THE CATHOLIC UNIVERSITY OF EASTERN AFRICA

A. M. E. C. E. A

GABA CAMPUS - ELDORET

MAIN EXAMINATION

SEPTEMBER – DECEMBER 2021 TRIMESTER

SCHOOL OF BUSINESS

ORDINARY DIPLOMA IN BUSINESS MANAGEMENT

DEPARTMENT OF ACCOUNTING AND FINANCE

CFD 081: ACTUARIAL AND FINANCIAL MATHEMATICS

Date: December 2021	**Duration:** 2 Hours

Instructions: Answer Question **ONE** and any other **TWO** questions

QUESTION ONE

a). It is estimated that an investment in a new process will cause the following cash flows:

Year	0	1	2	3	4	5
Net cash flow	(25,000)	8,000	12,000	9,000	7,000	7,500

Required;

Calculate the net present value of the investment, using a discount rate of 14%.

(10 marks)

b). Discuss the utility of the concept of 'time value of money' **(10 marks)**

c). It is estimated that a mine will yield an annual net return (after all operating costs) of shs. 50,000 for the next 15 years. At the end of this time the property will be valueless.

Required;

Calculate the purchase price of the mine to yield a return of 12% per annum

(10 marks)

QUESTION TWO

a) A machine that costs shs. 100,000 is expected to have a life of 5years and then a scrap value of shs. 15,000. Projects of this type are expected to return at least 18%. Its expected net returns are:

Year	1	2	3	4	5
Returns	20,000	50,000	35,000	35,000	35,000

Required;

i) Calculate the accumulated depreciation for the 5years **(5 marks)**

ii) Calculate the net present value of the machine **(12 marks)**

iii) Comment on whether the machine should be purchased **(3 marks)**

QUESTION THREE

a) A firm plans to invest an amount of money at the beginning of every year in order to accrue a sum of shs. 100,000 at the end of a five year period. What is the value of the amount, if the investment is 14%. **(10 marks)**

b) what is 'reducing balance' depreciation and how is it connected with compound interest **(10 marks)**

QUESTION FOUR

a) Discuss the factors that influence the value of a security **(15 marks)**

b) The following information was extracted from the books of XYZ ltd. the nominal value or par value of its shares was shs. 40 per share. Dividend declared and paid was 20% per share. The investor expected a dividend yield rate of 10%.

Required;

Calculate the value of this company's ordinary share **(5 marks)**

QUESTION FIVE

A main frame computer whose cost is shs. 220,000 will depreciate to a scrap value of shs. 12,000 in 5years.

Required;

a) If the reducing balance method of depreciation is used, find the depreciation rate. **(12 marks)**

b) What is the book value of the computer at the end of the third year? **(3 marks)**

c) How much more would the book value be at the end of the third year if the straight line method of depreciation has been used? **(5 marks)**

END