FORMULA SHEET

Effective Annual Rate

$$EAR = \left[1 + \frac{NOM}{m}\right]^{m} - 1$$

Future Value

$$FV = (1+r)^{n} * PV$$

Future Value Annuity

$$FV_{\text{annuity}} = \frac{(1+r)^{n} - 1}{r} \cdot (\text{payment amount})$$

Present Value

$$PV = \frac{1}{(1+r)^{n}} * FV$$

Present Value Annuity

$$\text{PV annuity} = \frac{1 - (1+r)^{-n}}{r} \cdot (\text{payment amount}).$$

WACC = rd(1 – t)(LVR) + re(1 – LVR)

BT

USE BACK OF <u>PREVIOUS PAGE</u> IF YOU NEED MORE SPACE

YOU are *evaluating* a property listed with an asking price of $800,000.

The property has 22,000 square feet of space for rent and the going rate is $14.25 per square foot for the first 9,000 square feet and $10.60 per square foot for next 8,000 square feet and $16.00 per square foot for the remaining area. It is estimated to have a 14% vacancy and credit loss and the operating expenses (excluding depreciation or CCA) is approximately 35% of effective gross income.

The land represent 32% of the property value and the balance is building. The building will be depreciated at a capital cost allowance rate of 4%, declining balance method, half year rule applies.

You plan to stay in this property for 13 years; tax rate is 40%; 50% of capital gains will be taxed; and inflation rate is 2.15% per annum. The cancellation fees of the mortgage is 1.85% of the mortgage balance.

EACH QUESTION IS INDEPENDENT UNLESS OTHERWISE STATED

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FINA 210/2 Sec. AA - FALL 2016 MIDTERM (VA)

Professor J. Mannadiar ***OCTOBER 26th, 2016 (545pm – 8:15pm)***

READ INSTRUCTIONS **MB 3.270 and MB 3.285**

Question #1 *see page 3 for details*

You purchased the property for 92% of the asking price. Assume Loan-to-Value Ratio (LVR) is 75%; annual mortgage payments; the interest rate is 4.95% per annum, compounded quarterly; term 30 years.

What is your mortgage payment per annum?.

Show work below AND use back of PREVIOUS page if you need more space

➔ ***Answer:*** $36,083

Purchasing Price = $736,000
LVR = 75% ∴ Loan = $552,000
interest = 4.95% pa, comp quarterly
∴ EFF = 5.042645%
Term = 30 years.

At FV = 0, PV = 552,000, I/Y = 5.042645, N = 30

⇒ MPmt = $36,083

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FINA 210/2 Sec. AA - FALL 2016 MIDTERM (VA)

Professor J. Mannadiar ***OCTOBER 26th, 2016 (545pm – 8:15pm)***

READ INSTRUCTIONS **MB 3.270 and MB 3.285**

Question #2 *see page 3 for details*

You purchased the property for 85% of the asking price. Assume LVR = 85% and you make annual mortgage payments. You sold the property as planned and received a notice (an invoice) from the bank. How much do you owe the bank, if the interest rate is 5.20% per annum, compounded monthly; and the term of 21 years?. ➔ ***Answer:*** $301,349

Use the table below if you find it useful

Year	Mortgage Pmt.	Interest	Principle	Loan Balance
0				$578,000
	$46,383			
13				

Show work below AND use back of PREVIOUS page if you need more space

Purchase Price = $680,000
LVR = 85% ∴ Loan = $578,000
interest = 5.2% pa, comp monthly
EFF = 5.325741%
Term = 21 years

At FV = 0
⇒ MPmt = $46,383

.sold as planned ∴ N = 21 − 13 = 8 years

Using FV = 0, N = 8, MPmt = 46,383, I/y = 5.325741

⇒ PV_{new} = $295,875

∴ Money owed = new PV + cancellation Fee.
= 295,875 + 5,474 = 301,349

* Cancellation Fee: 1.85% (295,875)
= $5474

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FINA 210/2 Sec. AA - FALL 2016 MIDTERM (VA)

