

$$S = \pounds 20. q = 0.5. u = 1.2. d = .67. X = \pounds 21.$$

1 + rf = 1.1.

Risk free hedge Portfolio: Buy One Share of Stock and write m call options.

$$uS - mCu = dS - mCd => 24 - 3m = 13.40.$$

 \Rightarrow M = 3.53.

By holding one share of stock, and selling 3.53 call options, your payoffs are the same in both states of nature (13.40): Risk free.

Since hedge portfolio is riskless:

$$(1+r_f)(S-mc)=uS-mc_u.$$

$$1.1(20 - 3.53C) = 13.40.$$

Therefore, C = 2.21.

This is the current price per call option. The total present value of investment = ± 12 .19, and the rate of return on investment is 13.40 / 12.19 = 1.1.