**FN1140**

**Final Exam Comprehensive Preview & Review**

**Complete with Sample exam**

**The exam is scheduled for December 14**

**The Final Exam is valued at 50% of your course mark. Whichever is greater of your Final exam mark or your course mark will be your final grade.**

**The Final Exam is comprehensive and will cover the following topics:**

|  |  |
| --- | --- |
| **Trade Discounts**  **Markup/Markdown Calculation** | **Chapter 6**  **Suggested Review Questions**  **First two questions in Exercise 6.1 , 6.2, 6.3 & 6.4** |
| **Breakeven / Contribution Margin** | **Chapter 5**  **Suggested Review Questions**  **First two questions in Exercise 5.1, 5.2 & 5.3** |
| **Simple Interest Calculation**  **Time Value of Money – PV and FV** | **Chapter 7 & 8**  **Suggested Review Questions**  **First two questions in Exercise 7.1, 7.2, 7.3, 7.4, 7.5**  **First two questions in Exercise 8.1, 8.2, 8.3** |
| **Compound Interest Calculations**  **Time Value of Money – PV and FV** | **Chapter 9**  **Suggested Review Questions**  **First two questions in Exercise 9.1, 9.2, 9.3, 9.4** |
| **Annuities**  **Annuities Due**  **Perpetuities** | **Chapters 11, 12, 13**  **Suggested Review Questions**  **First two questions in Exercise 11.1, 11.2,11.3**  **First two questions in Exercise 12.1, 12.2**  **First two questions in Exercise 13.1, 13.2, 13.5** |
| **Repayment Schedules** | **Chapter 14**  **Suggested Review Questions**  **First two questions in Exercise 14.1, 14.2** |

**The Final exam will contain two parts:**

* **Part A - Fill-In the blanks/choice at 40%**
* **Part B - Choice of 6 of 7 questions at 60%**

**You can use your calculator, excel spreadsheet and bring in a 8.5\*11 sheet of paper with anything you want on it (both sides)**

**Chapter 6 - Trade Discounts**

**Chapter 6 Overview**

As part of any marketing effort, stores often offer items with “discounted” prices. This encourages sales and can improve sales as well as profitability.

Sellers often start with a “List Price”. From there discounts can be applied to bring the price down to an actual “Selling Price”. In this unit we look at how the calculations are made.

Sellers may also extend payment terms to a buyer – in this unit we will look at calculating terms and cash discounts.

Finally, we look at calculating Markup (the amount of money that is charged over the dealer cost) and calculating Markdown (a reduction in the ticketed price)

**Markdown Calculation**

We know a MARKDOWN as a “Sale”, the sale effectively reduces the original List (tagged) price and reduces it to some degree so that you can buy the item for less than it was originally price marked.

**The amount of the Discount = List price x Discount rate**

**The Net price = List Price – Amount of Discount**

Eg: A purse is tagged at $100, it is 20% off (The Discount Amount) – this means that there is a $20 discount ($100\*.20) and the sale price of the purse is the “Net” price of $80 ($100-$20)

**Multiple Discounts**

On ocassion, there may be more than one discount – or multiple discounts. The summ of all the discounts is known as the Net price factor discount series.

**Net price factor discount series = Original list Price(1-d1)(1-d2)…**

Eg: A purse is tagged at $100, it is 20% off with a further 20% off that (The Discount Amount) – the total discount can be calculated by summing the (1-discount rate)

$100\*(1-.20)(1-.20) = $64

**Payment Terms**

Most commerecial deals are made on credit – you don’t get paid immediately. As a result, commercial sales are usually made with some stated term of payment. In order to encourage early payment, sellers ofter give an incentive to pay early by offering a small discount. They also need to specify how long the buyer has to pay without being charged interest on the debt.

These discounts/payment periods are noted in this type of format Disccount Rate/Days to pay to get the discount and Interest free Term (eg 2/10 net 30 means there is a 2% discount if paid within 10 days and payment is interest free up to 30 days after the sale)

**Markup**

Markup is the difference between what the seller buys the product for and what the seller sells it for. Markup can be expressed in dollar amounts or percentages.