Professor J. Mannadiar ***OCTOBER 26th, 2016 (545pm – 8:15pm)***

READ INSTRUCTIONS **MB 3.270 and MB 3.285**

Question #3a *see page 3 for details*

You purchased the property for 85% of the asking price. Complete the CCA column for the first five year. * HYR

	Year	BUCC	CCA	EUCC
2%	1	$462,400	* (9,248)	$453,152
4%	2	$453,152	* (18,126)	$435,026
4%	3	$435,026	* (17,401)	$417,625
4%	4	$417,625	* (16,705)	$400,920
4%	5	$400,920	* (16,037)	$384,883

Show work below AND use back of PREVIOUS page if you need more space

Land does not depreciate

Purchasing Price = $680,000 → Land (32%); Building (68%) = $462,400

Question #3b *see page 3 for details*

You purchased the property for 89% of the asking price. Assume No Cash on Hand (No COH); LVR = 72% and annual mortgage payments. The interest rate is 5.65% per annum, compounded weekly. Processing fees is $3,000 and term = 18 years. Assume 52 weeks per annum, What is the Effective Cost of Borrowing (ECB)?.

➔ ***Answer:*** 5.886515%

Purchasing Price = $712,000
LVR = 72% ∴ Loan = $512,640
Processing Fee = $3,000
} Amount Borrowed = $515,640
Interest = 5.65% pa, comp weekly
∴ EFF = 5.809416%
Term = 18 years

① using FV=0, I/Y=5.809416, N=18, PV=515,640
⇒ MPmt = $46,943

② using FV=0, Pmt=-46,943, PV=512,640, N=18
⇒ I/Y = 5.886515% = ECB

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FINA 210/2 Sec. AA - FALL 2016 MIDTERM (VA)

Professor J. Mannadiar ***OCTOBER 26th, 2016 (545pm – 8:15pm)***

READ INSTRUCTIONS **MB 3.270 and MB 3.285**

Question #4 *see page 3 for details*

You purchased the property for 94% of the asking price. Assume No Cash on Hand (No COH); LVR = 90% and annual mortgage payments. The interest rate is 4.75% per annum, compounded quarterly. Processing fees is $7,000. How much is the interest portion * of the 5th mortgage payment, term 22 years?.

➔ ***Answer:*** $29,299

Use the table below if you find it useful @4.835281%

Year	Mortgage Pmt.	Interest	Principle	Loan Balance
0				$683,800
1	$51,171	(33,064)	18,107	$665,693
2	$51,171	(32,188)	18,983	$646,710
3	$51,171	(31,270)	19,901	$626,809
4	$51,171	(30,308)	20,863	$605,946
5	$51,171	*(29,299)		
6				

Show work below AND use back of PREVIOUS page if you need more space

Purchasing Price = $752,000
Processing Fee = $7,000
LVR = 90% ∴ Loan = $676,800
} Amount Borrowed = $683,800

interest = 4.75% pa, comp quarterly
∴ EFF = 4.835281%

Term = 22 years.

using FV = 0, PV = 683,800, N = 22, I/Y = 4.835281

⇒ MPmt = $51,171

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FINA 210/2 Sec. AA - FALL 2016 MIDTERM (VA)

Professor J. Mannadiar ***OCTOBER 26th, 2016 (545pm – 8:15pm)***

READ INSTRUCTIONS **MB 3.270 and MB 3.285**

Question #5 *see page 3 for details*

es not mention COH ⇒ use assume buyer has COH

You purchased the property for 96% of the asking price. Assume LVR = 98% and annual mortgage payments. The interest rate is 5.05% per annum, compounded semi-annually. Processing fees = $6,000. How much is the principle portion * of the 4th mortgage payment, term 20 years?.

➔ ***Answer:*** $26,120

@5.113756%.

