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B.Tech DEGREE EXAMINATION, DECEMBER 2023

Fifth Semester

18CSO162T - COMPUTATIONAL FINANCE AND MODELLING

(For the candidates admitted during the academic year 2020 - 2021 & 2021 - 2022)

Note:

i. **Part - A** should be answered in OMR sheet within first 40 minutes and OMR sheet should be handed over to hall invigilator at the end of 40th minute.

ii. **Part - B** and **Part - C** should be answered in answer booklet.

Time: 3 Hours **Max. Marks: 100**

PART - A (20 × 1 = 20 Marks) — Answer **all** Questions

		Marks	BL	CO
1.	_____ as the name suggests, it is any financial product that "secures" a return in future. (A) Security (B) Stock (C) Derivative (D) Commodity	1	1	1
2.	A _____ is a type of derivative contract that obligates two parties to trade an asset at a specified price on a specified date in the future. (A) Forward (B) Futures (C) Options (D) Swap	1	1	1
3.	The term _____ used in finance refers to the transactions leading to a risk-free profit. (A) Arbitrage (B) Hedge (C) Stop loss (D) Tradeoff	1	2	1
4.	_____ is the risk on the return or mark-to-market (MtM) price of the product caused by the changes of the market price of the related financial assets and other financial factors. (A) Liquidity risk (B) Counter party risk (C) Market risk (D) Value at risk	1	2	1
5.	The _____ is the price at which a security first trades upon the opening of an exchange on a trading day. (A) Opening price (B) Closing price (C) High price (D) Low price	1	1	2
6.	_____ are the financial assets upon which a derivative's price is based. (A) Fixed assets (B) Liquid assets (C) Underlying assets (D) Current assets	1	1	2
7.	_____ style option may exercise at any time before the option expires. (A) European (B) American (C) Both European and American (D) Indian	1	2	2
8.	If the owner of an option decides to buy or sell the underlying instrument instead of allowing the contract to expire worthless or closing out the position, they it is called as _____. (A) Exercising (B) Buying (C) Selling (D) Holding	1	2	2
9.	_____ is a quantitative process of determining the fair value of an asset, investment, or firm. (A) Derivation (B) Verification (C) Computation (D) Valuation	1	1	3

10.	_____ refers to the degree to which market prices reflect all available, relevant information. (A) Inflation (B) Economic factor (C) Monetary policy (D) Market efficiency	1	2	3
11.	_____ is a risk management strategy that creates a mix of various investments within a portfolio. (A) Security analysis (B) Diversification (C) Differentiation (D) Deposit	1	2	3
12.	_____ measures a security's intrinsic value by examining related economic and financial factors. (A) Investment analysis (B) Portfolio analysis (C) Fundamental analysis (D) Technical analysis	1	1	3
13.	_____ is a rise in prices, which can be translated as the decline of purchasing power over time. (A) Inflation (B) Depression (C) Interest rate (D) Demand	1	2	4
14.	_____ is the net gain or loss of an investment over a specified time period, expressed as a percentage of the investment's initial cost. (A) Interest (B) Annualizing (C) Year over year (D) Rate of return	1	1	4
15.	_____ is a financial term used to describe the nominal or dollar value of a security, as stated by its issuer. (A) Face value (B) Discount value (C) Premium value (D) Discount and premium value	1	2	4
16.	_____ is a statistical function that describes all the possible values and likelihoods that a random variable can take within a given range. (A) Normal distribution (B) Log-normal distribution (C) Probability distribution (D) Frequency distribution	1	1	4
17.	_____ is the amount an investor stands to lose in an investment should the investment fail. (A) Risk return tradeoff (B) Offsetting position (C) Financial exposure (D) High frequency trading	1	2	5
18.	_____ is the most basic or standard version of a financial instrument, usually options, bonds, futures, and swaps. (A) Derivatives (B) Plain Vanilla (C) Exotic options (D) Investments	1	1	5
19.	_____ is a financial product where the parties involved in the transaction are assigned one of two outcomes based on whether the option expires in the money. (A) Dow option (B) Vanilla option (C) Focus option (D) Binary option	1	2	5
20.	_____ option is a latent option contract that begins to function as a normal option only once a certain price level is reached before expiration. (A) Financial exposure (B) Offset position (C) Knock in (D) Knock out	1	1	5

PART - B (5 × 4 = 20 Marks)

Answer **any 5** Questions

		Marks	BL	CO
21.	Illustrate the benefits of Currency Swaps with an example.	4	1	1
22.	Briefly write about settlement price in options.	4	1	2
23.	Explain the concept of Martingale system.	4	2	3

		Marks	BL	CO
24.	Discuss in brief your understanding on 'return'.	4	2	4
25.	Describe the importance of the outlier.	4	1	4
26.	Write a short note on hedging.	4	1	5
27.	Describe your understanding on exotic options.	4	2	5

PART - C (5 × 12 = 60 Marks)

Answer **all** Questions

		Marks	BL	CO
28.	(a) Discuss in detail on investible assets and investments, investment returns and risks.	12	2	1
	(OR)			
	(b) Elicit foreign exchange instruments and quotation conventions in detail.			
29.	(a) Elaborate Black Scholes model in detail.	12	3	2
	(OR)			
	(b) Evaluated the need of Delta, Theta and Gamma with suitable example			
30.	(a) Explain the methodologies of Value-at-Risk.	12	2	3
	(OR)			
	(b) Elaborate the Binomial Option Pricing model With suitable example			
31.	(a) Discuss normal distribution, its properties and empirical rule in detail.	12	2	4
	(OR)			
	(b) Criticize the stylized facts about volatility and volatility surface in detail.			
32.	(a) Elicit the following types of exotic options: Chooser options, compound options, barrier options and range options.	12	3	5
	(OR)			
	(b) Discuss in detail on statistical arbitrage and risk return tradeoff.			

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