ZIMBABWE EZEKIEL GUTI UNIVERSITY

FACULTY OF, SCIENCE, TECHNOLOGY, AGRIC AND FOOD SYSTEMS DEVELOPMENT

DEPARTMENT OF DIGITAL TECHNOLOGY AND INFORMATION SYSTEMS

EXAMINATION PAPER

COURSE CODE	:	DIS 112
COURSE TITLE	:	Introduction to general Mathematics
SPECIAL REQUIREMENTS	:	None
DURATION	:	3 Hours
LEVEL	:	1.1
DATE	:	2025

09 APR 2025

INSTRUCTIONS TO CANDIDATES:

1. This paper consists of 2 sections
2. Answer **ALL** Questions in SECTION A and ANY TWO Questions from SECTION B in booklet provided.
3. Start each Question on a new page

There are 5 printed pages on this question paper

SECTION A

*Answer **ALL** questions from this section. The section carries **60 marks***

1: Find the lowest common multiple (LCM) of each pair of numbers.

a) 15 and 35
b) 14 and 22
c) 15 and 21

[6]

2: Find the highest common factor (HCF) of each pair of the following numbers

a) 21 and 49
b) 35 and 45
c) 18 and 24

[6]

3: Given $60 = 2^2 \times 3 \times 5$ and $84 = 2^2 \times 3 \times 7$

Find

(a) the lowest common multiple(LCM) of 60 and 84.

[3]

(b)the highest common factor (HCF) of 60 and 84.

[3]

4: Find the lowest common multiple (LCM) of 15, 20 and 25.

[4]

5: Give the order of the following matrices

i) **(2 4 5)**

ii) $\begin{bmatrix} 1 & 0 \\ 3 & -4 \\ 2 & -1 \end{bmatrix}$

iii) $\begin{bmatrix} 2 & 5 & 2 \\ -3 & 9 & 7 \end{bmatrix}$

[6]

6: Explain the following terms using relevant examples

(a) Element
(b) Set
(c) Union
(d) intersection
(e) Complement of a Set **[10]**

7: If

$A = \begin{bmatrix} 1 & 3 \\ -2 & 8 \end{bmatrix}$ and $B = \begin{bmatrix} -4 & 6 \\ 0 & 7 \end{bmatrix}$

Find

i A+B
ii AB
iii 3A
iv 4(A+B)
v A-B
vi 2A+3B
vii The determinant of matrix A
viii The inverse of matric A

[16]

8: Explain the following terms using relevant examples

(a) Vector

(b) magnitude
(c) parallel vectors [6]

SECTION B

*Choose any **TWO** questions from this section. Each question carries **20 marks**.*

9

a) Four wooden rods are of lengths 140 cm,238cm,168cm and 210 cm. They are cut into pieces which are all of the same length. Find the greatest length possible for these pieces if no wood is left over?
[10]

b) Find the greatest number which when divided into 179 and 234 will leave a remainder of3 in each case (Hint first subtract 3 from both numbers.)
[10]

10

a) Draw a diagram for each situation below and shade the areas highlighted below

i $A \cup B$
ii $A \cap B$
iii A
iv B [4]

b) The universal set is a set of integers between 0 and 16
Set A is a set of even numbers
Set B is a set of multiples of 3

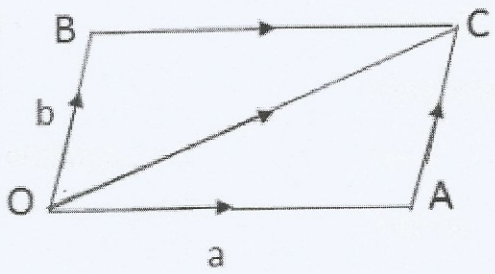
Write down the elements of
i The universal set
ii set A
iii set B
iv set B union set A
v set A intersection set B
vi complement of, set A intersection set B
vii complement of, set B union set A

viii number of elements in the universal set

[16]

11.

a) Given the following diagram find the following vectors in terms of **a** and **b**



i OC
ii BC
iii CA
iv AB
v OA

[10]

b) Given the following ,find the value of

$$5\begin{pmatrix}4 & 3\\ 7 & 3\end{pmatrix} - 2\begin{pmatrix}1 & 4\\ 3 & 2\end{pmatrix} = \begin{pmatrix}w & x\\ y & z\end{pmatrix}$$

i W
ii X
iii Y
iv Z
v 2x

[10]

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