %)

1	**B**
2	**B**
3	**D**
4	**A**
5	**C**
6	**C**
7	**D**
8	**A**
9	**D**
10	**D**
11	**A**
12	**D**
13	**D**
14	**B**
15	**A**

16	**D**
17	**D**
18	**A**
19	**D**
20	**D**
21	**C**
22	**A**
23	**B**
24	**D**
25	**B**
26	**A**
27	**B**
28	**D**
29	**A**
30	**C**

PROBLEM SOLVING

PROBLEM 1 (4%)

A portfolio consists of assets A and B. asset A makes up one-third of the portfolio and has an expected return of 18 percent. Asset B makes up the other two-thirds of the portfolio and is expected to earn 9 percent.

Required:

What is the expected return on the portfolio?

Solution:

Asset	Return (r_j)	Fraction (w_j)	$w_j\, r_j$
A	18%	⅓	⅓×18% = 6%
B	9%	⅔	⅔ × 9% = 6%
			r_p =12%

PROBLEM 2 (12%)

Sally Corporation's financial statements appear below

Sally Corporation Balance Sheet December 31, N		
Assets:		
Current Assets		
Cash	$100,000	
Marketable Securities	200,000	
Inventory	300,000	
Total Current Assets		$ 600,000
Noncurrent Assets		
Plant Assets		500,000
Total Assets		$1,100,000
Liabilities and Stockholders' Equity:		
Current liabilities	$200,000	
Long-Term liabilities	100,000	
Total liabilities		$ 300,000
Stockholders' Equity		
Common stock, $1 par value, $100,000 shares	$100,000	
Premium on Common Stock	500,000	
Retained Earnings	200,000	
Total Stockholders' Equity		800,000
Total liabilities and Stockholders' Equity		$1,100,000

Sally Corporation Income Statement For the year Ended December 31, N	
Net Sales	$10,000,000
Cost of Goods Sold	6,000,000
Gross Profit	$ 4,000,000
Operating Expenses	1,000,000
Income before Taxes	$ 3,000,000
Income Taxes (50% rate)	1,500,000
Net Income	$ 1,500,000

Additional information available is a market price of $150 per share of stock and total dividends of $600,000 for the year 'N', and $250,000 of inventory as of December 31, 'N – 1'.

Required:

Compute the following ratios:

(a) Current ratio

(b) Quick ratio

(c) Inventory turnover

(d) Average age of inventory (Days sales in inventory)

(e) Debt-equity ratio
(f) Earnings per share (EPS)
(g) Common Dividends per share (DPS)
(h) Common Dividend payout ratio (DPR)

Solution:

$$\text{a- Current ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}} = \frac{\$600{,}000}{\$200{,}000} = 3$$

$$\text{b- Quick ratio} = \frac{\text{Cash + marketable securities}}{\text{Current Liabilities}} = \frac{\$300{,}000}{\$200{,}000} = 1.5$$

$$\text{c- Inventory turnover} = \frac{\text{Cost of goods sold}}{\text{Average inventory}} = \frac{\$600{,}000}{(\$250{,}000 + \$300{,}000)/2} = 21.82$$

$$\text{d- Average age of inventory} = \frac{365}{\text{Inventory turnover}} = \frac{365}{21.82} = 16.7 \text{ days}$$

$$\text{e- Debt-equity ratio} = \frac{\text{Total liabilities}}{\text{Stockholders' equity}} = \frac{\$300{,}000}{\$800{,}000} = 0.375$$

$$\text{f- Earnings per share} = \frac{\text{Net income}}{\text{Outstanding common shares}} = \frac{\$1{,}500{,}000}{100{,}000 \text{ shares}} = \$15$$

$$\text{g- Dividends per share} = \frac{\text{Dividends}}{\text{Outstanding shares}} = \frac{\$600{,}000}{100{,}000 \text{ shares}} = \$6$$

$$\text{h- Dividend payout} = \frac{\text{Dividends per share}}{\text{Earnings per share}} = \frac{\$6}{\$15} = 0.4$$

PROBLEM 3 (10%)

The administrator of Hills Hospital would like a cost formula linking the costs involved in admitting patients to the number of patients admitted during a month. The admitting department's costs and the number of patients admitted during the immediately preceding eight months are given in the table below:

Month	Number of Patients Admitted	Admitting Department's Costs
May	1,800	$14,700
June	1,900	15,200
July	1,700	13,700
August	1,600	14,000
September	1,500	14,300
October	1,300	13,100
November	1,100	12,800
December	1,500	14,600

Required:

a- Use the high-low method to establish the fixed and variable components of admitting costs.

b- Express the fixed and variable components of admitting costs as a cost formula in the linear equation form