The Selling Price of a product is the sum of three important parts:

1. The Cost of buying the product for resale – eg $80
2. The expenses associated with selling that product – eg $10 overhead cost
3. The amount of profit that the seller wants to make on the product – eg $10 desired profit
4. 1 2 and 3 = The Seling price of $100

**In Chapter 6, here are the suggested Review Questions**

**First two questions in Exercise 6.1 , 6.2, 6.3 & 6.4**

**Chapter 5 – CVP and Breakeven**

Managers must determine product quantity, total revenue and total costs in order to maintain profitability. In this chapter we we will learn how to methamatically address these basic concerns. To do that we have to undersatand the relationship between Costs, Volume and Profit. With a good knowlegde of this relationahip we can begin to apply these concepts to management decision making

**Profit = Total Revenue – Total Cost** – Profit is the money that is left over after all bills are paid.

**Total Cost= Total Fixed Cost + Total Variable Cost** - Costs can be direct costs that are tied directly to production – these are called Variable costs. Other costs are not directly tied to production. These costs occur regardles of the level of production. We say these type of costs are Fixed. Fixed Cost remain unchanged over a relevant time and operating range

**Total Revenue = Selling Price \* Sales Volume**

**Total Variable Cost = (Unit Variable Cost \* Volume)**

**Total Revenue = Total Fixed Costs + Total Variable Costs + Profit**

**Breakeven**

The purpose of breakeven is to identify the sales volume (in units) necessary to cover all of the fixed costs. At Breakeven TOTAL REVENUE = TOTAL COSTS and profit is 0. Below breakeven sale, a firm will loose money (not cover costs), Above breakeven the firm will make a Profit.

Every unit that is sold should at least cover its cost of production (the Variable cost) and anything it brings in above that contributes towards paying off the fixed costs associated with the production. If enough units are sold, there will be enough money to pay the fixed costs**.**

Break Even Volume (in units) = Fixed Costs / Contribution margin per unit

Break Even Sales (in dollars) = Fixed Costs / Contribution Rate

**Chapter 5**

**Suggested Review Questions**

**First two questions in Exercise 5.1, 5.2 & 5.3**

**Chapter 7 & 8 Simple Interest**

Interest is the price paid for borrowed money (a form of rent). The actual amount of interest accumulated on a sum of borrowed money depends on three factors:

* Factor 1 – the amount of money borrowed ($)
* Factor 2 – the rate of interest (%)
* Factor 3 – the time period (years)

**Interest = Principal \* Rate \* Time (I=PRT)**

I

P R T

Because of the time value of money and interest, money’s value changes over time.

**Future Value = Principal + Interest**

We can calculate the value of money after a given pount in time (Future Value)

**FV= PV(1+rt)**

Or

We can calculate the value of money before a given amount and given point in time (Present Value)

**PV= FV/(1+rt)**

**Chapter 7 & 8**

**Suggested Review Questions**

**First two questions in Exercise 7.1, 7.2, 7.3, 7.4, 7.5**

**First two questions in Exercise 8.1, 8.2, 8.3**

**Chapter 9 Compound Interest**

Compound Interest is the most common type of interest. Here the the actual amount of interest accumulated adds to the total amount borrowed – so interest is effectivly charged on interest.

**Finding the FUTURE (Maturity) VALUE of an investment**

**(How much will something be worth in…?)**

Compound interest is interest that is added (compounded) on interest over time

|  |  |  |  |
| --- | --- | --- | --- |
| **Year** | **Year 0 - Deposit** | **10% interest rate applied yearly**  **Year 1** | **10% interest rate**  **Applied yearly**  **Year 2** |
| **Calculation** | $100 | Principal - $100  Interest – ($100\*10%) | Balance $110  Interest – ($110\*10%) |
| **Balance** | Balance $100 | Balance $110 | Balance $121 |

In order to calculate compond interest, we can use the following formula:

**FV = PV (1+i)n**

* FV = Future value of an amount of money
* PV = Present value of an amount of money
* I = interest rate
* n= number of compounding periods

We can calculate the future value in year 2 of the initial deposit of $100 at 10% annual interest by simply plugging into the equasion:

**FV(in two years) of $100 = $100 (1+.10)2 = $121**

**But what about when we have other than yearly interest?**

Although the concept of calculating compound interest is straightforward, we need to be aware that sometimes interest is applied in a semi-annual, annual, daily etc. way. In these cases we need to calculate the value of “I” – called the Periodic Value of Interest and also calculate the value of “n” – called the number of compounding periods so that we can apply them in the formula.

