

Joe 3

Midterm FINA 450/1 Section AA ~ SUMMER 2010  
May 25<sup>th</sup>, 2010 ~ 11:30 am to 1:30 pm  
Professor J. Mannadiar

Read Instructions to avoid penalty

Name: [REDACTED]

ID# [REDACTED]

1. Solutions without supporting calculations will not receive part marks, if wrong. Part marks allocated based on complexity of the problems. **IDENTIFY YOUR ANSWER CLEARLY**
2. You should be able to respond to all questions in the Work Area provided, continue on the BACK of PREVIOUS page.
3. This midterm contains 14 pages (including the cover page). Follow thru errors will be penalized, treat each question **INDEPENDENTLY**, unless otherwise stated
4. Calculators (non-programmable) are allowed. Talking, sharing of calculators absolutely not permitted.
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8. Do not round interest rates (keep at least 6 decimals at all times during the calculation process)

**DO NOT REMOVE STAPLE**

**TREAT EACH QUESTION INDEPENDENTLY**

Raphael is concerned over these real estate transaction that he is currently undertaking and have asked YOU for help.

|                               | Property<br>SGW           | Property<br>LOYOLA        |
|-------------------------------|---------------------------|---------------------------|
| Asking Price (AP)             | \$600,000                 | \$500,000                 |
| Raphael's Offer<br>(Accepted) | Sold 96% of AP<br>576,000 | Sold 95% of AP<br>475,000 |
| Financing Plan (FP)           |                           |                           |
| Loan-to-Value Ratio           | 75%                       | 85%                       |
| 1 <sup>st</sup> Mortgage      | 65% of Loan @ 5.40%       | 70% of Loan @ 5.95%       |
| 2 <sup>nd</sup> Mortgage      | Balance @ 5.95%           | Balance @ 6.15%           |
| Compounded                    | Semi-annually             | Semi-annually             |
| Payable                       | Annually                  | Annually                  |
| Processing fees               | 0.85% of Loan             | 1.05% of Loan             |
| Cancel. penalty               | 1.50% of M. Balance       | 1.80% of M. Balance       |
| Term (years)                  | 18                        | 15                        |

Each property has 22,000 square feet of space for rent and the going rate is \$6.80 per square foot for the first 15,000 square feet and at 20% premium per square foot for the remaining area. It is estimated to have a 9% vacancy and credit losses and the operating expenses (excluding depreciation) is approximately 36% of effective gross income.

The building represent 64% of the property value and will be depreciated at a capital cost allowance rate of 4%, declining balance method, half year rule applies. The balance is land.

The tax rate is 40% and 50% of the capital gains is taxed. Inflation is currently at 2.75% per annum.

i = 2.75%

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Question #1. see page 2 for details 10%

Assume CASH ON HAND and stays for the entire term. What is the Effective Cost of Borrowing for Project SGW?

→ Your Answer here: 5.784773%

Work Area (use back of previous page if you need more space)

COH

M1 (0.65)

PV = 280,800

$i_Y = 5.4729\%$

N = 18

CPT PMT = \$24,917

PV = 432,000 (1 - 0.0085) = 428,328

PMT = 24,917 + 14,005 = -38,922

N = 18

CPT  $i_Y = ECB = \underline{5.784773\%}$

Loan = 576,000 <sup>LVR</sup> × 0.75 = 432,000

M2 (0.35)

PV = 151,200

$i_Y = 6.038506\%$

N = 18

PMT = \$14,005

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Question #2. see page 2 for details 10%

Assume NO CASH ON HAND and stays for the entire term. What is the Effective Cost of Borrowing for Project LOYOLA?

→ Your Answer here: 6.263172%

Work Area (use back of previous page if you need more space)

NC04

$$\text{Loan} = 475,000 \times \overset{\text{LVR}}{0.85} = 403,750 + \text{Fee}$$

$$\rightarrow \frac{403,750}{1 - 0.0105} = \underline{408,034} \quad \text{Fee} = 4,284$$

M1(0.7)

$$\text{PV} = 285,624$$

$$i/y = 6.038506$$

$$N = 15$$

$$\text{CPT PMT} = \$29,483$$

$$\text{PV} = 403,750$$

$$\text{PMT} = 29,483 + 12,806 = 42,289$$

$$N = 15$$

$$\text{CPT } i/y = \text{ECB} = \underline{6.263172\%}$$

M2(0.3)

$$\text{PV} = 122,410$$

$$i/y = 6.244556$$

$$N = 15$$

$$\text{PMT} = \$12,806$$

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Question #3. see page 2 for details

10%

Assume NO CASH ON HAND and stays for 8 years. What is the Effective Cost of Borrowing for Project SGW?