Use the table below if you find it useful

Year	Mortgage Pmt.	Interest	Principle	Loan Balance
0				$752,640
1	$60,978	(38,488)	22,490	$730,150
2	$60,978	(37,338)	23,640	$706,510
3	$60,978	(36,129)	24,849	$681,661
4	$60,978	(34,858)	*26,120	
5				
6				

Show work below AND use back of PREVIOUS page if you need more space

Purchasing Price = $768,000

LVR = 98% ∴ Loan = $752,640

Interest = 5.05% pa, comp semi-annually

∴ EFF = 5.113756%

Term = 20 years

using FV=0, PV = 752,640, N=20, I/Y = 5.113756

⇒ MPmt = $60,978

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FINA 210/2 Sec. AA - FALL 2016 MIDTERM (VA)

Professor J. Mannadiar ***OCTOBER 26th, 2016 (545pm – 8:15pm)***

READ INSTRUCTIONS **MB 3.270 and MB 3.285**

Question #6 *see page 3 for details*

You purchased the property for 91% of the asking price. What is the Gross Income Multiplier (GIM), Net Operating Income Multiplier (NIM) and Overall Capitalization Rate (OCR)?. Assume LVR = 74%; No COH; Processing fees = $5,000. Complete the table below:

	Buyer (Purchasing Price)	Seller (Asking Price)
GIM = Value / EGI	728,000 / 252,023 = 2.888625x	800,000 / 252,023 = 3.174313x
NIM = Value / NOI	728,000 / 163,815 = 4.444037x	800,000 / 163,815 = 4.883558x
OCR = NOI / Value	163,815 / 728,000 = 22.502060%	163,815 / 800,000 = 20.476875%

Show work below AND use back of PREVIOUS page if you need more space

Asking Price = $800,000

Purchasing Price = $728,000

LVR = 74% ∴ Loan = $538,720

Processing Fee = $5,000

PGI = (14.25 x 9000) + (10.6 x 8000) + (16 x 5000)
= $293,050

PGI = $293,050
- VCL 14% (41,027)
= EGI = $252,023
- OE (w/o CCA) 35% (88,208)
= NOI = $163,815

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Question # 7.

Purchasing Price = $736,000

Building (68%) = $500,480

LVR = 81% ∴ Loan = $596,160

interest = 4.85% pa, comp monthly

∴ EFF = 4.959277%

Term = 25 years

⇒ MPmt = $42,127

Year	BBal	CCA	EBal
1	500,480	2% (10,010)	490,470
2	490,470	4% (19,619)	470,851

---

* Check *

	Year 1	Year 2
NOI	163,815	167,337
-MPmt	(42,127)	(42,127)
-Taxes	(49,696)	(47,510)
=CFAT	$71,992	$77,700

✓ ✓

FINA 210/2 Sec. AA - FALL 2016 MIDTERM (VA)

Professor J. Mannadiar ***OCTOBER 26th, 2016 (545pm – 8:15pm)***

READ INSTRUCTIONS **MB 3.270 and MB 3.285**

Question #7 *see page 3 for details*

You purchased the property for 92% of the asking price. Assume LVR = 81% and annual mortgage payments. The interest rate is 4.85% per annum, compounded monthly; term 25 years. What is the Cash Flow After Taxes (CFAT) for Year 1 and Year 2?.

Use the table below if you find it useful

Show work below AND use back of previous page if you need more space

	Year 1	Year 2
PGI	$293,050	inflation = 2.15% → $299,351
− VCL (14%)	(41,027)	(41,909)
EGI	= 252,023	= 257,442
− OE (w/o CCA) (35%)	(88,208)	(90,105)
NOI	= 163,815	= 167,337
− CCA (Previous page)	(10,010)	(19,619)
EBIT	= 153,805	= 147,718
− IE (Below)	(29,565)	(28,942)
EBT	= 124,240	= 118,776
− Taxes (40%)	(49,696)	(47,510)
EAT	= 74,544	= 71,266
+ CCA (Previous Page)	+ (10,010)	+ (19,619)
− Principle (Below)	− (12,562)	− (13,185)
CFAT	$71,992	= $77,700

$ check ✓

Year	MPmt	@4.85% Interest	Principal P	Loan Balance
1	$42,127	(29,565)	12,562	$583,598
2	$42,127	(28,942)	13,185	$570,413

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FINA 210/2 Sec. AA - FALL 2016 MIDTERM (VA)

Professor J. Mannadiar ***OCTOBER 26th, 2016 (545pm – 8:15pm)***

READ INSTRUCTIONS **MB 3.270 and MB 3.285**

Question #8

What is the value of the property using the Net Income Approach, using the following information?.

