KINGDOM OF BAHRAIN
MINISTRY OF EDUCATION
INTERNAL EXAMS SECTION
SECONDRY EDUCATION / UNIFIED TRACK

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RESIT EXAM 2023/2024

COURSE NAME: FINANCIAL MATHEMATICS 2   **TRACK:** التجاري وتوحيد المسارات

COURSE CODE: مال316   **TIME:** 2 Hours

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QUESTION ONE:

18

1. A person invested BD3500 at 3% semiannually. <u>Find the future value and the interest</u> at the end of 8 years.

(6 marks)

يراعى الخطأ المترتب

12 ×½

إبراهيم حسن أماني

$n = 8/ \times 2/ = 16$ times /

$i = 3\%$ semiannually

$FV = PV \times (1+i)^n$

$= 3500/ \times (1/+ 3\%/)^{16/}$

$= 3500 \times 1.6047/ = BD\ 5616.450/$

$CI = FV - PV$

$= 5616.450/ - 3500/ = BD2116.450/$
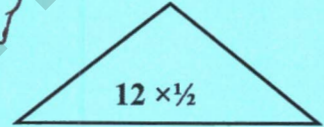
2. Saleh calculated the compound interest he will get it if he deposits his money in a bank at 4% annually for 12 years and it was BD 5409. <u>Find the present value.</u>
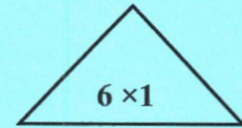
(6 marks)

6 ×1

$PV = CI \div [(1+i)^n - 1]$

$PV = 5409/ \div [(1+ 4\%/)^{12/} - 1/]$

$= 5409 \div [1.6010 - 1]$
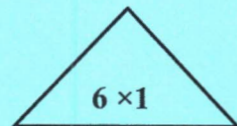
$= 5409 \div 0.6010/ = BD\ 9000/$

3. How long will it take an investment of BD6000 to amount of BD9773.400 at 5% annually?

(6 marks)

6 ×1

$(1+i)^n = FV \div PV$

$(1+5\%/)^n /= 9773.400/ \div 6000/$

$= 1.6289$ /we are choosing 5% from table to find <u>n</u> = 10 years /

OR $\frac{\log(1.6289)}{\log(1.05)}/ = 10$ years /

QUESTION TWO:

1. Abdulla paid an annuity of BD800 at the end of each year for 5 years at an interest rate of 6% annually. Find the following:
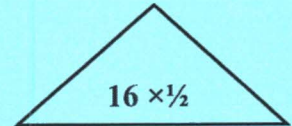
    a- Future value (amount) at the end of the period.

    b- Present value (amount) at the end of the period.

(8 marks)

a- $FVn = PMT \times [\frac{(1+i)^n - 1}{i}]$

$FVn = 800 /\times [\frac{(1/+6\%/)^{5/} - 1/}{6\%/}]$

$FVn = 800 \times 5.63709/ = BD4509.672/$

$16 \times \frac{1}{2}$

b- $PVn = PMT \times [\frac{1-(1+i)^{-n}}{i}]$

$PVn = 800/\times [\frac{1/-(1/+6\%/)^{-5/}}{6\%/}]$

$PVn = 800 \times 4.21236/ = BD3369.888/$

2. What semi – annually payment will accumulate to BD9799.315 in 7 years at 10% annually compounded semi-annually?

(7 marks)

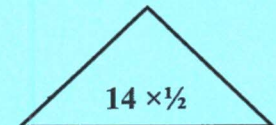No. of annuities (n) = 7/ × 2/= 14/

Partial rate (i) = 10/ ÷ 2/ = 5%/

$FVn = PMT \times [\frac{(1+i)^n - 1}{i}]$

$14 \times \frac{1}{2}$

$PMT = 9799.315 \div [\frac{(1/+5\%/)^{14/} - 1/}{5\%/}]$

$PMT = 9799.315 / \div 19.59863/$

$= BD\ 500/$

QUESTION THREE:

The following cash inflow and outflow of project "H" and 5% discount rate.

18×½

9

Cash Flow	Project H BD
Cost (Initial Investment)	**15,000**
Cash flow year 1	4,000
Cash flow year 2	5,000
Cash flow year 3	6,000
Cash flow year 4	7,000

Required:

Calculate Net Present Value of project "H" and you will accept or reject it?

Year	Cash Flow (CF)	$\times (1+i)^{-n}$	PV of Cash flow
0	-15,000/	$\times (1+5\%)^{0} = 1/$	-15,000/
1	4,000/	$\times (1+5\%)^{-1} = 0.9524/$	3809.600/
2	5,000/	$\times (1+5\%)^{-2} = 0.9070/$	4535/
3	6,000/	$\times (1+5\%)^{-3} = 0.8638/$	5182.800/
4	7,000/	$\times (1+5\%)^{-4} = 0.8227/$	5758.900/
Net Present Value (NPV)			**4286.300/**

NPV = 4286.300 > 0 (Acceptable) //

QUESTION FOUR:

The financial data for Yonis's Company are as follow:

Title	Yonis's Company
Selling price per unit	BD250
Variable cost per unit	BD200
Fixed Cost	BD400,000
Target Operating Income	BD100,000
Unit Sold	8,000 units

Required:

   1- What is the break-even point in units and sales revenue for Yonis's Company?

   2- What is the units and sales revenue to get target profit?

$$1 - Unit\ Sales/_{BEP} = \frac{FC}{USP-UVC}$$

$$= \frac{400000/}{250/-200/} = 8,000\ Units/$$

$$Sales\ in\ BD/_{BEP} = Unit\ Sales/_{BEP} \times USP$$
$$= 8000/ \times 250/ = BD2,000,000/$$

$$2 - Unit\ Sales/_{Target\ Income} = \frac{FC+TOI}{USP-UVC}$$

$$= \frac{400000/+100000//}{250/-200/} = 10,000\ Units /$$

$$Sales\ in\ BD/_{Target\ Income} = Unit\ Sales/_{Target\ Income} \times USP$$
$$= 10,000/ \times 250/ = BD2,500,000/$$

QUESTION FIVE:

The balance sheet and income statement for ASH Company are as follows.

10×1

10

Balance Sheet	BD 000
Cash	9500
Account Receivable	5500
Inventory	3000
Current Assets	**18000**
Fixed Assets	12000
Total Assets	**30000**
Current Liabilities	9000
Long-term debt	5000
Owners' Equity	16000
Total Liabilities and Equity	**30000**

Income Statement	BD 000
Net Sales (Revenues)	12000
Cost of Goods Sold	8000
Gross Profit	**4000**
Operating Expense	600
Operating Income	3400
Interest Expense	400
Profits before taxes	**3000**
Tax (10%)	300
Net Income	**2700**

Required:

Calculate the following ratios:

1- Capital Employed.

2- Return on Capital Employed (ROCE%).

3- Working Capital.

1- Capital employed = Total assets – Current liabilities

$$= 30000 / - 9000 / = BD21000 /$$

OR = 5000 / +16000 / = BD21000/

2- ROCE% $= \dfrac{profit\ before\ tax}{capital\ employed} \times 100$

ROCE $= \dfrac{3000/}{21000/} \times 100/ = 14.29\%/$

3- Working Capital = 18000 / – 9000 / = BD9000/

END OF AVSWER