## **Options: Practice Questions.**

1. **Option Pricing:** A firm's shares are currently trading at £25 per share. The firm also issues one period call options (ie the exercise date is in one period's time), with an exercise price of £30. In one period's time, the share price will either increase to £35, or fall to £10, each with a probability of 0.5. The risk free rate is 10%. Using the binomial pricing model, what is the current price of the call option?

What would happen to the price of the call option if;

- a) The probability of the upward movement in share price to £35 increases to 0.7? Decreases to 0.3?
- b) Investors become more risk averse?
- c) The exercise price is higher than £30.
- d) The exercise price is lower than £30.
- 2. <u>**Pavoff Profiles**</u>: Present diagrams to examine the payoff profiles of the following positions.
- Buy 3 call options at a price of C each. (Hint: If you buy 1 call option, you gain £1 for every £1 that the share price exceeds the exercise price, so the slope of the line is 45%. What do you gain, and what is the slope of the line, if you buy 3 call options?)
- ii) Sell 2 call options.
- iii) Sell a call option and buy a put option.
- iv) Buy a call option and sell 3 put options.
- v) A long position in a share, with a short position in 2 calls.
- vi) The option identity is S + P = B + C. What does this tell you about combining options to gain a risk-free profile? Use payoff profile diagrams to demonstrate this.
- vii) You expect a firm's shares to be extremely volatile. Demonstrate how you could combine a call and a put to gain for large changes in the stock price. What happens with small changes? What is this position called?
- viii) You sell one call and sell one put. When do you gain, and when do you lose?