Rent per square foot	$15.25
Rentable area	5,250 square feet
Vacancy and credit losses	15%
Operating expense (without CCA)	36% of effective gross income
Down payment	30% ∴ LVR = 70%
Tax rate	40%
Interest rate	6.15% per annum, *compounded semi-annually* ∴ EFF = 6.244556%
Cost of equity = Effective cost of borrowing + 7.85% risk-premium	

3 **How work below AND use back of PREVIOUS page if you need more space**

➔ ***Answer:*** $506,480

$$NIA = \frac{NOI}{WACC_{BT}} = \frac{43,555}{8.599556\%}$$

$$\Rightarrow NIA = \$506,480$$

PGI = $80,063
- VCL (15%) (12,009)
= EGI = 68,054
- OE (no CCA) (24,499)
= NOI = $43,555

$$WACC_{BT} = r_d(1-t)(LVR) + r_e(1-LVR)$$
$$= (6.244556\%)(40\%) + (7.85\% + 6.244556)(30\%)$$
$$= 4.371189\% + 4.228367\%$$
$$= 8.599556\%$$

14.094556%

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FINA 210/2 Sec. AA - FALL 2016 MIDTERM (VA)

Professor J. Mannadiar ***OCTOBER 26th, 2016 (545pm – 8:15pm)***

READ INSTRUCTIONS **MB 3.270 and MB 3.285**

Question #9

A property has 23,000 square feet (s.f.) of usable space. Analysis of construction costs indicate the follow: $10.50 per square foot for the first 11,000 square feet of space; $16.60 per square foot for the next 5,000 square feet, and $19 per square foot for the balance. This property is seventy-five years old. The estimated economic life of this property is 250 years. Changing neighborhood (location depreciation) characteristics have had a negative influence on the property of approximately 18% of building costs. An examination of similar lots indicate a land value of $32 per square foot and land area is 35,000 square feet.

What is the estimated value of this property, using the Cost Approach?.

6Show work below AND use back of previous page if you need more space

➔ ***Answer:*** $1,292,380

115,500 83,000 133,000

Value of Building = (10.5 x 11,000) + (16.6 x 5,000) + (19 x 7,000) = $331,500

Less depreciation: Physical / Functional } $\frac{75}{250} \times 100 = 30\%$ (99,450)

Locational: 18% (59,670)

= Book Value = $172,380

Add back value of land: 32 x 35,000 = +(1,120,000)

= Value of property = $1,292,380

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FINA 210/2 Sec. AA - FALL 2016 MIDTERM (VA)

Professor J. Mannadiar ***OCTOBER 26th, 2016 (545pm – 8:15pm)***

READ INSTRUCTIONS **MB 3.270 and MB 3.285**

Question #10 *see page 3 for details*

You purchased the property for 72% of the asking price. Assume LVR = 85% and annual mortgage payments. The interest rate is 6.15% per annum, compounded weekly; term 30 years. Assume 52 weeks per annum

How much is **your equity**, if you sold the property for $1,720,000 after 5 years of stay?. Ignore fees and taxes.

➔ ***Answer:*** _____

Complete the table below if you find it useful or *complete Your Equity below*

Down Payment	$ 86,400
Capital Gains	$ 1,144,000
Principle Portion	$ 33,106
Your Equity =	$ 1,263,506.

