ECO1192 MIDTERM Fall 2016 with Claude Théoret

Don't trust what I wrote in pencil, Answers are in red.

There were a few e) answers we had to include at our discretion

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Department of Economics

Engineering Economics (ECO 1192A)

Fall 2016 C. Théoret

White Mid-Term Examination #2

1. An 80-minute examination with 35 multiple-choice questions.
2. One (1) point for correct answers; zero (0) for incorrect answers.
3. Questions are to be answered on a Scantron (answer) sheet which you must submit as you exit the examination room.
4. Darken the bubbles on the Scantron sheet corresponding to your name, student number, course number and answers.
5. Calculators are permissible during this examination.
6. Please leave your student ID card visible at all times.

1. A project's cash flows can be analysed from the perspective of
   a) Efficiency and equity.
   b) Insider and outsider.
   c) A project and its sponsors (owners). ✓
   d) Balance Sheet and Income/Expense financial statements.

QUESTIONS 2 to 6

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

Assume:

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

$\frac{400}{2}(0.2)$

Year	Adjustments to UCC from Purchases & Dispositions	Base UCC Amount for CCA ($)	CCA ($)	Remaining UCC ($)	Tax Savings Due to CCA ($)	
2012	$400,000	40	AA 40	360	20	360(
2013	-$100,000	BB 260	52	208	CC	
2014	$300,000	505	101 6	DD		50
2015	$400,000		EE			

2. The dollar amount of cell AA is
   a) 10,000
   b) 20,000
   c) 30,000
   d) 40,000. ✓

400(0.5)(0.2) 40

360(0.2) 72 52

101 6

3. The dollar amount of cell BB is
   a) 220,000
   b) 240,000
   c) 260,000
   d) 280,000. ✓

$\frac{505}{2}(0.2)$

4. The dollar amount of cell CC is
   a) 10,000
   b) 12,000

c) 13,000
d) 14,000 $26.000

5. The dollar amount of cell DD is
   a) 252,000
   b) 380,000
   c) 511,800
   d) 840,620

$436400

6. Without the half-year rule, tax savings resulting from depreciation expenses in 2012 would have been
   a) $10,000
   b) $13,000
   c) $14,000
   d) $20,000.

40000

7. Which of the following answers is NOT a primary goal of a business plan?
   a) A guide to your business for employees, investors, suppliers, and advisors.
   b) A yardstick to gauge the financial health of a business.
   c) A method for identifying the opportunities and challenges of a business.
   d) A foundation for a loan application.

8. Which of the following depreciation methods has a constant depreciation rate and a variable depreciation base?
   a) Straight line.
   b) Declining balance.
   c) Sum-of-years'-digits (SOYD).
   d) Production level.

9. A capital (fixed) asset's economic life is generally
   a) longer than its physical life.
   b) shorter than its physical life.
   c) longer than its ownership life.
   d) the same as its ownership life.

10. Businesses should endeavour to track the depreciation of their fixed assets as accurately as possible to
   a) make sounder asset-replacement decisions.
   b) better reflect annual revenues.
   c) more reliably identify the initial before-tax cost of their capital assets.
   d) increase the reliability of their accounts payable reporting.

11. The half-year rule was introduced by the Government of Canada to
   a) increase business profits.
   b) decrease the tax burden of private businesses.
   c) provide an incentive for businesses to hire additional employees.
   d) decrease depreciation charges in the year in which assets are purchased.

12. The analysis of public (government) projects includes

a) all tangible (explicit) and intangible (implicit) impacts and the analysis of private sector projects is limited to tangible impacts.

b) only tangible impacts as does the analysis of private sector projects.

c) only tangible impacts and the analysis of private sector projects includes both tangible and intangible impacts.

d) Neither explicit nor implicit impacts.

