Assignment 12

The due date for submitting this assignment has passed. As per our records you have not submitted this assignment.

Due on 2019-10-23, 23:59 IST.

1) State whether the following statement is TRUE or FALSE:
   In the classical BSM model (with given parameters $a$, $\sigma$, and $r$), consider an option that pays an amount $C$ at maturity $T$ if the underlying stock price at $T$ is greater than or equal to $K$, and pays nothing otherwise. The risk-neutral price at time 0 of such an option with strike $K$ and cash component $C$ is given by
   \[ V_0 = e^{-rT} N(d) \], where \[ d = \frac{1}{\sigma \sqrt{T}} \ln(S/\text{E}) + (r - \sigma^2/2)T \].
   - TRUE
   - FALSE
   No, the answer is incorrect.
   Score: 0
   Accepted Answers:
   TRUE

2) State whether the following statement is TRUE or FALSE:
   The martingale representation theorem (MRT) will hold true with respect to any filtration for the underlying Brownian motion.
   - TRUE
   - FALSE
   No, the answer is incorrect.
   Score: 0
   Accepted Answers:
   FALSE

3) In the classical BSM model (with given parameters $a$, $\sigma$, and $r$), it is given that the current price of the stock is $60$, the call option currently sells for $0.15$ more than the put option, both the call option and put option will expire in 4 years, and both the call option and put option have a strike price of $70$. Then, the continuously compounded riskfree interest rate (in percentage) equals:
   No, the answer is incorrect.
   Score: 0
   Accepted Answers:
   (Type: Range) 3.80, 4.00

4) In the classical BSM model (with given parameters $a$, $\sigma$, and $r$), suppose that the stock price today is $S_0 = 10$, the riskfree interest rate is $r = 5\%$, and the time to maturity is 6 months from now. Consider an option $V_T$, whose BSM price at time $T$ is given by the function $V_T = F(t, S_t) = S_T^2 e^{-\sigma^2/2}$, where the time is in annual terms. Then, the volatility (in percentage) of the stock equals:
   No, the answer is incorrect.
   Score: 0
   Accepted Answers:
   (Type: Range) 15.14

5) In the classical BSM model (with given parameters, $a$, $\sigma$, and $r$), assume that an investor buys 1000 stocks of ABC company and holds them for 3 years. Each of the stocks held pays a continuous dividend yield of $5\%$ per annum and the investor reinvests all the dividends (in the same stock) when they are paid. The number of shares that the investor would have at the end of 3 years equals:
   No, the answer is incorrect.
   Score: 0
   Accepted Answers:
   (Type: Range) 1100, 1170

6) State whether the following statement is TRUE or FALSE:
   The binomial model as well as the classical BSM model are complete market models.
   - TRUE
   - FALSE
   No, the answer is incorrect.
   Score: 0
   Accepted Answers:
   TRUE