THE UNIVERSITY OF MELBOURNE

13/14

FNCE10002 Principles of Finance
Semester 1, 2019
Sample Mid Semester Exam 1

This sample exam and the mid semester exam are based on the material covered in weeks 1 – 4. The exam duration is 60 minutes with no reading time. Detailed suggested answers to this sample exam will be placed on the LMS in due course. On the mid semester exam, you will be required to enter your answers on a multiple choice answer sheet (MCAS). A sample of the MCAS is available via the Mid Semester Exam link. You will also be provided with adequate space for calculations, etc. in the exam booklet.

Questions 1 through 3 are based on the following information.

You have borrowed $20,000 from a bank for a five-year period. You will be making monthly payments on this loan and the interest rate on the loan is 12% per annum with interest compounded monthly.

C 1. The monthly payment on this loan is **closest** to:

monthly 1% p.m

A. $200.00.
B. $244.89.
C. $444.89.
D. $462.35.

$$20000 = \frac{C}{r}\left(1 - \frac{1}{(1+r)^5}\right)$$

$$20000 = \frac{C}{1\%}\left(1 - \frac{1}{1.01^{5\times12}}\right)$$

B 2. The principal balance repaid in the *first* month is **closest** to:

C = 444.89

interest = 20000 × 1% = 200

A. $200.00.
B. $244.89.
C. $444.89.
D. $462.35.

D 3. The effective annual interest rate on this loan is **closest** to:

$$r_E = \left(1 + \frac{r}{m}\right)^{12} - 1$$

$$= (1 + 1\%)^{12} - 1$$

$$= 12.68\%.$$

A. 1.0% p.a.
B. 12.0% p.a.
C. 12.4% p.a.
D. 12.7% p.a.

A 4. bond . growing perpetuity

LOL Ltd has just issued a perpetual (that is, non-maturing) financial security that is expected to pay an annual coupon of $120 next year. This coupon will then *decline* at a rate of 2% per annum forever. If the interest rate on this security is 8% p.a., its price today should be **closest** to:

$C = \$120$

$g = -2\%$

$r = 8\%$

$$P = \frac{C}{r-g}$$

A. $1,200.
B. $1,500.
C. $2,000.
D. $6,000.

5. Which of the following statement(s) for a coupon paying corporate bonds is (are) **true**?

I. For bonds selling at par the yield to maturity and coupon rate will be equal.
II. For bonds selling at a premium the yield to maturity will be higher than the coupon rate.
III. For bonds selling at a discount the yield to maturity will be lower than the coupon rate.

A. I only.
B. I and II only.
C. I and III only.
D. I, II and III.

6. Your friend has won first prize in the Tenth Annual Sumochef Competition and offered one of the following options. Assuming an interest rate of 10% p.a., which option should your friend choose? (*Assume end-of-the-year cash flows and round your final answers to the nearest dollar.*)

A. $99,000 today.
B. $10,000 per year for the next 50 years.
C. $160,000 at the end of year 5.
D. $5,000 next year growing at 5% p.a. forever.

7. Starz Ltd's dividends are expected to grow at a rate of 5% p.a. in the foreseeable future. Starz's current dividend is $1.00 per share and the required return on stocks like Starz is 10% p.a. Based on this information, Starz Ltd's share price today should be **closest** to:

A. $10.00.
B. $10.50.
C. $20.00.
D. $21.00.

8. A bond maturing in eight years with a face value of $10,000 is currently trading at $4,665. If the bond does not pay a coupon its yield to maturity should be **closest** to:

A. 8.0% p.a.
B. 9.0% p.a.
C. 10.0% p.a.
D. 11.0% p.a.

9. Taggart Ltd currently has a bank loan outstanding that requires it to make three annual payments at the end of the next three years of $1,000,000 each. The bank has offered to allow Taggart to skip making the next two payments and instead make one large payment at the end of the loan's term in three years. If the interest rate on the loan is 6% p.a., compounded quarterly, the final payment that will make Taggart indifferent between the two payment options is **closest** to:

A. $2,666,283.
B. $2,673,012.
C. $3,183,600.
D. $3,187,856.

10. Ninety days ago, you purchased a 180-day Treasury bill with a face value of $200,000. At that time, the yield to maturity on the bill was 8.0% p.a. The current yield to maturity on the bill is 6.0% p.a. The price of the bill today is **closest** to:

A. $192,409.
B. $194,252.
C. $196,131.

D. $197,084.

Growing perpetuity with different growth rate (calculate yearly!)