Show work below AND use back of previous page if you need more space

Purchasing Price = $576,000

LVR = 85% ∴ Loan = $489,600

Rate = 6.15% p.a, comp weekly

∴ EFF = 6.339185

Term = 30 years

⇒ MPmt = $36,869

② CG = 1,720,000 − 576,000

= $1,144,000

③ After 5 yrs: N = 30 − 5 = 25 years

new PV = $456,494

PP = 489,600 − 456,494 = $33,106

Dwn Pmt = 576,000 − 489,600

= $86,400

Equity = Down Pmt + CG + Principal P

= 86,400 + 1,144,000 + 33,106

= $1,263,506

Read Instructions to avoid penalty

End of Exam

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FORMULA SHEET

Effective Annual Rate

$$EAR = \left[1 + \frac{NOM}{m}\right]^{m} - 1$$

Future Value

$$FV = (1+r)^{n} * PV$$

Future Value Annuity

$$FV_{\text{annuity}} = \frac{(1+r)^{n} - 1}{r} \cdot (\text{payment amount})$$

Present Value

$$PV = \frac{1}{(1+r)^{n}} * FV$$

Present Value Annuity

$$\text{PV annuity} = \frac{1 - (1+r)^{-n}}{r} \cdot (\text{payment amount}).$$

WACC = rd(1 – t)(LVR) + re(1 – LVR)

USE BACK OF <u>PREVIOUS PAGE</u> IF YOU NEED MORE SPACE

YOU are *evaluating* a property listed with an asking price of $750,000.

The property has 23,000 square feet of space for rent and the going rate is $14.25 per square foot for the first 8,000 square feet and $10.60 per square foot for next 9,000 square feet and $16.00 per square foot for the remaining area. It is estimated to have a 16% vacancy and credit loss and the operating expenses (excluding depreciation or *CCA*) is approximately 34% of effective gross income.

The land represent 33% of the property value and the balance is building. The building will be depreciated at a capital cost allowance rate of 4%, declining balance method, half year rule applies.

You plan to stay in this property for 13 years; tax rate is 40%; 50% of capital gains will be taxed; and inflation rate is 1.85% per annum. The cancellation fees of the mortgage is 2.15% of the mortgage balance.

EACH QUESTION IS INDEPENDENT UNLESS OTHERWISE STATED

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FINA 210/2 Sec. AA - FALL 2016 MIDTERM (VB)

Professor J. Mannadiar ***OCTOBER 26th, 2016 (545pm – 8:15pm)***

READ INSTRUCTIONS **MB 3.270 and MB 3.285**

Question #1 *see page 3 for details*

You purchased the property for 92% of the asking price. Assume Loan-to-Value Ratio (LVR) is 75%; annual mortgage payments; the interest rate is 4.95% per annum, compounded quarterly; term 30 years.

What is your mortgage payment per annum?.

Show work below AND use back of PREVIOUS page if you need more space

➔ ***Answer:*** $ 33,828

Property = $750{,}000 \times 92\% = 690{,}000$

Loan = $690{,}000 \times 75\% = 517{,}500$

$EAR = \left(1 + \frac{4.95\%}{4}\right)^4 - 1 = 5.042645\%$

$PVA(5.042645\%, 30) = \frac{1 - (1 + 5.042645\%)^{-30}}{5.042645\%} = 15.29800401$

$Mpmt = \frac{517{,}500}{15.29800401} = 33{,}828$

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FINA 210/2 Sec. AA - FALL 2016 MIDTERM (VB)

Professor J. Mannadiar ***OCTOBER 26th, 2016 (545pm – 8:15pm)***

READ INSTRUCTIONS **MB 3.270 and MB 3.285**

Question #2 *see page 3 for details*

You purchased the property for 85% of the asking price. Assume LVR = 85% and you make annual mortgage payments. You sold the property @ 13 as planned and received a notice (an invoice) from the bank. How much do you owe the bank, if the interest rate is 5.20% per annum, compounded monthly; and the term of 21 years?. ➔ ***Answer:*** $285,346