$Y = a + bX$

Solution:

a-

Month	Number of Patients Admitted	Admitting Department Costs
High activity level (June)	1,900	$15,200
Low activity level (November)	1,100	12,800
Change	800	$2,400

$$\text{Variable cost} = \frac{\text{Change in cost}}{\text{Change in activity}} = \frac{\$2,400}{800 \text{ patients admitted}} = \$3 \text{ per patient admitted}$$

Fixed cost element = Total cost — Variable cost element

= $15,200 — ($3 per patient admitted × 1,900 patient admitted) = $9,500

b- The cost formula expressed in the linear equation form is $Y = \$9,500 + \$3X$

PROBLEM 4 (11%)

Sophie's Pet Shop is considering the purchase of a new delivery van. Sophie Smith, owner of the shop, has compiled the following estimates in trying to determine whether the delivery van should be purchased:

Cost of the van	$25,000
Annual net cash flows	4,300
Salvage value	3,000
Estimated useful life	8 years
Cost of capital	10%
Present value of an annuity of 1	5.335
Present value of 1	0.467

Sophie's assistant manager is trying to convince Sophie that the van has other benefits that she hasn't considered in the initial estimates. These additional benefits, including the free advertising the store's name painted on the van's doors will provide, are expected to increase net cash flows by $500 each year.

Required:

1. Calculate the net present value of the van, based on the initial estimates. Should the van be purchased?
2. Calculate the net present value, incorporating the additional benefits suggested by the assistant manager. Should the van be purchased?

Solution

(1)	Present value of annual cash flows ($4,300 × 5.335)	$22,941
	Present value of salvage value ($3,000 × 0.467)	1,401
		$24,342
	Capital investment	25,000
	Net present value	($ 658)

Based on the negative net present value of $658, the van should not be purchased.

(2)	Present value of annual cash flows [($4,300 + $500) × 5.335]	$25,608
	Present value of salvage value ($3,000 × 0.467)	1,401
		$27,009
	Capital investment	25,000
	Net present value	$ 2,009

Incorporating the additional benefits of $500/year into the calculation produces a positive net present value of $2,009. Therefore, the van should be purchased.

PROBLEM 5 (10%)

Eagle Corporation has the following direct requirements for the production of a machine tool set:

Direct Labor	Required Time (hours)	Hourly Rate ($)
Machining	6	10
Assembly	10	8

Forecasted sales for June, July, August and September are 6000, 5000, 8000 and 7000 units, respectively. June 1 beginning inventory of the tool set was 1500 unit. The desired units in ending inventory each month is one-half of the forecasted sales for the following month.

Required:

1. Prepare a production budget (in units) for the months of June, July and August.
2. Develop a direct labor budget (in $) for the months of June, July and August for each type of direct labor.

Solution:

Eagle Corporation (Production Budget)			
	June	July	August
Forecasted sales	6,000 units	5,000	8,000

Add: Desired ending inventory	2,500	4,000	3,500
Total need	8,500	9,000	11,500
Less: Beginning inventory	1,500	2,500	4,000
Number of units to be produced	7,000	6,500	7,500

Eagle Corporation (direct labor Budget)			
Machining:	June	July	August
Budgeted production	7,000	6,500	7,500
Direct labor hours per unit	X 6 hours	X 6	X 6
Total direct labor hours required	42,000 hours	39,000	45,000
	X $10	X $10	X $10
Direct labor cost	$420,000	$390,000	$450,000

Assembly:	June	July	August
Budgeted production	7,000 units	6,500	7,500
Direct labor hours per unit.	X 10 hours	X 10	X 10
Total direct labor hours required	70,000	65,000	75,000
	X $8	X $8	X $8
Direct labor cost	$560,000	$520,000	$600,000

PROBLEM 6 (8%)

Assume that House and Garden Depot expects each division to earn a 16% target rate of return. House and Garden Depot's weighted average cost of capital (WACC) is 13%, and its effective tax rate is 30%. Assume that the company's original Retail Division had the following results last year (in millions of dollars):

Operating income	$ 1,450
Total assets	16,100
Current liabilities	3,600
Sales	26,500

Required:

a- Compute the Retail Division's ROI.

b- Compute and interpret the Retail Division's RI.

Solution:

a- ROI = Sales margin × Capital turnover

= (Operating income ÷ Sales) × (Sales ÷ Total assets)

= ($1,450 ÷ $26,500) × ($26,500 ÷ $16,100)

= 0.055 × 1.646

= 0.091

b- RI = Operating income — (Target rate of return × Total assets)

= $1,450 — (16% × $16,100)

= $1,450 — $2,576

=($1,126)