pubic → all

private → tangible

QUESTIONS 13 to 18

Acorn Company Balance Sheet
at December 31, 2015

ASSETS	
Current Assets	
Cash	40,000
Accounts Receivable	30,000
Raw Materials Inventory	80,000
Finished Goods Inventory	50,000
Total Current Assets	[illegible]
Long Term Assets	
Equipment	330,000
Accumulated depreciation	130,000
Buildings	900,000
Accumulated depreciation	400,000
Land	600,000
Total Long Term Assets	1300
TOTAL ASSETS	1500
LIABILITIES AND OWNERS' EQUITY	
Current Liabilities	
Accounts Payable	30,000
Income Taxes Payable in 6 months	8,000
Loan due in 6 months	122,000
Total Current Liabilities	160

QUESTIONS 13 to 18

Acorn Company Balance Sheet
at December 31, 2015

Long Term Liabilities	
Loans due in two (2) years	550,000
TOTAL LIABILITIES	710
Common Stock: 30,000 shares @ $15	450,000
Retained Earnings	???
Total Owners' Equity	
TOTAL LIABILITIES & OWNERS' EQUITY	710 + 450 = 1160

Acorn Company Income and Expense Statement
January 1 to December 31, 2015

REVENUES	
Sales	700,000
EXPENSES	
Cost of goods sold	400,000
Operating Expenses	50,000
Depreciation Expense	40,000
Interest Expense	50,000
Total Expenses	540
PROFIT BEFORE TAXES	160
Income Taxes (50% Tax Rate)	80%
PROFIT AFTER TAXES	80

1500 - 1160

13. Acorn Company's "acid test ratio" (2 decimals without rounding) on December 31, 2015 was
   a) 0.43
   b) 1.00
   c) 1.25
   d) 1.35

total ass.

14. Acorn Company's "inventory turnover ratio" (2 decimals without rounding) on December 31, 2015 was
   a) 2.59
   b) 3.50
   c) 5.38
   d) 6.37

80+50 = $\frac{700}{130}$

15. Acorn Company's "profitability ratio" (2 decimals without rounding) on December 31, 2015 was
   a) 4.96%
   b) 5.33%
   c) 8.73%
   d) 10.67%

710

16. The dollar book value (BV) of Acorn Company's buildings on December 31, 2015 was
   a) 40,000
   b) 400,000
   c) 500,000
   d) 900,000

$P(1-d)^N$

P(1-

17. Acorn Company's after-tax cash flow for 2015 was
   a) $90,000
   b) $60,000
   c) $180,000 *
   d) $120,000

200-80 ?

18. A competitor, Excel Company, is examining Acorn's financial statements with the view of investing in (perhaps purchasing) Acorn Company. Excel Company would consider its potential investment in Acorn Company less risky if the Acorn Company had
   a) a current ratio less than the industry standard
   b) a debt ratio higher than the industry standard
   c) an acid-test ratio higher than the industry standard
   d) a profitability ratio lower than the industry standard.

QUESTIONS 19 TO 23

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

DETAILS	DEFENDER	CHALLENGER
First Cost ($)	300,000 (one year ago)	
Today's Market Value ($)	200,000	400,000
Economic life from today (years)	5	10
Maximum service life from today (years)	10	20
Annual Operating Cost ($)	75,000	80,000
Salvage Value ($)	• 1 year from today: 150,000 • 2 years from today: 110,000 • 3 years from today: 80,000 • 4 years from today: 30,000 • 5 years from today: 0	• 1 year from today: 325,000 • 2 years from today: 260,000 • 3 years from today: 180,000 • 4 years from today: 80,000 • 5 to 20 years from today: 0

19. Outsider Approach. If the defender is NOT beyond its economic life, its annual equivalent cost is given by
    a) -300,000(A/P,10%,5)-75,000
    b) -300,000(A/P,10%,10)-75,000
    c) -200,000(A/P,10%,5)-75,000
    d) -200,000(A/P,10%,10)-75,000

20. Outsider Approach. The challenger's annual equivalent cost is given by
    a) -400,000(A/P,10%,10)-80,000
    b) (-400,000+200,000)(A/P,10%,10)-80,000
    c) -400,000(A/P,10%,20)-80,000
    d) (-400,000+200,000)(A/P,10%,20)-80,000

