CEGE0073

MSc: Banking and Digital Finance

Course Work 1 - Section 1 – 2022

- Answer **all** questions.
- Include diagrams where they assist in providing an explanation.
- The marks allocated for each question are clearly indicated in the [ ].

Question 1

(a) There are three defaultable loans and a riskless one with the following expected return and risks:

Loans	Expected Returns	Risk
1	0.14	0.06
2	0.08	0.03
3	0.2	0.15
4	0.05	0

In addition, the assets correlate with each other; the correlation coefficients of the returns of the assets are as follow:

$$\rho_{12} = \rho_{21} = 0.5 \qquad \rho_{13} = \rho_{31} = 0.2 \qquad \rho_{23} = \rho_{32} = 0.4.$$

Obtain CML, the optimal portfolio of risky loans on the CML, the market price of risk, and the risk of the optimal portfolio.

[12 marks]

(b) Suppose that an investor has the risk tolerance of 0.02. Find the composition of the optimal portfolio on the CML by specifying the percentage of his wealth to be invested in the risk-free asset and the risky loans obtained in part a, i.e. you need to find four proportions.

[3 marks]

[Total marks 15]

END OF PAPER