→ Your Answer here: 5.942635%

Work Area (use back of previous page if you need more space)

NLOH

$$\text{Loan} = 576,000 \times 0.75 = 432,000 + \text{fee}$$

$$\frac{432,000}{1 - 0.0085} = \$435,703$$

$$= 3,703$$

M1(0.65)

$$PV = 283,207 \quad N = 18$$

$$Y = 5.4729\%$$

$$PMT = \$25,130$$

M2(0.35)

$$PV = 152,496 \quad N = 18$$

$$Y = 6.038506\%$$

$$PMT = \$14,125$$

MBal at  $t = 10$  (years remaining) Change  $N = 10$

$$\overset{M1}{189,667} + \overset{M2}{103,772} = 293,439 + \overset{\text{Cancel Penalty } 1.5\%}{(1.015)} = \$297,841$$

$$PV = 435,703 - 3703 = 432,000$$

$$PMT = 25,130 + 14,125 = 39,255$$

$$FV = -297,841$$

$$N = 8$$

$$CPT Y = ECB = \underline{5.942635\%}$$

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Question #4. see page 2 for details

10%

Assume CASH ON HAND and stays for 6 years. What is the Effective Cost of Borrowing for Project LOYOLA?

→ Your Answer here: 6.543275%

Work Area (use back of previous page if you need more space)

1.05%

Fee = \$4,239

COH Loan  $475,000 \times 0.85 = \$403,750$

M1 (0.7)

PV = 282,625

$i_y = 6.038506$

N = 15

PMT = \$29,173

M2 (0.3)

PV = 121,125

$i_y = 6.244536\%$

N = 15

PMT = \$12,671

MBal at  $t = 9$  (yrs left)

M1

198,094

M2

+ 85,274

change  $N = 9$  + cancel penalty 1.80%

$= \$283,368 \times (1.018) = \$288,469$

$PV = 403,750 - 4239 = 399,511$  ✓

$PMT = 29,173 + 12,671 = -41,844$  ✓

$FV = -288,469$  ✓

N = 6

CPT  $i_y = \text{EIR} = \underline{6.543275\%}$

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Question #5a see page 2 for details 10%

What is the Gross Income Multiplier (GIM), Net Operating Income Multiplier (NIM) and Overall Capitalization Rate (OCR) for the following buyer and seller?

Work Area (use back of previous page if you need more space)

|                  | BUYER<br>for SGW | SELLER<br>for Loyola |
|------------------|------------------|----------------------|
| <b>GIM</b> times | 3.98x ✓          | 3.45x ✓              |
| <b>NIM</b> times | 6.22x ✓          | 5.4x ✓               |
| <b>OCR</b> %     | 16.09% ✓         | 18.53% ✓             |

$$PGI \Rightarrow 15,000 @ \$6.80 = 102,000$$

$$7,000 @ \$6.80(1.2) = 57,120$$

$$159,120$$

q.i. Vacancy & Losses

$$PGI \quad 159,120$$

$$14,321$$

$$EGI \quad 144,799$$

$$OE(36i.) \quad 52,128$$

$$NOI \quad 92,671$$

Buyer SGW Value (576,000)

$$GIM = \frac{576,000}{144,799} = 3.9779$$

$$NIM = \frac{576,000}{92,671} = 6.2155$$

$$OCR = \frac{92,671}{576,000} = 0.160887$$

Seller (560,000) Value

$$\frac{500,000}{144,799} = 3.45306$$

$$\frac{500,000}{92,671} = 5.3954$$

$$\frac{92,671}{560,000} = 0.185342$$

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Question #6 see page 2 for details

10%

Assume NO CASH ON HAND. What is the Cash Flows After Taxes (CFAT) for Year 1 and Year 2, for Property SGW?

