3312 Review Questions- Stage One: Basic Level

1. Suppose you borrow $10,000 from a bank to buy a car. You agree to pay $207.58 per month for 5 years. What is the annual percentage rate? What is the periodic rate? What is the effective annual rate?

2. Suppose you begin saving for your retirement by depositing $2000 per year in an IRA. If the interest rate is 12.3%, how much will you have in 35 years if each deposit occurs at the end of the year? How much if you make yearly deposits beginning today?

3. You realize that you have a $5000 balance on your credit card, which is being assessed 18% yearly interest. If you cut the credit card up and make $100 payments every month on it, how many years until you've paid it off?

4. Ten years ago your firm borrowed $3 million to purchase an office building using a loan with 7.80% APR and monthly payments for 30 years. What is the monthly payment? How much do you owe on the loan today?

5. 10% APR, compounded monthly…What is the effective annual rate?

6. 25-year bond has a $1,000 face value, an 10% yield to maturity, and a 8% annual coupon rate, paid semi-annually. What is the market value of the bond?

7. Starting today, annual cash flows are as follows: -1300   1200   300   400   400. Calculate NPV@12% & IRR

8. If interest rates rise, what will bond prices do? What type of bonds will show the biggest change in price? (High or low coupon? Long or short maturity?)

9. A stock recently paid a $2 dividend. If that dividend is expected to grow by 10% per year, what should the stock's price be if you require a 12% return?

10. Sam is considering taking early retirement, having saved $400,000. Sam desires to determine how many years the savings will last if $40,000 per year is withdrawn at the end of each year. Sam feels the savings can earn 10 percent per year.

Answer 1: 8.99%, 0.7499%, 9.38%
Answer 2: 926,533 / 1,040,496
Answer 3: 93.11 months
Answer 4: 21596.12 / 2620773.12
Answer 5: 10.47%
Answer 6: 817.44
Answer 7: 549.51, 37.32%
Answer 8: low, longer, why?
Answer 9: $110
Answer 10: forever

Stage Two: Time Value of Money Problems – Intermediate Level

1. You need $15,000 for a new car. If you can deposit $10,000 today into an account that pays an APR of 5.5% based on daily compounding, how long will it take for you to be able to buy the new car? What if a bank quote annual compounding, how long will it take?

2. You want to buy a new sports coupe for $73,800, and the finance office at the dealership has quoted you a 6.2 percent APR loan for 60 months to buy the car. What will your monthly payments be? How much principal is paid in the first payment? What is the periodic rate on this loan? What is the effective annual rate on this loan?

3. You have just turned 30 years old, and have accepted the first job after earning the MBA. You want to contribute to the retirement account earning 7% per year, and you cannot withdraw until you retire on your 65th birthday. After that point, you will need $100,000 per year starting at the end of the first year of retirement and ending on your 100th birthday. What is your annuity payment starting at the end of every year that you work?

4. What is the present value of $920 per year, at a discount rate of 10 percent, if the first payment is received 5 years from now and the last payment is received 20 years from now?

5. Some financial advisors recommend you increase the amount of federal income taxes withheld from your paycheck each month so that you will get a larger refund come April 15th. That is, you take home less today but get a bigger lump sum when you get your refund. Based on your knowledge of the time value of money, what do you think of this idea? Explain.

6. You work for a furniture store. You normally sell a living room set for $4,000 and finance the full purchase price for 24 monthly payments at 24% APR. You are planning to run a zero-interest financing sale during which you will finance the set over 24 months at 0% interest. How much do you need to charge for the bedroom set during the sale in order to earn your usual combined return on the sale and the financing?

7. You need a 25-year, fixed-rate mortgage to buy a new home for $240,000. Your mortgage bank will lend you the money at a 7.5 percent APR for this 300-month loan, with interest compounded monthly. However, you can only afford monthly payments of $850, so you offer to pay off any remaining loan balance at the end of the loan in the form of a single balloon payment. What will be the amount of the balloon payment if you are to keep your monthly payments at $850?

8. What is the monthly rate of interest that will yield an annual effective interest rate of 12 percent?

Stage two answers:
Answer 1: 7.37 / 7.57
Answer 2: $1,433.6, $1,052.3, .5167%, 6.379%
Answer 3: $9,366
Answer 4: PV= $4,916.20
Answer 6: $5,076
Answer 7: $810,220
Answer 8: 0.949%