

Engineering Economics ECO 1192

Practice Examination #2

C.Théoret

38 Multiple Choice Questions

1. A business should maintain accurate depreciation records of capital assets to
 - a) track the value of its fixed (physical) assets.
 - b) reflect all production costs in the price of its goods and services.
 - c) accurately determine its income tax credits or liabilities.
 - d) All of these answers.

2. A capital (physical) asset's annual accounting depreciation is
 - a) equal to its purchase price less its total depreciation.
 - b) equal to its current market value less its total depreciation.
 - c) equal to its market value at the beginning of a year minus its market value at the end of the year.
 - d) formula-based (straight line, declining balance, etc.)
 - e) None of these answers.

3. The Declining Balance (DB) depreciation method is always preferred to the Straight Line (SL) depreciation method because the DB method completely and more rapidly depreciates a fixed asset than the SL method.
 - a) True
 - b) False

4. Which of the following statements is true?

- a) Smaller depreciation charges lead to more taxable income, smaller tax liabilities and smaller after-tax cash flows.
 - b) Smaller depreciation charges lead to less taxable income, smaller tax liabilities and smaller after-tax cash flows.
 - c) Higher depreciation charges lead to less taxable income, larger tax liabilities and larger after-tax cash flows.
 - d) Higher depreciation charges lead to less taxable income, smaller tax liabilities and larger after-tax cash flows.
 - e) None of the above answers.
5. A major difference between the analysis of private sector projects and the analysis of public sector projects is that the analysis of
- a) private sector projects includes all tangible and intangible impacts while the analysis of public sector projects is limited to tangible impacts.
 - b) private sector projects includes only tangible impacts as does the analysis of public sector projects.
 - c) private sector projects include only tangible impacts while the analysis of public sector projects includes both tangible and intangible impacts.
 - d) None of these answers.
6. The net income (i.e., income after tax from the “Income and Expense Statement”) of a business is equal to its
- a) before-tax cash flow + income taxes paid + annual depreciation.
 - b) after-tax cash flow + income taxes paid.
 - c) before-tax cash flow + income taxes paid + annual depreciation.
 - d) after-tax cash flow - annual depreciation.
 - e) None of these answers.
7. A company’s annual income taxes are considered explicit cash flows while its annual depreciation charges are implicit cash flows.
- a) True
 - b) False
8. At the end of a physical asset’s projected service life, its book and salvage values will always be equal with the Straight Line (SL) depreciation method but will most likely differ with the Declining Balance (DB) depreciation method.
- a) True
 - b) False
9. When the service requirements for a capital asset extend beyond the defender’s remaining service life, it is usually assumed that the defender will be replaced by
- a) a lower-cost asset
 - b) the challenger
 - c) an asset with an identical cost.

- d) None of these answers.
10. The half-year rule was introduced by the Government of Canada in 1981 to
- provide incentives to businesses for the purchase of more physical assets.
 - alleviate the income tax burden of businesses with significant income from operations
 - minimise the income tax advantage arising from the purchase of physical assets.
 - increase business operating profits.

QUESTIONS 11 TO 15

A firm is considering the purchase of a new computer for \$300,000 fully installed. It is expected to have a salvage value of \$100,000 after 3 years. Annual revenues from operations will be \$500,000 each year and annual operating and maintenance costs \$100,000.

- Depreciate the computer using the DB method ($d=20\%$).
- The before-tax interest rate is 10%.
- The after-tax interest rate is 5%.
- A 50% tax rate applies to net income from operations and to the recapturing of depreciation.
- The **half-year rule** applies.

The firm gets a **\$150,000 loan** (at a 10% rate of interest) which is repaid as follows:

Repayment of loan at the end of year	Percentage of loan repaid
1	25
2	35
3	40

Item	End of Year Cash Flows			
	<u>0</u>	<u>1</u>	<u>2</u>	<u>3</u>
1. Before Tax Cash Flow				
2. Annual Depreciation		AA	BB	
3. Interest Expense			CC	
4. Taxable Income				
5. Taxes Payable				
6. After Tax Cash Flow				

Item	End of Year Cash Flows			
	<u>0</u>	<u>1</u>	<u>2</u>	<u>3</u>
7. Interest Expense				
8. Loan Repayment			DD	
9. Cash Flow on Owner Equity	EE			

11. The numerical value of cell AA is
- \$30,000
 - \$54,000
 - \$60,000
 - \$48,000
 - None of the above answers
12. The numerical value of cell BB is
- \$30,000
 - \$54,000
 - \$60,000
 - \$48,000
 - None of the above answers
13. The numerical value of cell CC is
- \$15,000
 - \$11,250
 - \$6,000
 - \$5,000
 - None of the above answers
14. The numerical value of cell DD is
- \$37,500
 - \$52,500
 - \$43,200
 - \$60,000
 - None of these answers
15. The numerical value of cell EE is
- \$-300,000
 - \$-150,000
 - None of these answers

