

Mount Kenya



University

UNIVERSITY EXAMINATION 2014/2015

SCHOOL OF EDUCATION  
DEPARTMENT OF EARLY CHILDHOOD EDUCATION

BACHELOR OF EDUCATION IN EARLY CHILDHOOD STUDIES  
SCHOOL BASED

UNIT CODE: BEC2205

UNIT TITLE: PRIMARY MATHEMATICS II

DATE: AUGUST 2015

MAIN EXAM

TIME: 2 HOURS

**INSTRUCTIONS: ANSWER QUESTION ONE AND ANY OTHER TWO QUESTIONS**

1. a) Remove the brackets and simplify the following expressions;

i)  $5(x-2y)-3(x-4y+2)$  (3Marks)

ii)  $3\{2p-\frac{1}{3}(p-q+r)\}$  (3 Marks)

b) Solve for the unknown in each of the following equations;

i)  $(3x-7)-4(x-2)=0$  (3 Marks)

ii)  $\frac{2x-3}{2}=\frac{x+2}{2}$  (3 Marks)

c) If  $r=5$ ,  $s=2$  and  $t=3$ , find the value of;

i)  $\frac{r}{s}+\frac{s}{t}+\frac{t}{r}$  (3 Marks)

ii)  $\frac{25-r}{5}+\frac{3}{5}t$  (Marks)

d) i. A man is 3 times as old as his son. Ten years from now, the father will be just twice as old as his son, how old is each at present?

(4 Marks)

ii. The length of a rectangle is  $(2x+5)$  cm if the width of the rectangle is three fifths its length and the perimeter of the rectangle is 80cm, find its area.

(5 Marks)

e) Solve the inequality below and state the integral values of X  
 $3x-2 \leq 10+2x < 5x+2$ .

(3 Marks)

2/ a) Expand the following binomial products;

i)  $(x+3)(x-5)$

(3 Marks)

ii)  $(2x-5)(3x-4)$

(3 Marks)

b) Factorize completely the expressions given below;

i)  $x^2+5x+6$ .

(3 Marks)

ii)  $3x^2-4x-4$

(3 Marks)

c) i. Solve for x by the method of factorization given that  $x^2-8x+15=0$ .

(4 Marks)

ii. The difference between two whole numbers is 5. If the product of the two numbers is 24, find the two numbers.

(4 Marks)

3. a) Solve the pair of simultaneous equations;

$$3x-4y=16$$

$$4x+5y=42$$

Using

i) The method of elimination.

(4 Marks)

ii) The method of substitution.

(4 Marks)

b) John spent Kshs 420 to buy 12 pens and 8 pencils. If Peter spent Kshs 250 to buy 7 pens and 5 pencils of the same type, find the cost of a single pen and a single pencil.

(6 Marks)

c) Form the quadratic equation with the following roots;

i)  $(2, -\frac{1}{2})$

(3 Marks)

ii)  $(0, 3)$

(3 Marks)

$$\begin{aligned} a+b &= 25 \\ a-b &= 17 \\ \hline 2a &= 42 \\ a &= 21 \\ 21-b &= 25 \\ -b &= 4 \\ b &= -4 \end{aligned}$$

4. a) i. Simplify;  $\frac{x^2-9}{2x^2+9x+9}$ . (9 Marks)

ii. Solve the inequality given below and represent the solution on a number line;  $2-x < 2x-1 \leq 14-\frac{1}{2}x$ . (6 Marks)

b) State the nature of the roots of the quadratic equation  $ax^2 + bx + c = 0$  ( $a \neq 0$ ) when;

i)  $b^2 - 4ac > 0$  (1 Mark)

ii)  $b^2 - 4ac = 0$  (1 Mark)

iii)  $b^2 - 4ac < 0$  (1 Mark)

c) Solve the equation;

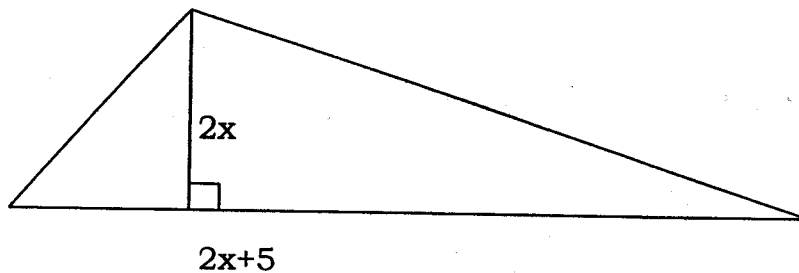
$$\frac{6}{x-4} = \frac{x+4}{x}$$

5. a) Solve the quadratic equation  $2x^2 + 3x - 2 = 0$  using

i) The quadratic formula. (4 Marks)

ii) The method of completing square. (4 Marks)

b) The figure below shows a triangle whose base and height in cm are as indicated in terms of  $x$ . If the area of the triangle is  $25\text{cm}^2$ , determine the actual base and height of the triangle.



c) Given  $t = \frac{y-x}{y+x}$  make;

i)  $X$  the subject of the formula. (3 Marks)

ii)  $Y$  the subject of the formula. (3 Marks)