

**UGANDA MARTYRS UNIVERSITY**  
**FACULTY OF EDUCATION**  
**DIPLOMA IN EDUCATION ( PRIMARY) YEAR I**  
**END OF SEMESTER TWO EXAMINATIONS 2016**

**PAPER I:**

**PRIMARY MATHEMATICS AND METHODOLOGY**

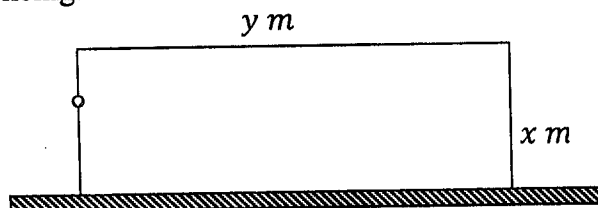
**DATE: WEDNESDY 25/05/2016 TIME: 9.30-12.30 PM DURATION: 3 HOURS**

**Instructions**

- Read and follow instructions on the answer booklet
- Do not write anything on this question paper
- Answer any four questions
- Start each question on a fresh page in your answer booklet.

**Question 1**

- a) What is an inequality?
- b) Identify and explain any two rules that must be observed when solving an inequality.
- c) Solve the inequality  $\frac{2x+7}{5} \geq \frac{3x}{2}$  and represent the solution on a number line.
- d) A farmer wishes to fence a rectangular field, with an area of at least  $100m^2$ , using part of the existing wall as one side, as illustrated below. He does not wish to buy more than  $30m$  of fencing.



- i. Write down a perimeter inequality involving  $x$ ,  $y$  and  $30$
- ii. Write down an area inequality involving  $x$ ,  $y$  and  $100$
- iii. If the farmer bought exactly  $30m$  and the longer side of the field is  $18m$ , Determine the length of the other side
- iv. How many more square meters did the farmer require?

### Question 2

- a) In a shop, pencils ( $p$ ) cost shs.10 each and erasers ( $e$ ) cost shs.15. Ben goes into the shop and buys some pencils and erasers. If Ben actually spent shs.105, write down the equation to show this.
- b) The perimeter,  $P$ , of a rectangle is given by the formula  $P = 2(l + b)$ . If  $l$  and  $b$  are the lengths and width respectively;
- Find  $P$  when  $l = 7.3\text{cm}$  and  $b = 3.7\text{cm}$
  - Find  $l$  when  $b = 16\text{cm}$  and  $P = 84\text{cm}$
- c) Solve the following equation

$$\frac{y+6}{4} - 1 = \frac{3y-1}{5}$$

- d) Factorize the following expressions and simplify where possible
- $22pq + 55qr$
  - $\frac{3xy-x}{5xz-z}$
  - $au + av - u - v$

### Question 3

- a) Explain how you would guide learner on how to convert from one unit of length to another.
- b) Change 18.03 Hectometer to the units stated
- Kilometer
  - Decameter
- c) A school van has a weight of 56000N. If the driver weighs 740N and with him in the van is Mr. Mugisha who is 48 Kg and Ms. Were who weighs 634N. What is the total;
- Weight of the van and its occupants
  - Mass of the van and its occupants, use  $g = 10 \text{ ms}^{-2}$
- d) Change  $94^{\circ}\text{C}$  to  $^{\circ}\text{F}$ .

### Question 4

- a) Given two sets  $A$  and  $B$ , define the following sets
- Disjoint sets
  - Complementary sets
  - Union sets.
- b) Given that  $F = \{\text{all factors of } 24\}$  and  $G = \{\text{all factors of } 30\}$ . Find;
- $n(F^c \cap G)$
  - $n(F \cap G^c)$

- c) A group of 8 students was asked what games they play. It was found out that 20 play Rugby (R), 30 play Soccer (S) and 15 play Basket ball (B). 6 play both Rugby and soccer, 4 play both Soccer and Basket ball and 5 play both rugby and basket ball. The number of students who play soccer only is equal to twice the number of students who play Rugby only. All the students play at least one of the games.
- Represent the above information on a Venn diagram
  - Find the number of students who play all the three games
  - The total number of students in the group
  - If a student is chosen at random from the group, find the probability that the student plays
    - At least two games
    - None of the three games. (explain your answer)

#### Question 5

- a) Define the following terms
- Probability
  - An event
  - Sample space
- b) A bag contains 3 Red, 5 White and 2 Green balls. A ball is taken out, and then a second one is picked without replacing the first one. Draw a tree diagram and use it to calculate the probability of picking;
- both red,
  - both white,
  - both Green,
  - red then white,
  - at least a Green ball,
  - same colors.

#### Question 6

- a) The base of a right pyramid is a right angled triangle whose sides are 3 cm, 4cm and 5 cm; the height of the prism is 10 cm.
- Calculate the volume of the prism
  - Make a sketch of the prism and construct a net of the prism
  - Calculate the surface area of the prism
- b) A cylinder has a radius of 3 cm and height 5 cm. Find the area of the curved surface, in  $\text{mm}^2$
- c) A floor measuring 2.5 m by 2.0 m is to be covered by square tiles measuring 25 cm each. Find the number of tiles that will be needed to cover the floor.