G5

→ Indicate ANSWERS below

Inflation = 2.7

Use this table if you find it useful

|                                  | Year 1    | Year 2    |
|----------------------------------|-----------|-----------|
| <b>NOI</b>                       | \$ 92,671 | \$ 95,219 |
| <b>Depreciation</b> -            | 7,373     | 14,451    |
| <b>EBIT</b>                      | 85,299    | 80,768    |
| <b>Interest</b> -                | 24,708    | 23,885    |
| <b>EBT</b>                       | 60,590    | 56,883    |
| <b>Taxes</b> 40% -               | 24,236    | 22,753    |
| <b>EAT</b>                       | 36,354    | 34,130    |
| <b>CCA</b> +                     | 7,373     | 14,451    |
| <b>Principle</b> -               | 14,547    | 15,370    |
| <b>CFAT</b> → <b>Answer here</b> | \$29,180  | \$33,211  |

Work Area (use back of previous page if you need more space)

NCOH

Dep(work) ⇒ Building Value = 576,000 × 0.64 = \$368,640

| Yr | BVCC    | CCA*   | EVCC    |
|----|---------|--------|---------|
| 1  | 368,640 | 7,373  | 361,267 |
| 2  | 361,267 | 14,451 | 346,816 |

\* Interest & Principle ⇒ Referred to 1<sup>st</sup> Part of Q3

| M1       | Yr | PMT    | Interest | Principle | M Balance |
|----------|----|--------|----------|-----------|-----------|
| 5.4729%  | 0  |        |          |           | 283,207   |
|          | 1  | 25,130 | 15,500   | 9,630     | 273,577   |
|          | 2  | 25,130 | 14,973   | 10,157    | 263,420   |
| M2       | 0  |        |          |           | 152,496   |
| 6.03850% | 1  | 14,125 | 9,208    | 4,917     | 147,579   |
|          | 2  | 14,125 | 8,912    | 5,213     | 142,366   |



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Question #7. 10%

Assume NO CASH ON HAND. Sacha purchased a property for \$750,000 and HSBC Bank financed it under the following terms: Processing fees is 2.50% of loan, cancellation penalty is 1.40% of mortgage balance, if mortgage is cancelled on or before the 5<sup>th</sup> year.

- Down payment or deposit 25 percent 757,000
- Term 25 years
- Payment mode Annually
- Interest Rate Variable, as follows
  - Year 1- 2 5.80% p.a. compounded semi-annually 5.8841%
  - Year 3 6.25% p.a. compounded semi-annually 6.347036%
  - Year 4 and thereafter 6.50% p.a. compounded semi-annually 6.605625%

Use the table if you find it useful

| Year | Installment | Interest | Principle | Loan Balance |
|------|-------------|----------|-----------|--------------|
| 0    | —           | —        | —         | 576,923      |
| 1    | 44,635      | 33,947   | 10,688    | 566,235      |
| 2    | 44,635      | 33,318   | 11,317    | 554,918      |
| 3    | 46,519      | 35,024   | 11,295    | 543,623      |
| 4    | 47,551      | 35,910   | 11,641    | 531,982      |
| 5    | 47,551      | 35,141   | 12,410    | 519,572      |
| 6    | 47,551      | 34,321   | 13,230    | 506,342      |
| 7    | 47,551      | 33,447   | 14,104    | 492,238      |
| 8    | 47,551      | 32,515   | 15,036    | 477,202      |
| 9    | 47,551      | 31,522   | 16,029    | 461,173      |
| 10   | 47,551      | 30,463   | 17,088    | 444,088      |

Sacha plans to stay for ten years. How much does he owe the bank if he sells?

→ Your Answer here: 444,088

Work Area (use back of previous page if you need more space)

$$\text{Loan} = (750,000 \times 0.75) + 0.025 \times 576,923 = 576,923$$

$$47,551 (PVA_{15}, 6.605625\%) = 444,088$$

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## Question #8a 5%

You are given an assignment to appraise this property. The property has 45,000 square feet (s.f.) of usable space. Analysis of construction costs indicate a per square-foot cost of \$35.00 for the first 25,000 square feet of space; \$32.50 per square foot for the next 30,000 square feet, and \$30 per square foot thereafter. The property is 27 twenty-seven years old with an estimated economic life of ninety years. Changing neighborhood (location depreciation) characteristics have had a negative influence on the property of approximately 12% of building (construction) costs. An examination of similar lots indicate a land value of \$14 per square foot and this property is on 70,000 square feet of land.

What is the estimated market value of this property based on the Cost Approach?

