

**BURUBURU GIRLS SECONDARY SCHOOL**

**MATHEMATICS**

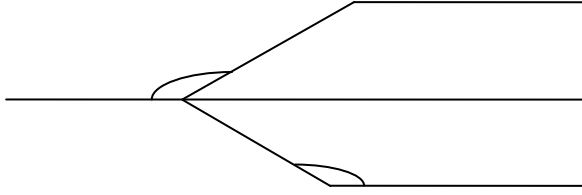
**FORM 2 END OF TERM 1 EXAM (2016)**

**TIME: 2 HOURS**

**Answer all the questions**

**SECTION A: Answer all the questions**

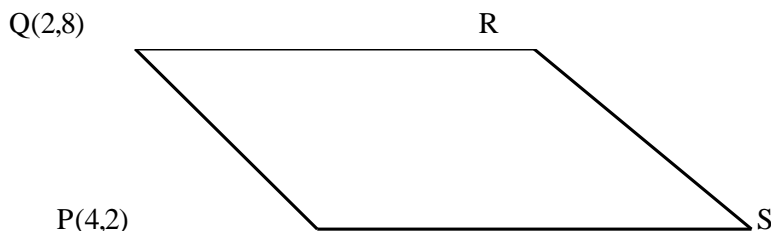
1. Evaluate  $\frac{-12 \div (-3) \times 4 - (-20)}{-6 \times 6 \div 3 + 6 + (-6)}$  (3marks)
2. Three bells ring at intervals of 9minutes, 15minutes and 21minutes. If they will next ring at 11 pm, find the time the bells had last rang together. (3marks)
3. Evaluate  $\frac{2/5 \div (1/2 \text{ of } 4/9) - 1^{1/10}}{1/8 - 1/6 x^3/8}$  (3marks)
4. It takes 30 workers 6 days working 8 hours a day to harvest maize in a farm. How many days would 50 workers working 6 hours a day take to harvest the maize. (2marks)
5. A salesman earns a basic salary of shs. 9000 per month. In addition he is paid a commission of 5% for sales above 15,000. In a certain month, he sold goods worth 120,000 at a discount of 3%. Calculate his total earnings that month. (3marks)
6. If  $\frac{x+3}{x-9}$  is the reciprocal of  $\frac{x-4}{x+1}$ . Find the value of x (3marks)
7. Use tables of reciprocals, cubes and square roots to evaluate  $\frac{5}{\sqrt{(0.493^3)+0.2045}}$  (4marks)
8. Solve for x given that  $32^{x-3} \times 8^{x+4} = 64 \div 2^x$  (3marks)
9. Use logarithm tables to evaluate  $\sqrt[3]{\frac{3.196^2 \times 0.024^3}{\log 204.6}}$  (4marks)
10. Simplify without using tables or calculators  $\frac{\log_{10} 2 \times \log_{10} 8}{\log_{10} 20 + \log_{10} 12.8}$  (2marks)
11. Find the equation of a line  $l_1$  that passes through the midpoint of another line  $l_2$ .  $l_2$  passes through points P(2,3) and Q(6,1). Express the equation in the form  $ax + by + c = 0$  where a, b and c are constants. (3marks)
12. In the figure below, PQ, RS and TU are parallel. Calculate the size of the unknown angles marked by the letters giving reasons for your answer. (3marks)



13. a) Expand  $(2x - 5)(x + 5)$  (2marks)  
 b) Use the expansion above in a) to expand  $95 \times 55$  (2marks)
14. The length of an arc of a circle is 9.42 cm. if the diameter is 10 cm, find the angle subtended by the arc at the center (take  $\pi = \frac{22}{7}$ ) (3marks)
15. The sum of the interior angles of two regular polygons is  $1620^\circ$ . Given that one polygon is one side more than the other, find the number of the sides of the two polygons and name them. (4marks)
16. If  $a = 3$ ,  $b = 4.7$ ,  $c = 6.4$ , find the value of  $\sqrt{\frac{a^2 b^2}{c}}$  using the squares and square root tables. (3marks)

**SECTION B: This section contains five questions. Answer all the five questions.**

17. The following is a pair of simultaneous equations  $5x + y = 7$  and  $3x + 2y = 0$
- Use a suitable scale to draw graphs of the two equations. (4marks)
  - From the graphs, find the value of  $x$  and  $y$  that make the solutions of the simultaneous equations. (2marks)
  - Solve the same pair of equations by substitution method. (4marks)
18. A three digit number is such that the sum of its hundreds and tens digits is 10. When the number is divided by its hundreds digit, the quotient is 108. If the number is divided by the sum of all its digits, the quotient is 36. Find the number. (10marks)
19. In the figure below, PQRS is a rectangle with the points  $P(4,2)$  and  $Q(2,8)$ . Given that the equation of the line PR is  $2y = 2x + 4$ , find (10marks)
- The equation of line QP
  - The equation of line QR
  - The co-ordinates of R
  - The co-ordinates of S



20. Three points P, Q, R are on a ground level. Q is 240 m from P on a bearing of  $230^\circ$ . R is 120m to the east of P.
- Using a scale of 1cm represents 40m, draw the diagram to show the positions of P, Q and R. (2marks)
  - Determine,

- i) The vertical distance of R from Q. (2marks)
- ii) The bearing of R from Q. (2marks)
- c. A vertical post stands at P and another at Q. a bird takes 18 seconds to fly directly from the top of the post at P to the top of another post at Q. calculate
- iii) The distance to the nearest meters the birds covers. (2marks)
- iv) The speed of the bird in km/h (2marks)
21. The measurements of a maize field using a base line XY in meters were recorded as follows.
- a. Using a suitable scale, draw the map of the maize field. (3marks)

	Y	
TO C 100	450	
TO B 60	300	20 TO D
	120	70 TO E
TO A 40	60	
	X	

- b. Find the area of the field in hectares. (4marks)
- c. Find the area of the shaded region in the square below. (3marks)
- $r = 3.5\text{cm}$

