

## Solutions to Item Sets

1. Correct Answer is C: The value of F-statistics =  $MSR/MSE = (RSS/k) / \{SSE/ (n-k-1)\} = 235.50 / \{85 / (60-1-1)\} = 235.50 * 58 / 85 = 160.91$ .
2. Correct Answer is A: t-statistics =  $(0.82 - 1) / 0.14 = -1.28$ .
3. Correct Answer is B:  $SEE = [SSE / (n-2)]^{0.5} = (85 / 58)^{0.5} = 1.21$ .
4. Correct Answer is B: Assumptions 2 and 3 ensure that the regression produces the correct estimates of  $b_0$  and  $b_1$ .
5. Correct Answer is C: Correlation coefficient in a linear regression equation = Square root of  $R^2 = (RSS/SST)^{0.5} = (235.50 / 320.50)^{0.5} = 0.857$ .
6. Correct Answer is A: The regression equation is: Percentage change in price of commodities =  $2.00\% + 0.82 * (\text{Percentage change in money supply})$ . The predicted value for 5% increase in money supply =  $2.00\% + 0.82 * 5.00\% = 6.10\%$ . The t-critical value for 95% confidence interval and 58 degrees of freedom =  $\pm 2.002$ . Confidence interval of the predicted value =  $6.10\% \pm 2.002 * (1.85\%) = 2.39\%$  to  $9.80\%$ .
7. Correct Answer is B: Adjusted  $R^2 = 1 - \{(n-1) / (n-k-1)\} * (1-R^2) = 1 - (49/46) * (1-0.7467) = 0.7301$ .
8. Correct Answer is A: BP test is used for heteroskedasticity and DW test is used for serial correlation.
9. Correct Answer is C: Heteroskedasticity and serial correlation is not present as it can be seen clearly from the test results of the Exhibit 2. Multicollinearity is present because no t-statistic is statistically significant but the F-test statistics is statistically significant.
10. Correct Answer is C: All the correction methods specified by Vinod Jayakumar are correct.
11. Correct Answer is A: Predicted P/E =  $5.35 - 0.32 * \text{dividend payout} + 12.5 * \text{earnings growth rate} - 0.60 * \text{beta} = 5.35 - 0.32 * 0.60 + 12.5 * 0.08 - 0.60 * 1.2 = 5.438$ .
12. Correct Answer is B: Heteroskedasticity and serial correlation lead to too many Type I errors and multicollinearity leads to too many Type II errors.
13. Correct Answer is A:  $B_{270} = 1 - (0.04 * 270 / 360) = 1 - 0.03 = 0.97$ .  $B_{180} = 1 - (0.035 * 180 / 360) = 1 - 0.0175 = 0.9825$ . Futures price =  $B_{270} / B_{180} = 0.97 / 0.9825 = 0.9873$ .
14. Correct Answer is C: Yes, arbitrage profit is possible as the no-arbitrage price is different than the market price. We will sell the futures contract and buy T-bill with 270 days to expiry and sell T-bill with 180 days to expiry. Total arbitrage profit after 270 days =  $(0.9910 - 0.9873) * \$1,000,000 * (1 / 0.9873) = \$3,770.53$ .
15. Correct Answer is A: If the current market T-bill futures price is lesser than the no-arbitrage price, we will take long position in the futures position and short the longer maturity T-bill and go long on shorter maturity T-bill.
16. Correct Answer is C: Futures price of bond with a delivery option =  $[\text{Bond price} * (1+r_f)^T - FVC] * (1/CF) = [121.5 * (1+0.05)^{1.25} - (4 * 1.05^{0.75} + 4 * 1.05^{0.25})] * (1/1.18) = \$102.49$ .
17. Correct Answer is B: The forward prices are lower when there is a positive correlation between the interest rates and the underlying asset. Mark-to-market feature is preferred in that case.

18. Correct Answer is B: Rahul is not correct regarding backwardation. The backwardation occurs when the benefits of holding the asset exceed the opportunity cost plus additional holding costs.
19. Correct Answer is C: The Company will buy a 3X9 FRA. The price of 3X9 FRA =  $[\{(1+0.045*270/360)/(1+0.035*90/360)\}-1]*(360/180) = 4.9566\%$
20. Correct Answer is A: After 30 days, the price of new FRA =  $[\{(1+0.05*240/360)/(1+0.04*60/360)\}-1]*(360/180) = 5.298\%$ . The value of FRA =  $(0.05298 - 0.049566)*(180/360)*2,000,000/(1+0.05*240/360) = \$3,303.71$ .
21. Correct Answer is A: Total profit at maturity =  $(0.055-0.04966)*(180/360)*2,000,000/(1+0.055*180/360) = \$5,288.28$ .
22. Correct Answer is C: All the statements made by Pallavi regarding the difference between swaption and forward rate agreement are correct.
23. Correct Answer is B: The forward contract is underpriced. So, for arbitrage, that needs to be bought and the spot instrument needs to be sold. It is done in reverse cash and carry arbitrage.
24. Correct Answer is A: Any party can have a credit risk. The party in the profit bears the credit risk. The credit risk amount is equal to the market value of the forward contract.
25. Correct Answer is A: The dividend of the company is expected to grow at a constant rate from its initiation. The Gordon growth model is the most appropriate model for valuing Tram International.
26. Correct Answer is B: Cost of equity =  $[WACC - w_d*r_d*(1-t)]/w_e = (0.10 - 0.40*0.10*0.60)/0.60 = 12.67\%$ .
27. Correct Answer is A: Earnings per share after 5 year =  $5*1.16*1.14*1.12*1.10*1.08 = 8.79$ . Earning in the 6<sup>th</sup> year =  $8.79*1.08 = 9.50$ . Dividends in the 6<sup>th</sup> year =  $0.5*9.50 = 4.75$ . Value per share =  $\{4.75/(0.1266-0.08)\}/(1+0.1266)^5 = \$56.08$ .
28. Correct Answer is C: The net income will become negative only if the company is not able to pay its debt holders from the earnings. Economic income will be negative in case ROE is less than the required return on equity. The accounting net income can be anything.
29. Correct Answer is C: The return provided by the growth factor = 8%. The return provided by the dividend yield =  $(0.1266-0.08)*100 = 4.67\%$ . Percentage of return provided by the dividend yield =  $4.67/12.67 = 36.84\%$ .
30. Correct Answer is B: The Company will pay a dividend of 2.90, 3.31, 3.70, 4.07 and 4.40 in next 5 years. The sum of present value of those payments = 12.72. Adding this to the value obtained in the question 27 to get the share price as \$68.79.