MACHAKOS UNIVERSITY

University Examinations 2019/2020

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF MATHEMATICS, STATISTICS AND ACTUARIAL SCIENCE

FIRST YEAR SECOND SEMESTER EXAMINATION FOR

CERTIFICATE IN FASHION DESIGN

CERTIFICATE IN FOOD AND BEVERAGE

MATHEMATICS

DATE: 26/3/2020 **TIME: 2.30-5.30 PM**

INSTRUCTIONS:

Answer all the questions in this paper.

1. Evaluate without using tables:

   (a) $\frac{\frac{1}{2} + 2\frac{4}{5} \text{ of } 8 \div 6(2 \times 4\frac{2}{5})}{\frac{2}{4} \text{ of } 6\ (8 \div 3\frac{1}{3})}$ (7 marks)

   (b) $\frac{{}^{7}C_5 \times {}^{9}C_6}{7P_1}$ (4 marks)

2. a) A batch of 40 items contains 8 defectives. If two items are picked at random, calculate the probability of having one defective, if they were drawn:

   (i) With replacement

   (ii) Without replacement (4 marks)

   b) Make m the subject of the formula

   $m - p = \sqrt{(k^2 - m^2)}$ (6 marks)

3. a) If y is directly proportional to x and y = 144, when x = 4. Determine the value of y when x = 15. (4 marks)

   b) Find the area of a trapezium given that the parallel sides are 7cm and 9cm with an attitude of 5 cm. (4 marks)

4. a) A trader offers 25% discount on the marked price and in addition 5% for cash on the discounted bill. How much would one pay for a parker pen costing Sh. 380. (5 marks)

b) Evaluate: $20 - 15 \div 4 \times 8 + 12$ (3 marks)

5. a) The weights in kg of 15 people are given as: 28,33, 30, 23, 34, 39, 30,29, 43, 25, 35, 26, 50, 30, 25

Determine:

(i) The mode

(ii) The median

(iii) The mean (8 marks)

b) Evaluate $(a^{\frac{3}{2}} b\, c^{-3})\ (a^{\frac{1}{2}} b^{-\frac{1}{2}} c)$ when a = 4, b = 16 and c = 2 (5 marks)