



MACHAKOS UNIVERSITY

University Examinations for 2020/2021

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF MATHEMATICS AND STATISTICS

FIRST YEAR SECOND SEMESTER EXAMINATION FOR

1802/101/M FB CRAFT CERTIFICATE IN FOOD AND BEVERAGE

1801/101/M CRAFT CERTIFICATE IN FASHION DESIGN

MATHEMATICS

DATE: 8/9/2021
AM

TIME: 11:30 – 2:30

INSTRUCTIONS

Answer **ALL** the questions in this paper.

1. Simplify:

(a) $\frac{x^{-\frac{2}{3}} y^{-\frac{1}{3}}}{(x^4 y^2)^{-\frac{1}{6}}}$ (5 marks)

(b) Evaluate:

$$\frac{a^2 b}{ab^2 - a^2 b} \quad (3 \text{ marks})$$

2. P varies directly as the cube of t and inversely as the square root of m. If P = 16 when t = 2 and m = 9, calculate the value of P when m = 16 and t = 5.

(7 marks)

3. The table shows the units of electricity consumed by 180 micro-enterprises in one month.

Units of Electricity	No. of Micro-Enterprises
50 – 70	5
70 – 90	25
90 – 110	85

Determine the :

- (i) Modal class
 - (ii) Median
 - (iii) Mean (10 marks)
4. (a) Solve the equation $\frac{x-3}{5} = 4 - \frac{(x-2)}{2}$ (4 marks)
- b) Determine the equation of the straight line that passes through the points P(1,2) and R(3, -4). (5 marks)
- (c) Evaluate
- (i) $\frac{7!x 5!}{8!x 3!}$ (4 marks)
 - (ii) $14P_3 \div 12C_6$ (5 marks)
5. (a) The football and volleyball teams played during intercollege games. The probability that the teams won were $\frac{5}{8}$ and $\frac{3}{7}$ respectively. Determine the probability that:-
- (i) At least one of the teams won.
 - (ii) Both teams won (6 marks)
- (b) Esther bought an old cooker for Sh. 750 and paid 35% of the price in cash. If the balance was paid in 10 equal monthly instalments, what was the monthly instalment? (4 marks)