
CHUKA



UNIVERSITY

**UNIVERSITY EXAMINATIONS
RESIT/SPECIAL EXAMINATIONS**

EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF

MATH 101: FOUNDATION MATHEMATICS

STREAMS:

TIME: 2 HOURS

DAY/DATE: THURSDAY 26/07/2018

5.00 P.M – 7.00 P.M

INSTRUCTION:

QUESTION 1 - (30MARKS)

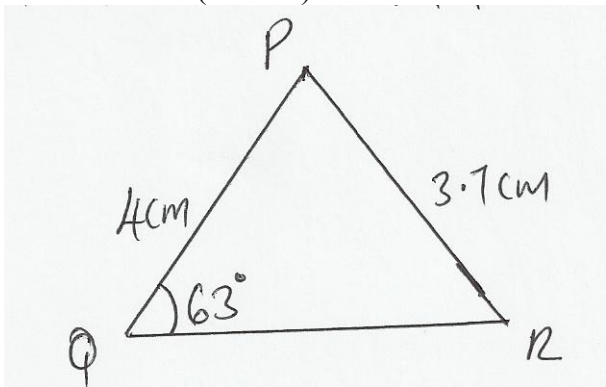
1. Expand $\left(5 - \frac{x}{2}\right)^6$ up to term in x^3 uses your expansion to estimate the value of $\left(4\frac{1}{2}\right)^6$ correct to one decimal place. (4 marks)

2. Find the radius and the centre of a circle whose equation is $3x^2 + 3y^2 + 18y - 12x - 9 = 0$ (4marks)

3. A single unbiased dice is thrown once. Find the probability that the score will be:
- a) even (2 mark)
 - b) a multiple of 3 (2mark)
 - c) a prime number (2mark)

4. Find the length QR of the following triangle if $PR=3.7\text{cm}$ $PQ=4\text{cm}$ and $\angle PQR = 63^\circ$.

(5marks)



5. Without using logarithms table, solve the equation

(4marks)

$$\log(5x - 4) = \log(x - 2) + \frac{1}{3} \log 27$$

6. Without using a calculator or mathematical table, express
simplify

$$\frac{\sin 60^\circ}{1 - \cos 30^\circ}$$

in surd form and
(4marks)

7. Simplify:

$$\frac{2a^2 - 3ab - 2b^2}{4a^2 - b^2}$$

(3marks)

QUESTION 2 - (20 MARKS)

1. Solve for θ in the equation $\sin (4\theta + 10^\circ) - \cos(\theta+70^\circ) = 0$ (4marks)

2. Solve for y if: $9^{(y^2)} = 27^{(2y + 2)}$.
(4marks)

3. Solve for X in the equation. (4 marks)

$$\frac{6x-4}{3} - \frac{2x-1}{2} = \frac{6-5x}{6}$$

4. Simplify the given algebraic expression

(4 marks)

$$\frac{54xy + 45uy - 12xu - 10u^2}{18xu + 10u^2 - 81xy - 45yu}$$

5. Work out the following

(4 marks)

$$\frac{\frac{2}{3} \div \frac{5}{7} \text{ of } \frac{1}{18}}{\frac{3}{5} + \left(2\frac{1}{2} - \frac{2}{3}\right) \div \frac{5}{6}}$$

QUESTION 3 - (20 MARKS)

1. Simplify

(3 marks)

$$\frac{89 - (21 - 2 \times 6) + 4(5 - 2) - 20}{96 \div 4(12 - 2(8 - 6))}$$

2. Determine the two possible values of a for which.

(3marks)

$$\int_0^a \frac{x^2 - 1}{x + 1} dx = 12$$

3. Evaluate

(4marks)

$$\int_1^3 \frac{3x^3 + x^2 - 2x}{3x} dx$$

4. Find the point on the curve $y = 2x^2 - 3x + 4$ at which the tangent is parallel to the line

$$y - 5x = 3.$$

(3marks)

5. The first term of an increasing A.P is 3. The third term, the sixth term and the tenth term of the A.P form the consecutive terms of the G.P. find the common difference of the AP.

(3marks)

6. Simplify the following by rationalizing the denominator.

(4marks)

$$\frac{\sqrt{2}-1}{4\sqrt{2}-3}$$
