

Assignment 1 Solution

Correct answer is in bold

Question 1: Consider the three projects A, B, and C, as shown here. If the firm has a cut-off period of 2-years, which of these projects should be selected

Project	C_0	C_1	C_2	C_3	C_4
A	-1,000	+1,000	+1,000	0	0
B	-1,000	0	+1,000	+2,000	+3,000
C	-5,000	+1,000	+1,000	+3,000	+5,000

- (a) **A and B; Hint: Projects A and B are the two candidates that recover the initial investment within two years.**
- (b) B and C; Hint: Projects A and B are the two candidates that recover the initial investment within two years.
- (c) C and A; Hint: Projects A and B are the two candidates that recover the initial investment within two years.
- (d) None of the above; Hint: Projects A and B are the two candidates that recover the initial investment within two years.

Question 2: Which of the following is an incorrect statement

- (a) Safe dollar is worth more than risky dollar. Hint: Opportunity cost of capital increases with risk and therefore present value comes down
- (b) Dollar today is worth more than dollar tomorrow. Hint: Remember the cash flow discounting formula, as the cash flows are delayed their present value goes down
- (c) Present values are obtained by discounting the Future values. Hint: This is the fundamental discounted cash flow concept
- (d) **A perpetuity of \$5000 received infinite number of years in future will have infinite value. Hint: It will have a finite value of $5000/r$, where r is the appropriate discount rate**

Question 3: For an investor, who intends to hold the stock for all times to come and not sell it, the appropriate value is the present value of dividends discounted at the appropriate risk.

- (a) No. Hint: Stocks have indefinite lives, and therefore, the present value of all the dividends discounted through the perpetuity formula (infinite period cash inflows from dividends) is an appropriate estimate of the current price.
- (b) **Yes. Hint: Stocks have indefinite lives, and therefore, the present value of all the dividends discounted through the perpetuity formula (infinite period cash inflows from dividends) is an appropriate estimate of the current price.**

- (c) Can not say. Hint: Stocks have indefinite lives, and therefore, the present value of all the dividends discounted through the perpetuity formula (infinite period cash inflows from dividends) is an appropriate estimate of the current price.
- (d) Invalid Information

Question 4: If a bond's coupon rate is lower than its yield to maturity, then the bond's price will increase over its remaining maturity.

- (a) True; Hint: Bond will sell at a discount, and its price will rise as maturity approaches**
- (b) False; Hint: Bond will sell at a discount, and its price will rise as maturity approaches
- (c) Cannot say/more information is required; Hint: Bond will sell at a discount, and its price will rise as maturity approaches
- (d) Invalid Information

Question 5: Assume that the CAPM model holds. Also, consider expected market return (\bar{r}_m) of 10%, risk-free rate (r_f) Of 4%. If a security has a market beta (β) of 0.5, what is the correct interval for expected returns (\bar{r}_i) as per CAPM.

- (a) 2%-4%. Hint: $CAPM = \bar{r}_i = r_f + \beta * (\bar{r}_m - r_f)$
- (b) 4%-6%. Hint: $CAPM = \bar{r}_i = r_f + \beta * (\bar{r}_m - r_f)$
- (c) 6%-8%. Hint: $CAPM = \bar{r}_i = r_f + \beta * (\bar{r}_m - r_f) = 4\% + 0.5 * (10\% - 4\%) = 7\%$**
- (d) 8%-10%. Hint: $CAPM = \bar{r}_i = r_f + \beta * (\bar{r}_m - r_f)$

Question 6: Identify the incorrect statement

- (a) As per CAPM, if a stock lies above the security market line, then it is undervalued. Hint: If a stock is above the security market line, it offers higher than CAPM expected returns.
- (b) As per CAPM, if a stock lies below the security market line, then it is overvalued. Hint: If a stock is below the security market line, it offers lower than CAPM expected returns.
- (c) As per CAPM, if a stock lies on the security market line, then it is overvalued. Hint: If a stock is below the security market line then it is overvalued.**
- (d) As per CAPM, if a stock lies on the security market line, then it is fairly priced Hint: Security market line is the equilibrium line on which all the fairly priced securities lie.

Question 7: Identify the incorrect statements.

- (a) There are three forms of market efficiencies; Hint: Yes, weak, semi-strong, and strong
- (b) A test of price predictability using historical prices is a test of weak-form efficiency. Hint: Yes, if prices can be predicted using historical price information, then this is a violation of weak-form of market efficiency

- (c) Competitive, deep, and liquid markets, are more efficient. Hint: Competitive deep and liquid markets facilitate market participants to conduct arbitrage and correct any inefficiency in prices
- (d) In a strong form efficient market, one can only make superior returns (compared to the market) by collecting private or insider information; Hint: In strong-form efficient markets, one cannot beat the market using any kind of information and cannot make superior returns**

Question 8: Identify the incorrect statements.

- (a) **Investors are always 100% rational. Hint: Investors do not always behave in a rational manner.**
- (b) Financing decisions are easily reversed as compared to investment decisions. Hint: Investment decisions like investing in plant and machinery are not easily reversible, as compared to financing decisions such as issuing bond, equity etc.
- (c) Higher transaction costs lead to more inefficient markets. Hint: Arbitrage activities facilitate correction in market inefficiencies. Higher transactions costs prohibit such arbitrage activities.
- (d) In efficient markets each stock should offer the same returns. Hint: In efficient markets, each stock should offer returns appropriate to the market risk of that stock

Question 9: A project has a forecasted cash flow of \$110 in year 1 and \$121 in year 2. The risk-free interest rate (r_f) is 5%, the estimated risk premium ($r_m - r_f$) on the market is 10%, and the project has a beta of .5. What is the correct interval for the cost of capital for the project.

- (a) 5%-7%; Hint: CAPM: $r = r_f + \beta(r_m - r_f)$
- (b) 7%-9%; Hint: CAPM: $r = r_f + \beta(r_m - r_f)$
- (c) 9%-11%; Hint: CAPM: $r = r_f + \beta(r_m - r_f) = 5\% + 0.5 \times 10\% = 10\%$**
- (d) 11%-13%; Hint: CAPM: $r = r_f + \beta(r_m - r_f)$

Question 10: In the previous question (9), if you use a constant risk-adjusted discount rate, what is the correct interval for the PV of the project.

- (a) 150-170; Hint: $PV = \frac{CF_1}{1+r} + \frac{CF_2}{(1+r)^2}$
- (b) 170-190; Hint: $PV = \frac{CF_1}{1+r} + \frac{CF_2}{(1+r)^2}$
- (c) 190-210; Hint: $PV = \frac{CF_1}{1+r} + \frac{CF_2}{(1+r)^2} = \frac{110}{1.1} + \frac{121}{1.1^2} = 200$**
- (d) 210-230; Hint: $PV = \frac{CF_1}{1+r} + \frac{CF_2}{(1+r)^2}$