→ Your Answer here: \$1,864,500

Work Area (use back of previous page if you need more space)

$$35 \times 25,000 = 875,000$$

$$32.5 \times 20,000 \text{ Left} = 650,000$$

$$\text{Cost of New} = 1,525,000$$

$$\text{Less Dep. } 27/90 (1,525,000) = (457,500)$$

$$\text{Location Dep } (-12\%) (1,525,000) \quad (183,000)$$

$$1,884,500$$

$$980,000$$

$$\underline{\underline{\$1,864,500}}$$

Value of  
+ Vacant Land 14(70,000)

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## Question #8b 5%

You obtained a mortgage 4 years ago for \$800,000 at 9.25% per annum compounded semi-annually, amortized over 20 years. Mortgage rates has dropped so that a 16-year loan can be obtained at 8.55% per annum, compounded semi-annually. Cancellation penalty is 1.30% of mortgage outstanding balance. There is a 2.50% processing fees on the new loan. Assume NO CASH ON HAND and you plan to switch. How much is the new loan?

→ Your Answer here: \$760,178

Work Area (use back of previous page if you need more space)

4 yrs ago \$800,000 @ 9.25 pa csa N=20

PV = 800,000 N = 20 Y = 9.463966 PMT = \$90,553

MBal at t = 16 (years remaining) N = 16

⇒ 731,662 × 1.013 = \$741,174 owe Bank

Cancel Fee = \$9,512 (1.30%)

New Loan NCOH

$$\frac{741,174}{1 - 0.025} = \underline{\underline{\$760,178}}$$

PFee = 19,004

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## Question #9 10%

A property has 12,000 square feet of rentable space at \$15.50 per square foot. You expect a vacancy and credit loss of 14% and operating expense (without CCA) amounts to \$50,000. Financing for this property is as follows: Loan-to-Value Ratio equals 72% of property value. Down payment equals \$280,000. Interest rate is 8.95% per annum compounded semi-annually; payable annually; processing fees is 1.90% of loan and the term of loan is 25 years. The opportunity costs of your down payment (equity) is 5.75% above the effective cost of borrowing (ECB) of the loan. Tax rate is 40%. Assume CASH ON HAND.

What is the estimated market value of the property based on the Net Income Approach?

→ Your Answer here: \$999,597

~~NOI~~  
WACC<sub>BT</sub>

Work Area (use back of previous page if you need more space)

|                      |                |
|----------------------|----------------|
| PGI 12,000 @ 15.5 =  | 186,000        |
| Vacancy & Losses 14% | 26,040         |
| EGI                  | 159,960        |
| OE                   | 50,000         |
| NOI                  | <u>109,960</u> |

$$\frac{109,960}{0.1100435} = \underline{\underline{\$999,597}}$$

Calc. ECB

$$(1 - 0.72) \times 280,000 = 84,000$$

$$\text{Value} = 1,000,000 \times 0.72 = 720,000$$

$$\text{COH PV} = 720,000 \quad Y = 9.150256$$

$$N = 25 \quad \text{PMT} = \$74,195$$

$$\text{PV} = 720,000 \quad (1 - 0.019) = \$706,320$$

$$\text{PMT} = -74,195$$

$$N = 25$$

$$\text{CPT } Y = \text{ECB} = 9.390435\%$$

$$\text{WACC}_{\text{BT}} = 9.390435 (0.72) + (9.390435 + 5.75) (0.28)$$

$$\Rightarrow 6.761113 + 4.239322$$

$$\Rightarrow 11.000435\%$$

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## Question #10 10%

On May 25<sup>th</sup>, 2010 a potential buyer offered you \$800,000 for your property and you are evaluating the offer with the following information.

- Housing prices increasing at 3.25% per annum
- \$90 per square foot
- \$28,000 per year reduction for age
- Two-car garage valued at \$65,000 compared to \$28,000 for a one-car garage
- Corner property warrants a 12 percent premium
- Swimming pool worth approximately \$44,000 considered a good selling point in your neighborhood

|                    | Comparable                       | Your Property |
|--------------------|----------------------------------|---------------|
| Selling Price      | \$635,000                        | See above ??  |
| Time sold          | November 25 <sup>th</sup> , 2009 | See above     |
| Location           | middle                           | corner        |
| Financing          | Conventional                     | Conventional  |
| Size (square feet) | 6,800                            | 6,300         |
| Age (years)        | 8                                | 5             |
| Garage             | 1-car garage                     | 2-car garage  |
| Swimming pool      | No                               | Yes           |

6 Mths

Should you accept the offer?.