QUESTIONS 16 to 21

**Ace Company Balance Sheet
at December 31, 2015**

ASSETS

Current Assets

Cash	10,000
Accounts Receivable	15,000
Raw Materials Inventory	50,000
Finished Goods Inventory	40,000

Total Current Assets

Long Term Assets

Equipment	150,000
Accumulated depreciation	100,000
Buildings	500,000
Accumulated depreciation	250,000
Land	100,000

Total Long Term Assets

TOTAL ASSETS

LIABILITIES AND OWNERS' EQUITY

Current Liabilities

Accounts Payable	10,000
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QUESTIONS 16 to 21

**Ace Company Balance Sheet
at December 31, 2015**

Income Taxes Payable in 6 months	2,000
Loan due in six (6) months	80,000
<u>Total Current Liabilities</u>	
<u>Long Term Liabilities</u>	
Loan due in two (2) years	350,000
TOTAL LIABILITIES	
Common Stock: 20,000 shares @ \$2	40,000
Retained Earnings	33,000
<u>Total Owners' Equity</u>	
TOTAL LIABILITIES & OWNERS' EQUITY	

Ace Company Income and Expense Statement January 1 to December 31, 2015	
REVENUES	
Sales	350,000
Cost of Goods Sold	200,000
Net sales	
EXPENSES	
Operating Expenses	20,000
Depreciation Expense	30,000

Ace Company Income and Expense Statement January 1 to December 31, 2015	
Interest Expense	10,000
Total Expenses	
PROFIT BEFORE TAXES	
Income Taxes @50% of Profit Before Taxes	
PROFIT AFTER TAXES	

16. Ace Company's current ratio (2 decimals, no rounding) on December 31, 2015 was
- 0.57
 - 0.77
 - 1.12
 - 1.25
17. Ace Company's quick-asset or acid-test ratio (2 decimals, no rounding) on December 31, 2015 was
- 0.77
 - 0.27
 - 1.30
 - 1.85
18. Ace Company's "equity ratio" (2 decimals, no rounding) on December 31, 2015 was
- 0.14
 - 0.57
 - 0.69
 - 0.86
 - None of these answers
19. Ace company's "profitability ratio" (1 decimal, no rounding) on December 31, 2015 was
- 4.8%
 - 5.4%
 - 8.7%
 - 12.1%
 - None of these answers

20. Ace company's "long-term debt ratio" (2 decimals, no rounding) on December 31, 2015 was
- 0.14
 - 0.67
 - 0.69
 - 0.86
 - None of these answers
21. Ace Company's after-tax cash flow for 2015 was
- \$90,000
 - \$45,500
 - \$75,000
 - \$135,000
 - None of these answers

QUESTIONS 22 to 25

CCA \equiv capital cost allowance
 UCC \equiv undepreciated capital cost
 () \equiv the disposition of assets.

Assume:

- **d = 20% (Declining Balance)**
- **t = 50%**
- **half-year rule applies**

Year	Adjustments to UCC from Purchases & Dispositions	Base UCC Amount for CCA (\$)	CCA (\$)	Remaining UCC (\$)	Tax Savings Due to CCA (\$)
2012	\$300,000			AA	
2013	\$200,000		BB		CC
2014	(\$100,000)			DD	
2015	\$400,000				

22. The dollar amount of cell AA is
- \$300,000
 - \$200,000
 - \$270,000

- d) None of these answers.
23. The dollar amount of cell BB is
- a) \$30,000
 - b) \$74,000
 - c) \$88,000
 - d) None of these answers
24. The dollar amount of cell CC is
- a) \$37,000
 - b) \$74,000
 - c) \$44,000
 - d) None of these answers
25. The dollar amount of cell DD is
- a) \$201,600
 - b) \$252,600
 - c) \$296,800
26. The cash flow analysis of a private project can be performed from two perspectives:
- a) Efficiency and equity
 - b) Insider and outsider
 - c) Project and sponsors (owners)
 - d) Balance Sheet and Income/Expense financial statements
27. Economic life is defined as the
- a) period of time after which an asset can no longer be repaired or refurbished so that it can perform a useful function
 - b) period of time after which an asset cannot perform its intended function without a major overhaul
 - c) length of time an asset might reasonably be expected to be useful in the production of income.
 - d) period of time over which a prudent owner will retain an existing facility to minimise costs.

QUESTIONS 28 TO XX

- A new computer was purchased last year.
- You were informed today that a better performing computer is currently available.
- Detailed information on the existing (old) and new computer is given below.
- MARR = 10%.