Use the table below if you find it useful

Year	Mortgage Pmt.	Interest	Principle	Loan Balance
0				

Show work below AND use back of PREVIOUS page if you need more space

oparty = 750,000 × 85% = 637,500

oan = 637,500 × 85% = 541,875

= 5.20% ⇒ EAR = $\left(1+\frac{5.20\%}{12}\right)^{12}-1 = 5.325741\%$

$A_{(5.325741\%,21)} = \frac{1-(1+5.325741\%)^{-21}}{5.325741\%} = 12.46141560$

$PVA_{(5.325741\%,8)} = \frac{1-(1+5.325741\%)^{-8}}{5.325741\%}$

$= 6.37895422.$

balance = 6.37895422 × 43,484 × 2.15%

= 283,346

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Ipmt = $\frac{541,875}{12.46141560} = 43,484$

FINA 210/2 Sec. AA - FALL 2016 MIDTERM (VB)

Professor J. Mannadiar ***OCTOBER 26th, 2016 (545pm – 8:15pm)***

READ INSTRUCTIONS **MB 3.270 and MB 3.285**

Question #3a *see page 3 for details*

You purchased the property for 85% of the asking price. Complete the *CCA* column for the first five year. *

Year	BUCC	CCA	EUCC
1 (2%)	427,125	* 8,543	418,582
2 (4%)	418,582	* 16,743	401,839
3 (4%)	401,839	* 16,074	385,765
4 (4%)	385,765	* 15,431	370,334
5 (4%)	370,334	* 14,813	355,521

Show work below AND use back of PREVIOUS page if you need more space

Property = 750,000 × 85% = 637,500
Building = 637,500 × 67% = 427,125

Question #3b *see page 3 for details*

You purchased the property for 89% of the asking price. Assume <u>No Cash on Hand (No COH):</u> LVR = 72% and annual mortgage payments. The interest rate is 5.65% per annum, compounded weekly. Processing fees is $3,000 and term = 18 years. Assume 52 weeks per annum, What is the Effective Cost of Borrowing (ECB)?.

➔ ***Answer:*** 5.891917760 %

Property = 750,000 × 89% = 667,500
Loan = 667,500 × 72% = 480,600 + 3000 = 483,600

$$EAR = \left(1 + \frac{5.65\%}{52}\right)^{52} - 1 = 5.809416\%$$

$$PVA_{(5.809416\%;\ 18)} = \frac{1-(1+5.809416\%)^{-18}}{5.809416\%} = 10.98426953$$

$$Mpmt = \frac{483,600}{10.98426953} = 44,027$$

No COH, with processing fee → ECB > EAR.

PV = 480,600
N = 18
PMT = 44,027
FV = 0

CPT I/Y = 5.891917760

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FINA 210/2 Sec. AA - FALL 2016 MIDTERM (VB)

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READ INSTRUCTIONS **MB 3.270 and MB 3.285**

Question #4 *see page 3 for details*

You purchased the property for 94% of the asking price. Assume No Cash on Hand (No COH); LVR = 90% and annual mortgage payments. The interest rate is 4.75% per annum, compounded quarterly. Processing fees is $7,000. How much is the interest portion * of the 5th mortgage payment, term 22 years?.

➔ ***Answer:*** $ 27,487

Use the table below if you find it useful

Year	Mortgage Pmt.	Interest	Principle	Loan Balance
0				
1				
2				
3				
4				
5		* 27,487		
6				

Show work below AND use back of PREVIOUS page if you need more space

Property = 750,000 × 94% = 705,000

Loan = 705,000 × 90% = 634,500 + 7000 = 641,500

$EAR = \left(1 + \frac{4.75\%}{4}\right)^4 - 1 = 4.835281\%$

$PVA_{(4.835281\%, 22)} = \frac{1 - (1+4.835281\%)^{-22}}{4.835281\%} = 13.36295632$

$Mpmt = \frac{641,500}{13.36295632} = 48,006$

$PVA_{(4.835281\%, 18)} = \frac{1 - (1+4.835281\%)^{-18}}{4.835281\%} = 11.84149083$

$Balance_4 = 48,006 \times 11.84149083 = 568,463$

$Interest_5 = 568,463 \times 4.835281\% = 27,487$

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READ INSTRUCTIONS **MB 3.270 and MB 3.285**

Question #5 *see page 3 for details*

You purchased the property for 96% of the asking price. Assume LVR = 98% and annual mortgage payments. The interest rate is 5.05% per annum, compounded semi-annually. Processing fees = $6,000. How much is the principle portion * of the 4th mortgage payment, term 20 years?.

