

JOMO KENYATTA UNIVERSITY OF AGRICULTURE AND TECHNOLOGY

DBIT/DBA CAT.2 &3 TAKEAWAY

- a) A manufacturer makes two products Q and M. the cost of making 15 units of product Q and 10 units of M is 600 shillings. The cost of making 5 units of product Q and 8 units of product M is 340 shillings. The manufacturer makes a profit of 20% and 25% on each unit of product Q and product M respectively.
- Form a simultaneous equation for the above statement. (3marks)
 - Calculate the cost of making one unit of product Q and product M. (4marks)
 - Calculate the selling price of one unit of product Q and product M. (3marks)
- b) Find the inverse of the following matrices P.
- $$P = \begin{bmatrix} 2 & -3 & 4 \\ 1 & 0 & 3 \\ 2 & -1 & 3 \end{bmatrix} \quad (6marks)$$
- c) The first, the third, and the seventh terms of an increasing arithmetic progression are three consecutive terms of geometrical progression. If the first term of the arithmetic progression is 10, find the common difference of the arithmetic progression. [8marks]
- a) Use the quotient rule to find the first derivatives of the following expressions.
- $Y = \frac{4x^3+2}{x^6}$
 - $Y = \frac{5x^2+4}{x^3+6}$ (8marks)
- d) Sum the series $9+99+999+9999+\dots$ to n terms (5 Marks)
- e) Using chain rule show that if $y = \sqrt{x^2 + 4}$ then $\frac{dy}{dx} = \frac{x}{\sqrt{x^2 + 4}}$ (5 Marks)
- f) A group of young men decided to raise sh.480,000 to a business to a start a business. Before the actual payment was made, four of the members pulled out and each of those remaining had to pay an additional sh.20,000. Determine the original number of the members. (8marks)
- g) Find the sum of even numbers between 1 and 99 (5 Marks)
- h) A two digit number is such that its value equals four times the sum of its digits. If 27 is added to the number the result is equal to the value of the number obtained when the numbers are interchanged, what is the number? (4 Marks)