1. **Periodic Rate of interest( I ) = Nominal Rate of interest/Compounds per year**
2. **Number of Compounding Periods(n) = Number of years in term \* Number of compounding periods in a year**

|  |  |  |
| --- | --- | --- |
| **Refer to** | **Examples 9.2 A, B & C pp319-321** |  |
| **Practice** | **Review Exercises 9.1 p319** | **# 1, 2, 3, 4** |
|  | **Review Exercises 9.2 p330-331** | **# 1 – 8** |

**Finding the PRESENT VALUE of an investment**

**(How much would you have to invest to accumulate $X in Y time…?)**

Sometimes it is necessary to determine how much you need to put aside now in order to have a desired amount of money in the future.

**PV = FV / (1+i)n**

* PV (the amount you’d need today)
* Future Value (the amount you want in the future)
* I = interest rate
* n= number of compounding periods

**But what about when we have other than yearly interest?**

Although the concept of calculating compound interest is straightforward, we need to be aware that sometimes interest is applied in a semi-annual, annual, daily etc. way. In these cases we need to calculate the value of “I” – called the Periodic Value of Interest and also calculate the value of “n” – called the number of compounding periods so that we can apply them in the formula.

1. **Periodic Rate of interest( I ) = Nominal Rate of interest/Compounds per year**
2. **Number of Compounding Periods(n) = Number of years in term \* Number of compounding periods in a year**

**Promissary Notes**

**Calculating the value of Promissary notes are an application of PV and FV concepts**

|  |  |  |
| --- | --- | --- |
| **Refer to** | **Examples 9.3 A, B & C pp331-334** |  |
| **Practice** | **Review Exercises 9.3 p336** | **# 1, 2, 3, 4** |
| **Practice** | **Review Exercises 9.4 p340+341** | **# 1 – 8** |
|  |  |  |
|  |  |  |

**Chapters 11, 12 & 13 – Annuities**

***Although the name may not be familiar we deal with annuities every day in the world of finance. If you have ever had a loan that you paid off over time, you have dealt with an annuity***

Simply put, Annuities are a series of EQUAL payments that are made at periodic intervals over time.

All annuities have these essential ingredients – in our examples, you will have information about all of these except for one – which you will learn how to find:

* **Future Value (FV) of a series of payments**
* **Present Value (PV) of a series of payments**
* **A Payment Amount (PMT)**
* **An Annual Rate of Interest**
* **A Conversion Period (the number of compounds per year)**
* **A Payment Period**
* **A Payment Interval (time between payments)**
* **An indication of the payment being made at either the END OF the payment period or BEGINNING OF the payment period**

There are several types of annuity calculations used – and the type used depends on the type of annuity.

|  |  |  |
| --- | --- | --- |
| **Type of Annuity** | **Use when** | **Formula** |
| **Chapter 11**  Ordinary Simple Annuity | Conversion Period and Payment Period are the same interval. Payment made at END of payment Period | FVn = PMT ( (1+i)n – 1) / i )  PVn = PMT ( (1-(1+i)-n) / i ) |
| **Chapter 12**  Ordinary General Annuity | Conversion Period and Payment Period are **not** the same interval. Payment made at END of payment Period | FVG = PMT ((1+P)n – 1)/P) where P=(1+i)C - 1  PVG = PMT ((1-(1+P)-n)/P) where P=(1+i)C – 1  where  C = (# compounds/yr) / (# pmt prd/yr) |