➔ ***Answer:*** $24,487

Use the table below if you find it useful

Year	Mortgage Pmt.	Interest	Principle	Loan Balance
0				
1				
2				
3				
4			* 24,487	
5				
6				

Show work below AND use back of PREVIOUS page if you need more space

Property = 750,000 × 96% = 720,000

Loan = 720,000 × 98% = 705,600

$EAR = \left(1 + \frac{5.05\%}{2}\right)^2 - 1 = 5.113756\%$

$PVA_{(5.113756\%, 20)} = \frac{1 - (1 + 5.113756\%)^{-20}}{5.113756\%} = 12.34287949$

$Mpmt = \frac{705,600}{12.34287949} = 57,167$

$PVA_{(5.113756\%, 17)} = \frac{1 - (1 + 5.113756\%)^{-17}}{5.113756\%} = 11.17888824$

balance 3 = 57,167 × 11.17888824 = 639,064

Interest 4 = 639,064 × 5.113756% = 32,680

Principal 4 = 57,167 − 32,680 = 24,487

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FINA 210/2 Sec. AA - FALL 2016 MIDTERM (VB)

Professor J. Mannadiar ***OCTOBER 26th, 2016 (545pm – 8:15pm)***

READ INSTRUCTIONS **MB 3.270 and MB 3.285**

Question #6 *see page 3 for details*

You purchased the property for 91% of the asking price. What is the Gross Income Multiplier (GIM), Net Operating Income Multiplier (NIM) and Overall Capitalization Rate (OCR)?. Assume LVR = 74%; No COH; Processing fees = $5,000. Complete the table below:

	Buyer	Seller
GIM	2.66044532 x	2.92356628 x
NIM	4.03097204 x	4.42963960 x
OCR	24.8079129%	22.575200%

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PGI = (14.25 x 8087) + (10.60 x 9080) + (16.00 x 6080) = 305,460

VCL = (305,460 x 16%) = (48,864)

EGI = 256,536

OE (w/o CCA) = (256,536 x 34%) = (87,222)

NOI = 169,314

Buyer

GIM = Value / EGI = 682,587 / 256,536 = 2.66044532 x

NIM = Value / NOI = 682,587 / 169,314 = 4.03097204 x

OCR = NOI / Value = 169,314 / 682,587 = 24.8079129%

Seller

GIM = Value / EGI = 750,080 / 256,536 = 2.92356628;

NIM = Value / NOI = 750,080 / 169,314 = 4.42963960;

OCR = NOI / Value = 169,314 / 750,080 = 22.575200%

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Question #7 *see page 3 for details*

You purchased the property for 92% of the asking price. Assume LVR = 81% and annual mortgage payments. The interest rate is 4.85% per annum, compounded monthly; term 25 years. What is the Cash Flow After Taxes (CFAT) for Year 1 and Year 2?.

Use the table below if you find it useful

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1.85%

		Year 1	Year 2
	PGI	305,400	311,050
-	**VCL** 16%	(48,864)	(49,768)
	EGI	256,536	261,282
-	**OE (w/o CCA)** 34%	(87,222)	(88,835)
	NOI	169,314	172,446
-	**CCA**	(9,246)	(18,122)
	EBIT	160,068	154,324
-	**IE**	(27,717)	(27,133)
	EBT	132,351	127,191
-	**Taxes** 40%	(52,940)	(50,876)
	EAT	79,411	76,315
+	**CCA**	9,246	18,122
-	**Principle**	(11,777)	(12,361)
	CFAT	76,880	82,076

Property = 750,000 × 92% = 690,000

Building = 690000 × 67% = 462,300

CCA_1 = 462300 × 2% = 9,246

CCA_2 = (462,300 − 9,246) × 4% = 18,122

$EAR = \left(1 + \frac{4.85\%}{12}\right)^{12} - 1 = 4.959277\%$

Loan = 690000 × 81% = 558,900

$PVA_{(25,\ 4.959277\%)} = \frac{1 - (1+4.959277\%)^{-25}}{4.959277\%}$

$= 14.15164983$

Mpmt = $\frac{558,900}{14.15164983}$ = 39,494

PMT	Interest	Principal	Balance
Y_1 39,494	27,717	11,777	547,123
Y_2 39,494	27,133	12,361	534,762

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Question #8

What is the value of the property using the Net Income Approach, using the following information?.