Circle

YES or

NO

What is the value of the subject property?.

Comparable \$635,000  
 Adj. 10,319  
 Time 76,200  
 Location + (45,000)  
 Size - 84,000  
 Age + 37,000  
 Garage + 44,000  
 Pool Yes +

→ 841,519

6/12 (3.25%) (635,000)

→ Your Answer here:

\$841,519

Name: [REDACTED] ID: [REDACTED]

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|                               | Property<br>SGW      | Property<br>LOYOLA   |
|-------------------------------|----------------------|----------------------|
| Asking Price (AP)             | \$500,000            | \$600,000            |
| Raphael's Offer<br>(Accepted) | 96% of AP<br>480,000 | 95% of AP<br>570,000 |
| Financing Plan (FP)           |                      |                      |
| Loan-to-Value Ratio           | 75%                  | 85%                  |
| 1 <sup>st</sup> Mortgage      | 65% of Loan @ 5.40%  | 70% of Loan @ 5.95%  |
| 2 <sup>nd</sup> Mortgage      | Balance @ 5.95%      | Balance @ 6.15%      |
| Compounded                    | Semi-annually        | Semi- annually       |
| Payable                       | Annually             | Annually             |
| Processing fees               | 0.85% of Loan        | 1.05% of Loan        |
| Cancel. penalty               | 1.50% of M. Balance  | 1.80% of M. Balance  |
| Term (years)                  | 18                   | 15                   |

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The building represent 64% of the property value and will be depreciated at a capital cost allowance rate of 4%, declining balance method, half year rule applies. The balance is land.

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→ Your Answer here: 5.784773%

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COH + SGW

Selling → 480,000

M1: 234,000

Loan → 360,000

M2: 126,000

PF → 3060

PMT?

PV = 234,000

PV = 126,000

FV = 0

FV = 0

N = 18

N = 18

IY = 5.4729

IY = 6.038506

→ PMT = 20,764

→ PMT = 11,671

PMT = 32,435

ECB?

PV = 360,000 - 3060 = 356,940

FV = 0

PMT = 32,435

N = 18

→ IY = 5.784773



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→ Your Answer here: 6.262929%

Work Area (use back of previous page if you need more space)

LOYOLA + NO COH

Selling → 570,000

Loan → 484,500

$$\frac{484,500}{1 - 1.05\%} = 489,641$$

PF → 5141

M1: 342,749

M2: 146,892

PMT?

PV = 342,749

FV = 0

N = 15

IY = 6.038506

→ PMT = 35,379

PV = 146,892

FV = 0

N = 15

IY = 6.244556

→ PMT = 15,367

PMT = 50,746

ECB?

PV = 489,641 - 5141 = 484,500

FV = 0

PMT = 50,746

N = 15

→ IY = 6.262929

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Question #3. see page 2 for details 10%

Assume NO CASH ON HAND and stays for 8 years. What is the Effective Cost of Borrowing for Project SGW?

→ Your Answer here: 5.942860%

Work Area (use back of previous page if you need more space)

No COH + SGW

Selling → 480,000

Loan → 360,000

M1: 236,006

M2: 127,080

$$\frac{360,000}{1 - .85\%} = \boxed{363,086}$$

PF → 3086

PMT?

PV = 236,006

FV = 0

N = 18

IY = 5.4729

→ PMT = 20,942

PV = 127,080

FV = 0

N = 18

IY = 6.038506

→ PMT = 11,771

PMT = 32,713

PV @ time 8

FV = 0

N = 10

IY = 5.4729

PMT = 20,942

→ PV = 158,058

FV = 0

N = 10

IY = 6.038506

PMT = 11,771

→ PV = 86,477

FV = 158,058 + 86,477 + Penalty

= 244,535 + 3668

= 248,203

Penalty = 244,535 (1.5%)

= 3668

ECB?

$$PV = 363,086 - 3086 = 360,000$$

$$FV = -248,203$$

$$PMT = -32,713$$

$$N = 8$$

$$\rightarrow IY = 5.942860$$

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Question #4. see page 2 for details 10%

Assume CASH ON HAND and stays for 6 years. What is the Effective Cost of Borrowing for Project LOYOLA?

→ Your Answer here: 6.54 38 30 %

Work Area (use back of previous page if you need more space)

COH + LOYOLA

Selling → 570,000

Loan → 484,500

PF → 5087

M1: 339,150

M2: 145,350

PMT?

