First Mid Term – FIN301

**Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Part I: Multiple Choice Questions (3.6\*21= 76)**

1. Compute compound interest on $2000 invested at 5% for two years with annual compounding.

1st year interest is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Principal now is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. $100, $2,000
2. $100, $2,050
3. $100, $2,100
4. $100, $2,150
5. Compute compound interest on $2000 invested at 5% for two years with annual compounding.

2nd year interest is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Principal now is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* 1. $105, $2,205
  2. $202.5, $2,102.5
  3. $200, $2,200
  4. $205, $2,215

1. What will be the *FV* of $1000 in 3 years at interest rate of 10%?
2. $1,250
3. $1,430
4. $1,300
5. $1,331
6. You have $1000 but need $1500 three years later. To achieve this goal, interest rate should be how much?
7. 13.64%
8. 14.47%
9. 15.3%
10. 16.51%
11. The mortgage quoted rate (APR) is 6% annually. How much is the actual rate (EAR)? (hint: mortgage is paid monthly)
12. 6.57%
13. 6.00%
14. 6.47%
15. 6.17%
16. What is the NPV of the following cash flows. The discount rate is 5%.

Year CF

1. 0
2. 100
3. 100
4. 0
5. 200
   1. $343.09
   2. $300.00
   3. $350.92
   4. $333.79
6. What is the NFV of the following cash flows. The discount rate is 5%.

Year CF

1. 0
2. 100
3. 100
4. 0
5. 200
   1. $426.01
   2. $400.00
   3. $441.19
   4. $482.44
6. At 6% interest, how long would it take to double your money?   
   A. 11.90 years  
   B. 12.00 years  
   C. 11.27 years  
   D. 12.38 years
7. You are borrowing $30,000 to buy a car. The terms of the loan call for monthly payments for 5 years at 3 percent interest (APR=3%). What is actual (effective) annual rate?   
   A. 3.38%  
   B. 3.00%  
   C. 3.08%  
   D. 3.04%
8. You are borrowing $30,000 to buy a car. The terms of the loan call for monthly payments for 5 years at 3 percent interest (APR=3%). How much shall you pay to the credit company each month?   
   A. $559.15  
   B. $539.06  
   C. $475.55  
   D. $580.26
9. You receive an offer to transfer your $10,000 balance from your current credit card, which charge an annual rate of 19.8%, to a new credit card charge a rate of 6%. How long does it take to payoff the debt with the new card by making your monthly payment of $300? (Hint: use APR=6%)
   1. 36.81 months
   2. 36.56 months
   3. 34.84 months
   4. 33.85 months

12. An insurance company is offering a new policy to its customers. The detail of the policy is as follows.

First year: $500

Second year: $600

Third year: $700

Fourth year: $800.

Fifth year: $900

Assume that the interest rate is 10%. How much is the lump sum value of the five payments as of today (NPV)

1. $2,581.57
2. 3,500.00
3. 2,498.93
4. 2528.51

13. Five year ago, you invested $1,500. Today it is worth $2,000.00. What rate of interest did you earn?   
A. 6.51%  
B. 5.67%  
C. 6.13%  
D. 5.92%

14. You agree to make 24 deposits of $500 at the beginning of each month into a bank account. At the end of the 24th month, you will have $13,000 in your account. If the bank compounds interest monthly, what is your monthly interest rate?

a. 0.63%

b. 0.69%

c. 0.72%

d. 0.82%

15. You agree to make 24 deposits of $500 at the end of each month into a bank account. At the end of the 24th month, you will have $13,000 in your account. If the bank compounds interest monthly, what is your monthly interest rate?

a. 0.63%

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16. Some time ago, you purchased eleven acres of land costing $56,900. Today, that land is valued at $300,000. How long has she owned this land if the price of the land has been increasing at 10 percent per year?   
A. 17.33 years  
B. 17.98 years  
C. 17.44 years  
D. 17.29 years

17. What is the effective annual rate if a bank charges you 9.50 percent compounded quarterly?   
A. 9.62 percent  
B. 9.88 percent  
C. 9.72 percent  
D. 9.84 percent

18. An ordinary annuity is best defined by which one of the following?   
A. increasing payments paid for a definitive period of time  
B. increasing payments paid forever  
C. equal payments paid at regular intervals over a stated time period  
D. equal payments paid at regular intervals of time on an ongoing basis

19. John calls his stockbroker and instructs him to purchase 100 shares of Microsoft Corporation common stock. John also deposits the same of money into a local bank. Meanwhile, he invests the same amount of money in the bond market. Five years later, his returns from the three different markets are expected to be (from low to high)

A) bank, stock, bond

B) bank, bond, stock

C) stock, bond, bank

D) bond, bank, stock

20. The Pawn Shop loans money at an annual rate of 15 percent and compounds interest weekly. What is the actual rate being charged on these loans?   
A. 16.16 percent  
B. 13.32 percent  
C. 23.49 percent  
D. 18.56 percent

21. You just signed a consulting contract that will pay you $35,000, $52,000, and $80,000 annually at the end of the next 3 years, respectively. What is the present value of these cash flows given a 10.5 percent discount rate?   
A. $133,554  
B. $142,307  
C. $148,880  
D. $151,131

**Short Answer Question (12\*2=24):**

1. You collect old coins. Today, you have two coins each of which is valued at $500. One coin is expected to increase in value by 10 percent annually while the other coin is expected to increase in value by 5 percent annually. What will be the difference in the value of the two coins 20 years from now? Show detail.

2. You are considering two projects with the following cash flows:

**Project x project y**

**Year 1 9000 7000**

**Year 2 10000 5000**

**Year 3 12000 15000**

**Year 4 13000 18000**

@10%, which project is more favorable? @5%, which one is more favorable?

Show details (NPV of each project)

**Extra credit ( 5 points)** After graduation, you plan to work for 12 years and then start your own business. You expect to save $7,500 each year for the first 6 years and $15,000 annually for the following 6 years. The first deposit is expected to be made one year from today. In addition, you just received a $25,000 graduation gift which you will deposit right away. If the interest rate = 9%, compounded annually. Calculate how much you will have 12 years from now when you start your business?

a. $237,186

b. $251,702

c. $266,905

d. $277,797

e. $293,607