MACHAKOS UNIVERSITY

University Examinations for 2022/2023 Academic Year

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF MATHEMATICS AND STATISTICS

THIRD YEAR SECOND SEMESTER EXAMINATION FOR

BACHELOR OF SCIENCE (ACTUARIAL SCIENCE)

SAC 305: INVESTMENT AND ASSET MANAGEMENT 1

DATE: 18/4/2023 **TIME: 11:00 – 1:00 PM**

INSTRUCTIONS

ANSWER QUESTION ONE [COMPUSLSORY] AND TWO OTHER QUESTIONS

QUESTION ONE: 30 MARKS.

a) Define the following terms:
   i. Payback period. (2 marks)
   ii. Straight bonds. (2 marks)

b) How can the covariance of the returns on securities S_i and S_j be expressed in terms of the correlations of the returns on securitiesS_i andS_j? (5 marks)

c) Give the equation of the Markowitz model. (5 marks)

d) Assume that the capital gains allowance is £10,000 and the capital gains tax rate is 18% on gains that fall within the basic rate tax band and 28% on any further gains.
Mrs. Y has £1,000 of the basic tax band left unused. She makes a chargeable gain of £15,000. How much capital gains tax does she pay? (5 marks)

e) State five features of a government bond. (5 marks)

f) Briefly discuss three terms in which a bond is described. (6 marks)

QUESTION TWO (20 MARKS)

Cytonn Investments Management PLC wishes to invest in bonds.

a) State with explanations five corporate bonds that they would consider.

(10 marks)

b) Discuss five types of risk that they may encounter as they venture into that business. (10 marks)

QUESTION THREE (20 MARKS)

A piece of land is available for sale for £5,000,000. A property developer, who can lend and borrow money at a rate of 15% per annum, believes that she can build housing on the land and sell it for a profit. The total cost of development would be £7,000,000 which would be incurred continuously over the first two years after purchase of the land. The development would then be complete.

The developer has three possible project strategies. She believes that she can sell the completed housing:

- in three years' time for £16,500,000
- in four years' time for £18,000,000
- in five years' time for £20,500,000

The developer also believes that she can obtain a rental income from the housing between the time that the development is completed and the time of sale. The rental income is payable quarterly in advance and is expected to be £500,000 in the first year of payment. Thereafter, the rental income is expected to increase by £50,000 per annum at the beginning of each year that the income is paid. Determine the optimum strategy if this is based upon using net present value as the decision criterion.

QUESTION FOUR (20 MARKS)

a) Complete the following table comparing ordinary shares with preference shares. **(10 marks)**

	ordinary shares	preference shares
Voting rights		
Dividends		
Importance for company		
Different varieties		
Priority on winding up the company		

b) You be requested by your friends to help them choose the best loan suitable for their different needs .outline with explanations five types of loans that they would consider. (10 marks)

QUESTION FIVE (20 MARKS)

An investor has the choice of the following assets that earn rates of the return as follows in each of the four possible states of the world.

State	probability	Asset 1	Asset 2	Asset 3
1	0.2	5%	5%	6%
2	0.3	5%	12%	5%
3	0.1	5%	3%	4%
4	0.4	5%	1%	7%
Market capitalization		100,000	17,546	82,454

Determine the market price of risk assuming CAPM holds and define the terms.