MAHINDRA UNIVERSITY HYDERABAD
École Centrale School of Engineering
Minor-I Examinations, September 2023

Program: B.Tech. Branch: CM(2021 Batch) Year: 3^{rd} Semester: I

Subject: Financial Mathematics (MA3116)

Date: 19/09/2023 **Start Time: 10:00 AM**
Time Duration: 1.5 Hours **Max. Marks: 30**

Instructions:

1. Answer all questions.
2. Using scientific calculator is allowed.

Q 1:

Marks : 10

a) Define the following : (i) Futures contract, (ii) Call Option, (iii) Put Option.

Q 2:

Marks : 10

a) Consider a 3-period binomial model of stock price process. Assume $P(H) = 1/3$ and $P(T) = 2/3$. Let the initial stock price be $S_0 = 8$, $u = 2$ denote up-factor, $d = 0.5$ denote down-factor. Compute the conditional expectations $E_2(S_2)$, $E_2(S_3)$.

Q 3:

Marks : 10

a) Consider a 3-period binomial model of stock price process. Let the initial stock price be $S_0 = 8$, $u = 2$ denote up-factor, $d = 0.5$ denote down-factor, $r = 0.25$ be risk-free rate of interest compunding per time period.

(i) Find the premium price of the European call option with strike price $K = 14$.

(ii) Find Δ_0, Δ_1, Δ_2.