PV = 339,150

FV = 0

N = 15

IY = 6.038506

→ PMT = 35,008

PV = 145,350

FV = 0

N = 15

IY = 6.244556

→ PMT = 15,206

PMT = 50,214

PV @ time 6

FV = 0

N = 9

IY = 6.038506

PMT = 35,008

→ PV = 237,715

FV = 0

N = 9

IY = 6.244556

PMT = 15,206

→ PV = 102,335

FV = 237,715 + 102,335 + Penalty

= 340,050 + 6121

= 346,171

Penalty = 340,050 (1.8%)

= 6121

ECB?

PV = 484,500 - 5087 = 479,413

FV = -346,171

PMT = -50,214

N = 6

→ IY = 6.543830

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Question #5~~4~~ see page 2 for details

5%

What is the Gross Income Multiplier (GIM), Net Operating Income Multiplier (NIM) and Overall Capitalization Rate (OCR) for the following buyer and seller?

Work Area (use back of previous page if you need more space)

|                  | BUYER<br>for SGW | SELLER<br>for Loyola |
|------------------|------------------|----------------------|
| <b>GIM</b> times | 3.32 x           | 4.14 x               |
| <b>NIM</b> times | 5.18 x           | 6.47 x               |
| <b>OCR</b> %     | 19.31 %          | 15.46 %              |

|         |         |
|---------|---------|
| PGI     | 159,120 |
| - VCL   | 14,321  |
| EGI     | 144,799 |
| - OP EX | 52,128  |
| NOI     | 92,671  |

|                         |
|-------------------------|
| PGI = 22,000            |
| (6.80) 15,000 = 102,000 |
| (8.16) 7,000 = 57,120   |
| 159,120                 |
| VCL = 159,120 (9%)      |
| = 14,321                |
| OP EX = 144,799 (36%)   |
| = 52,128                |

BUYER SGW

SELLER LOYOLA

$$GIM = \frac{\text{Selling}}{EGI} = \frac{480,000}{144,799} = 3.32 \times$$

$$GIM = \frac{\text{Asking}}{EGI} = \frac{600,000}{144,799} = 4.14 \times$$

$$NIM = \frac{\text{Selling}}{NOI} = \frac{480,000}{92,671} = 5.18 \times$$

$$NIM = \frac{\text{Asking}}{NOI} = \frac{600,000}{92,671} = 6.47 \times$$

$$OCR = \frac{1}{NIM} = \frac{1}{5.18} = 19.31\%$$

$$OCR = \frac{1}{NIM} = \frac{1}{6.47} = 15.46\%$$

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**Question #6 see page 2 for details 10%**

Assume NO CASH ON HAND. What is the Cash Flows After Taxes (CFAT) for Year 1 and Year 2, for Property SGW?.

**→ Indicate ANSWERS below**

*Use this table if you find it useful*

|                           | <b>Year 1</b>        | <b>Year 2</b>        |
|---------------------------|----------------------|----------------------|
| <b>NOI</b>                | 92,671               | 95,219               |
| <b>Depreciation</b> —     | 6,144                | 12,042               |
| <b>EBIT</b>               | 86,527               | 83,177               |
| <b>Interest</b> —         | 20,590               | 19,903               |
| <b>EBT</b>                | 65,937               | 63,274               |
| <b>Taxes (40%)</b>        | 26,375               | 25,310               |
| <b>EAT</b>                | 39,562               | 37,964               |
| <b>CCA</b> +              | 6,144                | 12,042               |
| <b>Principle</b> —        | 12,123               | 12,810               |
| <b>CFAT → Answer here</b> | <del>\$ 33,583</del> | <del>\$ 37,196</del> |