Rent per square foot	$15.45
Rentable area	5,360 square feet
Vacancy and credit losses	14%
Operating expense (without CCA)	38% of effective gross income
Down payment	35%
Tax rate	40%
Interest rate	6.05% per annum, *compounded semi-annually*
Cost of equity = Effective cost of borrowing + 7.65% risk-premium	

3 **How work below AND use back of PREVIOUS page if you need more space**

➔ ***Answer:*** $500,680

PGI = 82,812

14% VCL = (11,594)

EGI = 71,218

38% O/E (w/o CCA) (27,063)

NOI 44,155

($15.45 × 5,360 = 82,812)

$EAR = \left(1 + \frac{6.05\%}{2}\right)^2 - 1 = 6.141506\%$

$WACC_{BT} = r_d(LVR) + r_e(1-LVR)$

$= (6.141506\% \times 65\%) + \left[(6.141506\% + 7.65\%) \times 35\%\right]$

$= 0.03991979 + 0.04827027$

$= 0.08819006$

Value of this project $= \frac{44,155}{0.08819006} = 500,680$

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Question #9

A property has 21,000 square feet (s.f.) of usable space. Analysis of construction costs indicate the follow: $10.60 per square foot for the first 11,000 square feet of space; $16.75 per square foot for the next 4,000 square feet, and $19 per square foot for the balance. This property is seventy-five years old. The estimated economic life of this property is 250 years. Changing neighborhood (location depreciation) characteristics have had a negative influence on the property of approximately 18% of building costs. An examination of similar lots indicate a land value of $28 per square foot and land area is 35,000 square feet.

What is the estimated value of this property, using the Cost Approach?.

6Show work below AND use back of previous page if you need more space

➔ ***Answer:*** 1,134,752

Value of the building as if new = ($10.60 × 11k) + ($16.75 × 4k) + ($19 × 6k) = 297,600

less (Physical Depreciation / Functional Depreciation) → 75/250 = 30% × 297,600 (89,280)

less Locational Depreciation 18% × 297,600 (53,568)

Book Value 154,752

Add Value of the land as if new = $28 × 35,000 980,000

⇒ Estimate value of this property 1,134,752

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Question #10 *see page 3 for details*

You purchased the property for 72% of the asking price. Assume LVR = 85% and annual mortgage payments. The interest rate is 6.15% per annum, compounded weekly; term 30 years. Assume 52 weeks per annum

How much is **your equity**, if you sold the property for $1,720,000 after 5 years of stay?. Ignore fees and taxes.

➔ ***Answer:*** $ 1,292,033

Complete the table below if you find it useful or *complete Your Equity below*

Down Payment	$	81,000
Capital Gains	$	1,180,000
Principle Portion	$	31,033
Your Equity =	$	1,292,033

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Property = 150,000 ÷ 72% = 540,000

Loan = 540,000 × 85% = 459,000

Down = 540,000 × 15% = 81,000

CC = 1,720,000 − 540,000

$$EAR = \left(1 + \frac{6.15\%}{52}\right)^{52} - 1 = 6.339185\%$$

$$PVA_{(6.339185\%,\,20)} = \frac{1-(1+6.339185\%)^{-30}}{6.339185\%} = 13.27934601$$

PMT = 34,565

$$PVA_{(6.339185\%,\,25)} = \frac{1-(1+6.339185\%)^{-25}}{6.339185\%} = 12.38157155$$

Bal 5 = 34,565 × 12.38157155 = 427,967

Principal = 459,000 − 427,967 = 31,033

Read Instructions to avoid penalty

End of Exam

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