JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY

SCHOOL OF BUSINESS & ECONOMICS

UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR OF EDUCATION

1ST YEAR 1ST SEMESTER 2018/2019 ACADEMIC YEAR

KISII CAMPUS-PART TIME

COURSE CODE: ABA 107

COURSE TITLE: MANAGEMENT MATHEMATICS I

EXAM VENUE: **STREAM: (B/ED)**

DATE: **EXAM SESSION:**

TIME: 2   HOURS

Instructions

1. Answer question one (compulsory) and any other two questions
2. Candidates are advised not to write on the question paper
3. Candidates must hand in their answer booklets to the invigilator while in the examination room

Question one

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

End year	0	1	2	3	4	5	6
Cash-flow	(60,000)	10,000	15,000	20,000	20,000	20,000	20,000

The firm wishes to earn atleast 15% interest per annum on the project of this type

Required:

a) Calculate   net present value of the project and comment on the course of action to be taken.
                                                                                    (8marks)
b) i) Distinguish between simple interest and compound interest.   (2marks)
    ii)   Discounting and compounding.   (2marks)
c) A computer whose cost is shs. 220,000 will depreciate to a value of 12,000 in 5years find;
    i)   Depreciation rate.   (4marks)
    ii)   The value of the computer at the end of 3rd year.   (4marks)

d) i) solve the following equations by matrix method.   (4marks)

$$2x + 3y = 20$$
$$x - y = 10$$

ii) $\frac{2x-3}{3} = \frac{x+10}{4}$ (3marks)

iii) $\frac{x+1}{1+2x} = \frac{1}{3}$ (3marks)

Question two

a) The following data of consumer prices was obtained from consumer watch for the period of 2016

	2017		2016	
	Price (ksh.)	**Qty(bags)**	**Price (ksh.)**	**Qty(bags)**
Maize	65	20	135	30
Wheat	95	8	160	7
beans	150	5	320	8

Required: taking 2016 as the base year calculate:

i)   Laspeyres price index.   (4marks)
ii)   Paasche's price index.   (4mrks)
iii)   Fisher's ideal price index .   (4marks)
iv)   Marshall edgeworth price index.   (2marks)

b) A man wants to save 100,000 to pay for his son's education in 10 years time. An education fund requires the investor to deposit equal installments annually at the end of each year. If interest of 7.5% is paid, how much does the man need to save each year in order to meet his target?.

                                                                         (6marks)

Question three

a) A building costs 500,000 and it is decided to depreciate it at 10% p.a. on the reducing balance method . what will be its written down value be after 25 years?   (8marks)

b) Project y requires an initial outlay of 40,000. The expected use of the project is five years and the cash-flows for the five years are given below.

Year	shs.
1	18,000
2	12,000
3	10,000
4	9,000
5	6,000

The cost of capital is 10%

Required:

i)   Net present value.   (6marks)

ii)   Profitability index.   (2marks)

iii)   Payback period.   (2marks)

c) Internal rate of return.   (2 marks)

Question four

Given that:

T= {0,1,2,3,4,5,6,7,8,9,---,30}

A={1,2,3,5,7,11,13,17,19,23}

B={1,3,5,7,9,11,13,15,17,19,21,23,25}

C= {2,3,4,6}

List the elements of set

i)   A∪B∪ C.   (4marks)

ii)   A∩ B ∩ C.   (4marks)

Records at Ruma national park indicates that of 2000 people attending a tour to the park, 1200 visited section A 1150 visited section B and 870 visited both section A and B

Required:

a) How many people visited only section A.   (3marks)

b) How many people visited only one section.   (3marks)

c) How many people did not visit neither section A nor section B.   (3marks)

d) How many people visited either section A or section B.   (3marks)

Question five

a) Four businessmen; Aghan, bosire, Charles and derrick were each given shs. 250,000to invest in a bank that pays an interest of 12% per annum for four years. The amounts were compounded as follows for each group.

Aghan –quarterly

Bosire – semi annually

Charles - monthly

Derrick – annually

Required:

Determine the amount for each group at the end of the period.   (12 marks)

      i)   Solve the following equations.   (8 marks)

$$2x+y-z=11$$
$$x-2y+2z=-2$$
$$3x-y+3z=5$$