22/11/17   DATE:

INSTRUCTIONS

1. Answer all questions.
2. Show clearly and neatly all the workings.
3. Do not write anything on the question paper.

QUESTION ONE

(i) Work out: $\int (8x^3 + 3x^2 - 10x - 7)dx$ for $1 \le x \le 5$ **(4marks)**

(ii) The manager of Nakumatt retail stores in Kakamega determines the marginal revenue (MR) function of the store to be MR=120+4Q, where Q is the total number of items sold. Find the stores' total revenue if between 12 and 25 items are sold.   **(4marks)**

(ii). Find the derivative of the function Y = (5+4x²) (2x³ -1) using the product rule   **(4marks)**
(ii).The total cost (TC) function of a company XYZ is given as TC=10000+50Q+4Q², where Q=Units produced. Determine the units XYZ company should manufacture to minimize its average cost   **(4marks)**

QUESTION TWO

a) The following linear equations relate to a production process of three products: X, Y and Z. By matrix inversion solve for the values of each products that optimizes the resources available.

    X+Y+Z = 7

    X+2Y+Z = 8

    2X+Y+Z = 9   **(12 Marks)**

b) Assume that each unit of the product X, Y and Z sells for Ksh. 45, 1050 and 220 respectively, determine total sales value.   **(2 Marks)**