Faculté des sciences sociales | Faculty of Social Sciences
Département de science économique
Department of Economics
uOttawa

Engineering Economics
ECO 1192

Practice Examination #2

C.Théoret

30 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.
   c) accurately determine its income tax credits or liabilities.
   d) All of the above answers.

2. A capital (physical) asset's annual accounting depreciation is defined as its
   a) purchase price less its total depreciation.
   b) current market value less its total depreciation.
   c) market value at the end of the year plus its market value at the beginning of the year.
   d) None of the above answers.

3. The Declining Balance (DB) depreciation method is always preferred to the Straight Line (SL) depreciation method because the DB method fully 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 the above answers.

6. The net income (i.e., income after tax) 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 the above 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 the economic life of a physical asset, its book and salvage values will always be equal with the straight line depreciation method but will most likely differ with the Declining Balance 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 the above answers.

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

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 truck 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			
	0	1	2	3
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				
7. Interest Expense				

Item	End of Year Cash Flows			
	0	1	2	3
8. Loan Repayment			DD	
9. Cash Flow on Owner Equity	EE			

11. The numerical value of cell AA is
    a) $30,000
    b) $54,000
    c) $60,000
    d) $48,000
    e) None of the above answers

12. The numerical value of cell BB is
    a) $30,000
    b) $54,000
    c) $60,000
    d) $48,000
    e) None of the above answers

13. The numerical value of cell CC is
    a) $15,000
    b) $11,250
    c) $6,000
    d) $5,000
    e) None of the above answers

14. The numerical value of cell DD is
    a) $37,500
    b) $52,500
    c) $43,200
    d) $60,000
    e) None of the above answers

15. The numerical value of cell EE is
    a) $-300,000
    b) $-150,000
    c) None of the above answers

QUESTIONS 16 to 20

Balance Sheet for Ace Company
at December 31, 2009

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
Income Taxes Payable in 6 months	2,000

QUESTIONS 16 to 20

Balance Sheet for Ace Company at December 31, 2009

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

Ace Company Income and Expense Statement January 1 to December 31, 2009	
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, 2009	
Interest Expense	10,000
Total Expenses	
PROFIT BEFORE TAXES	
Income Taxes @50% of Profit Before Taxes	
PROFIT AFTER TAXES	

16. Ace Company's quick-asset or acid-test ratio (2 decimals) on December 31, 2009 was
    a) 0.77
    b) 0.27
    c) 1.30
    d) 1.85
    e) None of the above answers

17. Ace Company's "equity ratio" (2 decimals) on December 31, 2009 was
    a) 0.14
    b) 10.4
    c) 0.906
    d) 6.37
    e) None of the above answers

18. Ace company's "profitability ratio" (2 decimals) on December 31, 2009 was
    a) 10.8%
    b) 5.4%
    c) 8.7%
    d) 2%
    e) None of the above answers

19. Ace Company's after-tax cash flow for 2009 was
    a) $90,000
    b) $45,500
    c) $75,000
    d) $135,000
    e) None of the above answers

QUESTIONS 20 to 30

CCA ≡ capital cost allowance
UCC ≡ undepreciated capital cost
( ) ≡ 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 ($)	Tax Savings Due to CCA ($)
2006	**$300,000**			**AA**	
2007	**$200,000**		**BB**		**CC**
2008	**($100,000)**			**DD**	
2009	**$400,000**				

20. The dollar amount of cell AA is
    a) $300,000
    b) $200,000
    c) $270,000
    d) None of the above answers.

21. The dollar amount of cell BB is
    a) $30,000
    b) $74,000
    c) $88,000
    d) None of the above answers

22. The dollar amount of cell CC is
    a) $37,000
    b) $74,000
    c) $44,000
    d) None of the above answers

23. The dollar amount of cell DD is
    a) $201,600
    b) $352,600
    c) $236,800
    d) None of the above answers

24. The cash flow analysis of a private project can be from two perspectives:
    a) Efficiency and equity
    b) Insider and outsider
    c) Project and sponsors (owners)
    d) Balance Sheet and Income/Expense financial statements
    e) None of the above answers.

25. 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.

QESTIONS 26 TO 30

- 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%.

DETAILS	DEFENDER	CHALLENGER
First Cost($)	**150,000 (one year ago)**	**120,000**
Market Value Today ($)	**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 ($)	• **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**	• **10 years from today: 40,000** • **Beyond 10 years from today: 0**

26. 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 the above answers.

27. Using the outsider approach, the challenger's annual equivalent cost can be obtained from
    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 the above answers.

28. 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 the above answers.

29. If the switching decision from the defender (which has not reached its economic life) to the challenger was based on the insider approach instead of the outsider approach, the initial cost (P) of the defender in the calculation of its annual equivalent cost would be
    a) $150,000
    b) $100,000
    c) $0
    d) None of the above answers.

30. If the switching decision from the defender (which is NOT beyond its economic life) to the challenger was based on the insider approach instead of the outsider approach, the initial cost (P) of the challenger in the calculation of its annual equivalent cost would be
    a) $120,000
    b) $100,000
    c) $20,000
    d) $0

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Question	Answer
1	D
2	A
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	B
17	A
18	C
19	C
20	C
21	B
22	A
23	C
24	C
25	D
26	C
27	B
28	B
29	C
30	C