11. The current dividend of Vandalay Industries is $1.00 and is expected to grow at 20% p. a. over the next three years and then grow at 6% p.a. forever. The required rate of return on stocks like Vandalay is 10% p.a. Based on this information, Vandalay's share price today should be **closest** to:

A. $34.40.
B. $38.00.
C. $45.80.
D. $49.40.

12. Your friend already has $20,000 in an investment account and is considering investing an additional $5,000 at the end of year 1 with this amount growing at 6% p.a. until the end of year 5. If the interest rate earned by the investment account is expected to be 8% p.a., the total amount she will have accumulated in this account at the end of five years is **closest** to:

A. $29,387.
B. $32,776.
C. $62,162.
D. $66,120.

13. Which one of the following statements is *most likely* to be **true**?

A. Bond prices and market interest rates move in the same direction.
B. The only factor that has an impact on a bond's price is its market yield.
C. Shorter maturity bonds are more sensitive to changes in interest rates than longer maturity bonds.
D. As time passes and a bond approaches its maturity date, its (ex-coupon) price will converge to its face value.

14. You are considering investing $1,000 in an investment fund at the end of every quarter for the next 6 years. The first investment will be made at the end of the coming quarter. The fund is expected to earn an interest rate of 10% p.a., with interest compounded quarterly. At the end of 6 years, the total dollar value in this investment fund will be **closest** to:

A. $6,388.
B. $7,716.
C. $32,349.
D. $40,000.

Formula Sheet for Sample Mid Semester Exam

$FV_n = PV_0(1+n\times r)$	$PV_0 = \dfrac{FV_n}{(1+n\times r)}$
$FV_n = PV_0(1+r)^n$	$PV_0 = \dfrac{FV_n}{(1+r)^n}$
$PV_0 = \dfrac{C}{r}$	$PV_0 = \left(\dfrac{C}{r}\right)\left(\dfrac{1}{(1+r)^n}\right)$
$PV_0(\text{OA}) = \left(\dfrac{C}{r}\right)\left(1-\dfrac{1}{(1+r)^n}\right)$	$FV_n(\text{OA}) = \left(\dfrac{C}{r}\right)\left[(1+r)^n-1\right]$
$PV_0(AD) = \left(\dfrac{C}{r}\right)\left(1-\dfrac{1}{(1+r)^n}\right)(1+r)$	$FV_n(AD) = \left(\dfrac{C}{r}\right)\left[(1+r)^n-1\right](1+r)$
$PV_0 = \dfrac{C_1}{r-g}$	$PV_0(GA) = \left(\dfrac{C_1}{r-g}\right)\left(1-\dfrac{(1+g)^n}{(1+r)^n}\right)$
$FV_n(GA) = \left(\dfrac{C_1}{r-g}\right)\left(1-\dfrac{(1+g)^n}{(1+r)^n}\right)(1+r)^n$	$r_e = \left(1+\dfrac{r}{m}\right)^m - 1$
$r_e = e^r - 1$	$P_0 = F_n/[1 + (n/365) \times r_D]$
$P_0 = \left(\dfrac{C}{r_D}\right)\left(1-\dfrac{1}{(1+r_D)^n}\right)+\dfrac{F_n}{(1+r_D)^n}$	$P_0 = \sum_{t=1}^{n}\left(\dfrac{D_t}{(1+r_E)^t}\right)+\dfrac{P_n}{(1+r_E)^n}$
$r_E = \dfrac{D_{n+1}}{P_n}+\dfrac{P_{n+1}-P_n}{P_n}$	$P_n = \dfrac{D_{n+1}}{r_E-g}$
$r_E = \dfrac{D_{n+1}}{P_n}+g$	$g = r_E - \dfrac{D_{n+1}}{P_n}$
$\dfrac{P_0}{E_1} = \dfrac{\alpha}{r_E-g}$	$\dfrac{P_0}{E_0} = \dfrac{\alpha(1+g)}{r_E-g}$