|  |  |  |
| --- | --- | --- |
| **Chapter 13**  Ordinary Simple Annuity Due | Conversion Period and Payment Period are the same interval – Payment made at BEGINNING of payment Period | FVnDUE = PMT ((1+i)n – 1)/i)\*(1+i)  PVnDUE = PMT (1-(1+i)-n)/i)\*(1+i) |
| **Chapter 13**  Ordinary General Annuity Due | Conversion Period and Payment Period are not the same interval. Payment made at BEGINNING of payment Period | FVgDUE = PMT ((1+p)n – 1)/p)\*(1+p)  PVgDUE = PMT (1-(1+p)-n)/p)\*(1+p)  where P=(1+i)C – 1  where C = (# Compounds/yr) / (# pmt prd/yr) |
| **Chapter 13**  Ordinary Simple Perpetuity | The payment begins at a fixed date and then continues indefinitely, Conversion Period and Payment Period are the same interval – Payment made at BEGINNING of payment Period | PVn = PMT / i |
| **Chapter 13**  Ordinary General Perpetuity | The payment begins at a fixed date and then continues indefinitely, Conversion Period and Payment Period are NOT the same interval – Payment made at BEGINNING of payment Period | PV = PMT / i |

|  |  |  |
| --- | --- | --- |
| Ch 11 |  |  |
| Ch 12 | P440 Ex12.1 p1-4  P443 ex12.2 p1-4 |  |

**Chapter 14 – Annuity Payment Tables**

**Payment Schedules**

So you can now calculate a payment (PMT) amount on a loan given basic information about the nature of the repayment, the timeframe and the rate of interest.

Any given payment on a loan represents the blending of two components: The interest, and the principal repayment.

|  |
| --- |
| **PMT = Interest payment + Principal repayment** |

1. **Calculate the Annuity Payment**

You can calculate the annuity payment on a typical loan (end of month payment) by using.

**PVn=PMT(((1-(1+i)-n)/i) (use if length of payment interval and length of interest compounding is the same)**

**PVg=PMT(((1-(1+p)-n)/p) (Where P=(1+i)c – 1) (use if length of payment interval and length of interest compounding is different)**

SOLVE for PMT

1. **Calculate the amount of interest accumulated during the payment period**

**Interest paid in the Period =**

**(Interest rate (for the period) X**

**Amount of Principal carried in the period)**

1. **Calculate the Principal Repayment**

**Principal repayment = PMT - Interest paid in the Period**

1. **Construct an amortization table**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Payment Number** | **Amount of Payment** | **Interest Paid** | **Principal Repaid** | **Outstanding Principal Balance** |
| X | See Step A | See Step B | See Step C | Outstanding Principal Balance – Principal Repaid (C) |

**Sample Final Exam**

Coverage:

* Chapter 5 – CVP & Breakeven
* Chapter 6 - Discounts
* Chapter 7 – Simple Interest
* Chapter 8 – Simple Interest Calculations
* Chapter 9 – Compound interest
* Chapter 11 – Ordinary Simple Annuities
* Chapter 12 – Ordinary General Annuities
* Chapter 13 – Annuities Due & Perpetuties
* Chapter 14 – Amortization Tables

**Instructions: This exam contains 5 Questions, each with multiple parts. Using your calculator, excel spreadsheet and 8.5\*11 sheet answer the questions in the space provided.**

**SHOW YOUR WORKINGS**

**Question 1**

A Bookstore has sales of $100,000, variable costs of $40,000 and fixed costs of $30,000. What would its sales have to be to break even? How much profit has the store made.

**Question 2**

Come By Chance machinary purchased equipment from its supplier at a cost of $100,000 less 25% and 15%. According to the company’s pricing strategy, all merchandise is marked at a price that allows and ongoing discount of 10% and maintains a profit of 20% of the regular selling price. Overhead is 20% of the regular selling price.

1) Determine the cost of the equipment to the store?

2) Determine the regular selling price of the equipment?

3) Determine the original marked price to allow the ongoing discount

4) Determine the Profit or Loss

**Question 3**

The Town of Clarenville has a couple of loans that it wants to pay off today. It owes $50,000 due in 5 months, and $100,000 due in 1 Year. Interest is allowed at 10%. How much will that single payment be?