21. Outsider Approach. If the defender is now (referred to "today" in the Table) beyond its economic life, its annual equivalent cost is given by

a) -300,000(A/P,10%,5)-75,000
b) -300,000(A/P,10%,10)-75,000
c) -200,000(A/P,10%,1)-75,000+150,000(A/F,10%,1)
d) -300,000(A/P,10%,1)-75,000+150,000(A/F,10%,1)

22. Insider Approach. The challenger's annual equivalent cost is given by

a) -400,000(A/P,10%,10)-80,000
b) (-400,000+200,000)(A/P,10%,10)-80,000
c) -400,000(A/P,10%,20)-80,000
d) (-400,000+200,000)(A/P,10%,20)-80,000

23. Insider Approach. If the defender is NOT beyond its economic life, its annual equivalent cost is given by

a) -300,000(A/P,10%,10)-75,000
b) -200,000(A/P,10%,5)-75,000
c) -75,000

QUESTIONS 24 to 30

Ace Company is evaluating the purchase of new equipment worth $500,000. The equipment is expected to

- have a salvage value of $200,000 after 3 years.
- generate annual revenues of $600,000 and annual operating and maintenance costs of $300,000.

Other information includes:

- DB depreciation with a 20% rate.
- A before-tax MARR=10%.
- An after-tax MARR=5%.
- A 50% income tax rate.
- The half-year rule applies.

$d = 0.2$ $SV = 200$

$i = 0.1$

$= 0.5$

$t = 0.5$

600
300
$300

The firm gets a $400,000 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	EOY Cash Flows 0	1	2	3
1. Before-Tax Cash Flow				
2. Annual Depreciation		100 AA	BB 80	64
3. Interest Expense				CC
4. Taxable Income		DD		
5. Taxes Payable				
6. After-Tax Cash Flow	EE			
7. Interest Expense				
8. Loan Repayment			FF	
9. Cash Flow on Owner Equity	GG			

PW = PW

24. The dollar value of cell AA is
    a) 50,000
    b) 100,000
    c) 140,000
    d) 160,000

$P(1-d)^n$ $Pd(1-d)^{n-1}$

$500(1-0.2)^1$

25. The dollar value of cell BB is

p

a) 80,000
b) 90,000
c) 110,000
d) 120,000

$Pd(1-d)^{i}$

26. The dollar value of cell CC is
a) 10,000
b) 12,000
c) 16,000
d) 30,000

27. The dollar value of cell DD is
a) 40,500
b) 60,000
c) 160,000
d) 210,000
e) None of the above answers

28. The dollar value of cell EE is
a) -100,000
b) -175,000
c) -400,000
d) -500,000

29. The dollar value of cell FF is
a) 100,000
b) 140,000
c) 160,000
d) 200,000

30. The dollar value of cell GG is
a) -100,000
b) -175,000
c) -400,000
d) -500,000

31. The before-tax cash flow of a business is equal to its
a) after-tax cash flow + income taxes
b) after-tax cash flow - income taxes
c) after-tax cash flow + depreciation charges.
c) after-tax cash flow + depreciation charges - income taxes.

32. Income taxes are implicit cash flows while depreciation charges are explicit cash flows.
a) True
b) False

33. Which of the following statements is true?
a) Smaller depreciation charges will decrease taxable income, income tax

liabilities and after-tax cash flows.

b) Smaller depreciation charges will increase taxable income, decrease income tax liabilities and increase after-tax cash flows.

c) Higher depreciation charges will increase taxable income, income tax liabilities and after-tax cash flows.

d) Higher depreciation charges decrease taxable income and income tax liabilities, and increase after-tax cash flows.

34. A capital asset's annual economic depreciation is defined as its
   a) purchase price less its cumulative depreciation.
   b) current market value less its cumulative depreciation.
   c) market value at the beginning of a year less its market value at the end of the same year.
   d) current market price less its purchase price.

35. What is the usual relationship between a capital asset's book (BV) and salvage (SV) values at the end of the asset's economic life with the Declining Balance depreciation method?
   a) (SV = BV) > $0
   b) SV > BV
   c) SV < BV
   d) SV = BV = $0

o-o-o

inc ↑ tax ↑ af T cash ↓

mV

↑ depreciation

↓ income

↓ income tax

↑ ATCF