**Work Area (use back of previous page if you need more space)**

$$\text{Building} = 480,000 (64\%)$$

$$= 307,200$$

$$\text{Loan} \rightarrow \frac{360,000}{1 - 0.85\%} = \boxed{363,086}$$

|     |             |            |             |
|-----|-------------|------------|-------------|
|     | <b>BUCC</b> | <b>CCA</b> | <b>EUCC</b> |
| Yr1 | 307,200     | 6144       | 301,056     |
| Yr2 | 301,056     | 12,042     | 289,014     |

$$M1: 236,006$$

$$M2: 127,080$$

$$M1: 5.4729\%$$

$$M2: 6.038506\%$$

| <u>YR</u> | <u>Install</u> | <u>Int</u> | <u>Prin</u> | <u>OB</u> |
|-----------|----------------|------------|-------------|-----------|
| 0         |                |            |             | 236,006   |
| 1         | 20,942         | 12,916     | 8026        | 227,980   |
| 2         | 20,942         | 12,477     | 8465        | 219,515   |

| <u>YR</u> | <u>Install</u> | <u>Int</u> | <u>Prin</u> | <u>OB</u> |
|-----------|----------------|------------|-------------|-----------|
| 0         |                |            |             | 127,080   |
| 1         | 11,771         | 7674       | 4097        | 122,983   |
| 2         | 11,771         | 7426       | 4345        | 118,638   |

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Question #7. 10%

Assume NO CASH ON HAND. Sacha purchased a property for \$700,000 and HSBC Bank financed it under the following terms: Processing fees is 1.40% of loan, cancellation penalty is 2.50% of mortgage balance, if mortgage is cancelled on or before the 5<sup>th</sup> year.

- Down payment or deposit      25 percent → 175,000
- Term      25 years
- Payment mode      Annually
- Interest Rate      Variable, as follows
  - Year 1- 2      5.80% p.a. compounded semi-annually 5.8841
  - Year 3      6.25% p.a. compounded semi-annually 6.347656
  - Year 4 and thereafter      6.50% p.a. compounded semi-annually 6.605625

Use the table if you find it useful

| Year | Installment | Interest | Principle | Loan Balance |
|------|-------------|----------|-----------|--------------|
| 0    |             |          |           | 532,454      |
| 1    | 41,195      | 31,330   | 9865      | 522,589      |
| 2    | 41,195      | 30,750   | 10,445    | 512,144      |
| 3    | 42,934      | 32,509   | 10,425    | 501,719      |
| 4    | 43,885      | 33,142   | 10,743    | 490,976      |
| 5    | 43,885      | 32,432   | 11,453    | 479,523      |
| 6    | 43,885      | 31,675   | 12,210    | 467,313      |
| 7    | 43,885      | 30,869   | 13,016    | 454,297      |
| 8    | 43,885      | 30,009   | 13,876    | 440,421      |
| 9    | 43,885      | 29,093   | 14,792    | 425,629      |
| 10   | 43,885      | 28,115   | 15,770    | 409,859?     |

Sacha plans to stay for ten years. How much does he owe the bank if he sells? → **Your Answer here:** \$409,859

Work Area (use back of previous page if you need more space)

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## Question #8a 5%

You are given an assignment to appraise this property. The property has 45,000 square feet (s.f.) of usable space. Analysis of construction costs indicate a per square-foot cost of \$32.50 for the first 25,000 square feet of space; \$35 per square foot for the next 30,000 square feet, and \$40 per square foot thereafter. The property is twenty-seven years old with an estimated economic life of ninety years. Changing neighborhood (location depreciation) characteristics have had a negative influence on the property of approximately 12% of building (construction) costs. An examination of similar lots indicate a land value of \$15 per square foot and this property is on 70,000 square feet of land.

What is the estimated market value of this property based on the Cost Approach?

→ Your Answer here: \$1,927,250

Work Area (use back of previous page if you need more space)

|                       |           |
|-----------------------|-----------|
| Value Building (new)  | 1,512,500 |
| - Depreciation        | 635,250   |
| Book Value            | 877,250   |
| + Value Land (unused) | 1,050,000 |
| Market Value          | 1,927,250 |

Building: 45,000 sq ft

$$\begin{aligned} 25,000(32.50) &= 812,500 \\ 20,000(35) &= 700,000 \\ \hline &1,512,500 \end{aligned}$$

Depreciation:

$$\frac{27}{90} \times 1,512,500 = 453,750$$

$$12\% \times 1,512,500 = 181,500$$

$$453,750 + 181,500 = 635,250$$

Land:

$$\begin{aligned} (15) 70,000 &= \\ \hline &1,050,000 \end{aligned}$$

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Question #8b 5%

You obtained a mortgage 4 years ago for \$800,000 at 9.50% per annum compounded semi-annually, amortized over 20 years. Mortgage rates has dropped so that a 16-year loan can be obtained at 8.55% per annum, compounded semi-annually. Cancellation penalty is 2.50% of mortgage outstanding balance. There is a 1.30% processing fees on the new loan. Assume No CASH ON HAND and you plan to switch. How much is the new loan?.

