

Test - 2

1	The stock price is Rs.100. The annual continuously compounded risk free interest rate is 5% and the annual volatility relevant for the Black Scholes formula is 30%. Call options are written with a strike price of Rs.80 and time to expiration of 5 years. The stock will pay a dividend of Rs.20 In 2 years and another dividend of Rs. 30 in 3 years. Use the Black – Scholes formula to find the price of one such call option.	6
2	Prove that $\{W^2(t) - t, t \geq 0\}$ is a Martingale, where $\{W(t), t \geq 0\}$ is a Brownian motion.	6
3	Define discrete time filtration and If $\{S_n, n = 0,1,2\}$, $S_0 = 0$ is a <i>symmetric random walk</i> . Construct three σ – <i>fields</i> such that they form a filtration for the stochastic process $\{S_n, n = 0,1,2\}$.	8