(b) (i) Illustrate the inequalities formulated in (a) on a graph by shading the unwanted regions.

(ii) Use your graph to list all the possible combinations of fertilizers that the farmer could buy to minimise the cost.

(08 marks)

(c) Calculate the lowest amount of money the farmer will spend on buying fertilizers. *(03 marks)*

11. The curve $y = 2x^2 + 1$ and the line $y = 2x + 5$ intersect at two points.

(a) Find the coordinates of the points of intersection. *(05 marks)*

(b) Sketch, on the same axes, the graphs of the curve and the line. *(04 marks)*

(c) Use the sketch drawn in (b) to determine the area enclosed between the curve and the line. *(06 marks)*

12. (a) The roots of the equation $7x^2 - 2x + 1 = 0$ are a and b. Form a quadratic equation with integral coefficients whose roots are $\frac{1}{a}$ and $\frac{1}{b}$. *(07 marks)*

(b) Three consecutive numbers $p - 4$, $p + 2$ and $3p + 1$ are in a geometric progression (G.P.). Find the two possible values of the common ratio of the G.P. *(08 marks)*

PART TWO: STATISTICS

13. The table below shows the ages (x) years and intelligence quotient, IQ (y) of 10 scholars from a certain country.

AGE (x) (years)	60	48	60	91	85	72	40	69	70	30
IQ (y)	185	181	142	196	174	157	150	193	170	160

(a) (i) Calculate the rank correlation coefficient between the age and IQ of the scholars.

(ii) Comment on your result. *(07 marks)*

(b) (i) Plot a scatter diagram for the data.

(ii) On the same diagram, draw a line of best fit.

(iii) Use the diagram to find the value of x when $y = 165$. *(08 marks)*

14. The discrete random variable X has a probability distribution as:

$P(X = 0) = P(X = 4) = k$; $P(X = 1) = P(X = 3) = 2k$ and $P(X = 2) = 4k$.

Determine the;

(a) value of k.

(03 marks)