**Question 4**

A 5 month promissary note dated December 31, 2015 and bearing interest of 10% annually has a maturity value of $100,000. What will be the face value of the note on December 31, 2015 ?

**Question 5**

Suppose that you invest $3000 for 4 years and 8 months at 5% p.a. compounded semi-annually. How much will your investment be worth at the end of the period?

1. Appropriate formula = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. PV=\_\_\_\_\_\_\_\_\_\_\_
3. I/Y=\_\_\_\_\_\_\_\_\_\_\_
4. C/Y=\_\_\_\_\_\_\_\_\_\_\_
5. i = \_\_\_\_\_\_\_\_\_\_\_\_
6. n = \_\_\_\_\_\_\_\_\_\_\_
7. FV = \_\_\_\_\_\_\_\_\_\_

**Question 6**

A 3 year, non-interest bearing note for $5,000 was dated Aug 31, 2015 and earned 8% p.a. compounded quarterly. Determine the proceeds of the note if it were to be discounted on November 30, 2016?

1. Appropriate formula = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. PV=\_\_\_\_\_\_\_\_\_\_\_
3. I/Y=\_\_\_\_\_\_\_\_\_\_\_
4. C/Y=\_\_\_\_\_\_\_\_\_\_\_
5. i = \_\_\_\_\_\_\_\_\_\_\_\_
6. n = \_\_\_\_\_\_\_\_\_\_\_
7. FV = \_\_\_\_\_\_\_\_\_\_

**Question 7**

Find the accumulated value of quarterly payments of $100 made a the end of each quarter for 15 years just after the last payment has been made if the interest rate is 8% compounded monthly.

1. Appropriate formula = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. PMT=\_\_\_\_\_\_\_\_\_\_\_
3. I/Y=\_\_\_\_\_\_\_\_\_\_\_
4. P/Y=\_\_\_\_\_\_\_\_\_\_\_
5. C/Y=\_\_\_\_\_\_\_\_\_\_\_
6. i = \_\_\_\_\_\_\_\_\_\_\_\_
7. c = \_\_\_\_\_\_\_\_\_\_\_\_\_
8. P=\_\_\_\_\_\_\_\_\_\_\_\_
9. n = \_\_\_\_\_\_\_\_\_\_\_
10. FV = \_\_\_\_\_\_\_\_\_\_

**Question 8**

Find the accumulated value of payments of $1000 made at the beginning of each year for 5 years if the interest rate is 8% compounded monthly.

1. Appropriate formula = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. PMT=\_\_\_\_\_\_\_\_\_\_\_
3. I/Y=\_\_\_\_\_\_\_\_\_\_\_
4. P/Y=\_\_\_\_\_\_\_\_\_\_\_
5. C/Y=\_\_\_\_\_\_\_\_\_\_\_
6. c = \_\_\_\_\_\_\_\_\_\_\_
7. P = \_\_\_\_\_\_\_\_\_\_\_
8. i = \_\_\_\_\_\_\_\_\_\_\_\_
9. n = \_\_\_\_\_\_\_\_\_\_\_
10. FV = \_\_\_\_\_\_\_\_\_\_

**Question 9**

What sum of money invested today at 10% compounded monthly will provide an annual scholarship of $1000 paid at the end of the year, indefinitely?

1. Appropriate formula = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. PMT=\_\_\_\_\_\_\_\_\_\_\_
3. I/Y=\_\_\_\_\_\_\_\_\_\_\_
4. P/Y=\_\_\_\_\_\_\_\_\_\_\_
5. c = \_\_\_\_\_\_\_\_\_\_\_
6. P = \_\_\_\_\_\_\_\_\_\_\_
7. i = \_\_\_\_\_\_\_\_\_\_\_\_
8. PV = \_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Question 10**

The Town of Clarenville has a debt of $100,000 and it is amortized by making equal a single payment every year for 5 years. If money is borrowed at 5% compounded monthly, construct an amortization schedule like the one below.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Payment Number** | **Amount of Payment** | **Interest Paid** | **Principal Repaid** | **Outstanding Principal Balance** |
|  |  |  |  |  |