**JAIPURIA INSTITUTE OF MANAGEMENT, INDORE**

**PGDM**

**FOURTH TRIMESTER (Batch 2020-22)**

**END TERM IMPROVEMENT EXAMINATION, DEC-2021**

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| Course Name | **Financial Derivatives and Risk Management** | Course Code | **FIN402** |
| Max. Time | **2 hours** | Max. Marks | **40** |

**Instruction**

1) Answer all the questions. A standard normal variate table has been attached with the question paper and certain formulae have been appended below for your ready reference. The notations and letters used in the formula sheet have the same meaning as used in text book and class room lecture, as such, no further explanation is required.

2) Laptop computer, books, any written note, paper, and mobile phones are strictly prohibited. You can carry only pen, pencil, eraser and your own scientific calculator in the examination hall. **Exchange of calculator is strictly prohibited.**

3) All questions carry adequate information to answer them appropriately. Hence don’t disturb the invigilator by asking any.

1. **A)** Explain ‘in the money’ ‘at the money and ‘out of the money’ put option.

**B)** The strike price of put option of HUL share is Rs. 2400/- . On the expiration day of the option, the stock price is found to be Rs.2300/. Is the option ‘in the money’ ‘at the money and ‘out of the money’ . If the option premium is Rs.20, what would be the pay off of the long position investor ?

 **C)** An investor purchases a stock for Rs.38 and put option for Rs.0.50 with a strike price of

 Rs.35. The investor sells a call option for Rs 0.50 with a strike price of Rs.40. What is the

 maximum profit and loss for this position. Draw a profit and loss diagram of this strategy as

 a function of the stock price at expiration. **(2+3+5 Marks)**

1. **A)** A long forward contract on a non-dividend paying stock was entered into sometime back. It

currently has 6 months to maturity. The risk-free interest rate with continuous compounding is 10% per annum. If the stock price is Rs.25 and the delivery price is Rs.24, a) what would be the value of 6 month forward price, and b) the value of the forward contract ?

**B)** What is the convenience yield of a consumption asset ? Explain by an example.

**C)** Consider 1 year future contract of an investment asset that provides no income. It costs Rs.2 per unit to store the asset with payment being made at the end of the year. Assume the spot price is Rs.450 per unit and the risk free rate with continuous compounding being 7%, what would be its future price ? **(4+3+3 Marks)**

1. **A)** A stock price is currently Rs.200. It is known that at the end of 3 months its value will either rise by 10% or go down by 10%. The risk free rate of interest rate is 12% PA with continuous compounding. What is the value of 3 month European call option with a strike price of Rs.190?

**B)** Consider an option on a non-dividend paying stock when the stock price is Rs.30, the exercise price is Rs.29, the risk free interest rate is 5%, the volatility is 25% PA and the time to maturity is 4 months. What is the price of the option if it is a European call ?  **(5+5 Marks)**

1. Companies X and Y have been offered the following rates per annum on a $5 million 10-year

investment:

|  |  |  |
| --- | --- | --- |
|  | Fixed Rate | Floating Rate |
| Company X | 8.0% | LIBOR |
| Company Y | 8.8% | LIBOR |

 Company X requires a fixed-rate investment; company Y requires a floating-rate investment.

 Design a swap that will net a bank, acting as intermediary, 0.2% per annum and will appear equally attractive to XandY.

Provide detailed answer with diagram with explanation as to what is the advantage of current swap, otherwise marks will be deducted. **(10 Marks)**

**BSM**

