



# MACHAKOS UNIVERSITY

University Examinations for 2019/2020 Academic Year

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF MATHEMATICS AND STATISTICS

FIRST YEAR THIRD SEMESTER EXAMINATION FOR

ARTISAN IN FOOD AND BEVERAGE

GARMENT MAKING

ELECTRICAL ENGINEERING

MOTOR VEHICLE ENGINEERING

1601/103: MATHEMATICS

DATE: 17/12/2020

TIME: 2.30- 5.30 PM

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## INSTRUCTIONS

**ANSWER ALL THE QUESTIONS**

- Convert the recurring decimal 0.545454 into a fraction.
- Evaluate  $2\frac{1}{4} \times 5\frac{5}{6} \div 4\frac{2}{3}$
- Solve the simultaneous equations  
 $3x + y = -2$   
 $2x + 4y = 2$
- The base of an isosceles triangle is 16cm, if its area is  $120\text{cm}^2$ , find the length of its equal sides.
- If  $4x + y - 2 = 0$ , what is the gradient and at what point does the graph cross the x-axis.
- How long would Sh. 1,200.00 amount to Sh. 1,440.00 at 12% simple interest per annum?
- From the following data:

Mark	10	20	30	40	50	60
Frequency	3	6	1	14	11	2

Determine: mode, median and mean

- In a triangle ABC, angle A is twice angle B and C is 20% less than angle B. Find the size of each angle.
- Simplify:  
(i)  $\frac{a-b}{3} - \frac{2a-4b}{4}$       (ii)  $\frac{16^{1/2} \times 2^3 \times 4^2}{8^3}$
- Find the value of x in  $\frac{2}{6x} = \frac{4}{8x-3}$