→ Your Answer here: \$761,633

Work Area (use back of previous page if you need more space)

Loan → 800,000

EAR → 9.725625%

PMT?

PV = 800,000

N = 20

IV = 9.725625

FV = 0

→ PMT = 92,214

PV @ time 4

FV = 0

N = 16

IV = 9.725625

PMT = 92,214

→ PV = 733,397

WHAT YOU OWE:

$$X = 733,397 + \text{CANCEL PENALTY}^* + PF$$

$$X = 733,397 + 18,335 + 0.013 X$$

$$0.987 X = 751,732$$

$$X = 761,633$$

\*Cancellation Penalty:

$$733,397 (2.50\%) = 18,335$$



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## Question #9 10%

A property has 12,000 square feet of rentable space at \$16 per square foot. You expect a vacancy and credit loss of 15% and operating expense (without CCA) amounts to \$50,000. Financing for this property is as follows: Loan-to-Value Ratio equals 72% of property value. Down payment equals \$280,000. Interest rate is 8.75% per annum compounded semi-annually; payable annually; processing fees is 1.80% of loan and the term of loan is 25 years. The opportunity costs of your down payment (equity) is 5.80% above the effective cost of borrowing (ECB) of the loan. Tax rate is 40%. Assume CASH ON HAND.

What is the estimated market value of the property based on the Net Income Approach? **→ Your Answer here:** \$1,049,095

**Work Area (use back of previous page if you need more space)**

|         |         |
|---------|---------|
| PGI     | 192,000 |
| - VCL   | 28,800  |
| EGI     | 163,200 |
| - OP.EX | 50,000  |
| NOI     | 113,200 |

$$\text{Value} = \frac{\text{NOI}}{\text{WACC}_{\text{b4tax}}}$$

$$= \frac{113,200}{10.790255\%} = 1,049,095$$

DP: 280,000 28% EAR: 8.941406%  
LOAN: 720,000 72% PF: 12,960

MT?

PV = 720,000  
FV = 0  
IY = 8.941406%  
N = 25  
→ PMT = 72,953

ECB?

PV = 720,000 - 12,960 = 707,040  
FV = 0  
PMT = 72,953  
N = 25

→ IY = 9.166255 = rd

re = rd + prem.  
= 9.166255 + 5.80  
= 14.966255

$$\begin{aligned} \text{WACC}_{\text{b4tax}} &= \text{rd}(\text{LVR}) + \text{re}(1 - \text{LVR}) \\ &= 9.166255(72\%) + 14.966255(28\%) \\ &= 6.599704 + 4.190551 \end{aligned}$$

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## Question #10 10%

On May 25<sup>th</sup>, 2010 a potential buyer offered you \$800,000 for your property and you are evaluating the offer with the following information.

- Housing prices increasing at 3.85% per annum
- \$75 per square foot
- \$25,000 per year reduction for age
- Two-car garage valued at \$60,000 compared to \$25,000 for a one-car garage
- Corner property warrants a 10 percent premium
- Swimming pool worth approximately \$40,000 considered a good selling point in your neighborhood

|                    | Comparable                       | Your Property |
|--------------------|----------------------------------|---------------|
| Selling Price      | \$625,000                        | See above ??  |
| Time sold          | November 25 <sup>th</sup> , 2009 | See above     |
| Location           | middle                           | corner        |
| Financing          | Conventional                     | Conventional  |
| Size (square feet) | 6,800                            | 6,200         |
| Age (years)        | 8                                | 4             |
| Garage             | 1-car garage                     | 2-car garage  |
| Swimming pool      | No                               | Yes           |

Should you accept the offer?

Circle

YES or

**NO**

What is the value of the subject property?

Selling 625,000  
 + Inflation 12,031  
 + Location 62,500  
 - Size 45,000  
 + Age 100,000  
 + Garage 35,000  
 + Pool 40,000  
829,531

→ Your Answer here: 829,531

$$\text{inflation: } \frac{6}{12} (3.85\%) 625,000 = 12,031$$

$$\text{location: } 625,000 (10\%) = 62,500$$

$$\text{size: } 600 (75) = 45,000$$

$$\text{age: } 4 (25,000) = 100,000$$

$$\text{garage: } 60,000 - 25,000 = 35,000$$

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***END OF MIDTERM EXAM***