



Name:

Enrolment No:

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, May 2022

Course: Introduction to Derivatives

Program: B Com (Hons)

Course Code: FINC3017

Semester: VI

Time : 03 hrs.

Max. Marks: 100

Instructions:

**SECTION A
10Qx2M=20Marks**

S. No.		Marks	CO
1	If derivatives transactions with a counterparty are cleared bilaterally, they are..... A) Carried forward B) Netted C) Outstanding D) Not settled.	2	CO1
2	Which of the following are mostly closed before maturity? A) Future contracts B) Forward contract C) Equity Shares of Axis Bank D) Options	2	CO1
3	Which of the following is not an input in put call parity. A) St B) d1 C) Co D) Po	2	CO1
4	S_1^{+i} is computed using- A) Fiduciary call B) Protective put C) Risk free rate D) Option payoff	2	CO1
5	American option prices can computed using- A) Synthetic probabilities B) Black-Scholes-Merton Method C) Binomial pricing D) Straddle	2	CO1
6	Lognormal distribution of return is an assumption in A) Put call parity B) Protective put	2	CO1

	C) BSM Model D) Binomial pricing method		
7	Daily margin cash flows are referred to as which of the following margin. A) Initial margin B) Maintenance margin C) Variation margin D) Option B & C	2	CO1
8	Risk neutral probabilities are used to compute only long call option prices and not short call option prices. A) True B) False	2	CO1
9	Hedging increases risk in financial markets. A) False B) True	2	CO1
10	Speculation and gambling are same. A) True B) False	2	CO1

SECTION B
4Qx5M= 20 Marks

11	Explain calendar spread strategy for option trading.	5	CO2
12	Describe the use of derivatives in financial markets.	5	CO2
13	How are future contracts different from forward contracts?	5	CO2
14	Contrast between bull spread and bear spread trading strategies of options trading.	5	CO2

SECTION-C
3Qx10M=30 Marks

15	Provide the formula to compute optimal hedge ratio and also give one hypothetical example.	10	CO3
16	The stock price today is INR 100, the risk free rate is 4%. The exercise price of call option is INR 108. Time to maturity of this contract is 90 days. The exercise price of put option is INR 110. The risk free bond is available at a face value of INR 1000. Show that put-call-parity holds true in this case.	10	CO3
17	Suppose that:- The spot price of oil is US\$50. The quoted 1 year futures price of oil is US\$40. The 1 year US\$ interest rate is 5% per annum. The storage costs of oil are 2% per annum. Is there an arbitrage opportunity?	10	CO3

SECTION-D
2Qx15M= 30 Marks

18	<p>If the stock price of HDFC Bank is INR 1,100. The risk free rate is 4%. The exercise price for 180 days from today is INR 1,280. Standard deviation of stock price 3.68 and the variance of the volatility is 3.51. Time to maturity is 180 days. Compute the call option price using BSM framework. ($e = 2.718$)</p> <p style="text-align: center;">OR</p> <p>Explain the process to compute call option prices using Black-Scholes-Merton method. Also mention the assumptions of this model.</p>	15	CO4
19	<p>Prove the following-</p> $h = \frac{C_1^+ - C_1^-}{S_1^+ - S_1^-}$ <p>where the h is the hedge ratio, C and S are the call option and spot prices.</p>	15	CO4