<u>DETAILS</u>	<u>DEFENDER</u>	<u>CHALLENGER</u>
First Cost(\$)	150,000 (one year ago)	
Market Value Today (\$)	100,000	120,000
Economic life from today (years)	5	10
Maximum service life from today (years)	10	20
Annual Operating Cost (\$)	30,000	20,000
Salvage Value (\$)	<ul style="list-style-type: none"> • 1 year from today: 80,000 • 2 years from today: 60,000 • 3 years from today: 40,000 • 4 years from today: 20,000 • 5 years from today: 0 	<ul style="list-style-type: none"> • 10 years from today: 40,000 • Beyond 10 years from today: 0

28. Using the outsider approach, the defender's annual equivalent cost (if it is not beyond its economic life) is given by
- a) $-150,000(A/P, 10\%, 5) - 30,000$
 - b) $-150,000(A/P, 10\%, 10) - 30,000$
 - c) $-100,000(A/P, 10\%, 5) - 30,000$
 - d) $-100,000(A/P, 10\%, 10) - 30,000$
 - e) None of these answers.
29. Using the outsider approach, the challenger's annual equivalent cost is given by
- a) $-120,000(A/P, 10\%, 20) - 20,000$
 - b) $-120,000(A/P, 10\%, 10) - 20,000 + 40,000(A/F, 10\%, 10)$

- c) $-120,000(A/P, 10\%, 10) - 20,000 - 40,000(A/F, 10\%, 10)$
 d) $-(120,000 - 100,000)(A/P, 10\%, 10) - 40,000(A/F, 10\%, 10)$
 e) None of these answers.
30. Using the insider approach, the defender's annual equivalent cost (if it is not beyond its economic life) is given by
 a) $-150,000(A/P, 10\%, 5) - 30,000$
 b) $-150,000(A/P, 10\%, 10) - 30,000$
 c) $-100,000(A/P, 10\%, 5) - 30,000$
 d) $-30,000$
 e) None of these answers.
31. Using the insider approach, the challenger's annual equivalent cost is given by
 a) $-120,000(A/P, 10\%, 20) - 20,000$
 b) $-(120,000 - 100,000)(A/P, 10\%, 10) - 20,000 + 40,000(A/F, 10\%, 10)$
 c) $-120,000(A/P, 10\%, 10) - 20,000 - 40,000(A/F, 10\%, 10)$
 d) $-(120,000 - 100,000)(A/P, 10\%, 10) - 40,000(A/F, 10\%, 10)$
 e) None of these answers.
32. Using the outsider approach and assuming that the defender is beyond its economic life, the defender's cost for the coming year would be
 a) $-150,000(A/P, 10\%, 1) - 30,000 + 80,000(A/F, 10\%, 1)$
 b) $-100,000(A/P, 10\%, 1) - 30,000 + 80,000(A/F, 10\%, 1)$
 c) $-150,000(A/P, 10\%, 5) - 30,000$
 d) $-100,000(A/P, 10\%, 5) - 30,000$
 e) None of these answers.
33. The defender is beyond its economic life when its marginal cost (or its cost for the coming year) is
 a) less than the annual equivalent cost for its economic life.
 b) equal to the annual equivalent cost for its economic life.
 c) larger than the annual equivalent cost for its economic life.
 d) independent of the annual equivalent cost for its economic life.

QUESTIONS 34 to 35

Project	First Cost (\$M)	Individual Project B-C Ratios	INCREMENTAL B-C RATIOS			
			A	B	C	D
A	400	0.8				
B	500	1.2	0.9			
C	550	1.1	1.1	1.2		
D	625	1.2	1.1	0.9	1.3	
E	700	1.2	0.9	1.1	1.2	1.1

34. If A, B, C, D and E are independent, valid projects are
- All projects.
 - A, B, C and E.
 - A, C, D and E.
 - B, C, D and E.
35. If A, B, C, D and E are mutually exclusive, which project (if any) is best?
- A
 - B
 - C
 - D
 - E
36. The after-tax cash flow is
- sensitive to the method selected to capture the declining value of a capital asset.
 - insensitive to the method selected to capture the declining value of a capital asset.
37. Economic depreciation is
- formula-based (e.g., straight line, declining balance ...)
 - the difference between the market value of a fixed asset at the beginning of an accounting period (e.g., a year) and its market value of the end of the same accounting period.
 - the difference between a fixed asset's book value at the beginning of an accounting period and its book value at the end of the same accounting

- d) period.
the difference between the fixed asset's purchase price and its salvage value.
38. Accounting depreciation is
- a) formula-based (e.g., straight line, declining balance ...)
 - b) the difference between the market value of a fixed asset at the beginning of an accounting period (e.g., a year) and its market value of the end of the same accounting period.
 - c) the difference between a fixed asset's book value at the beginning of an accounting period and its book value at the end of the same accounting period.
 - d) the difference between the fixed asset's purchase price and its salvage value.
 - e) a) and c).

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<u>Question</u>	<u>Answer</u>
1	D
2	D
3	B
4	D
5	C
6	D
7	A
8	A
9	C
10	C
11	A
12	B
13	B
14	B
15	B
16	D
17	B
18	A
19	C
20	B
21	C
22	C
23	B
24	A
25	C
26	C
27	D
28	C
29	B
30	D
31	B
32	B
33	C
34	D
35	E
36	A
37	B
38	E