

UF DAGRI PAST PAPER



**SIR ARTHUR LEWIS COMMUNITY COLLEGE**  
**DIVISION OF AGRICULTURE**

**Final Exam Semester II – Certificate Students**

**Course:** Elementary Mathematics II  
**Duration:** 2 ½ Hours

**Date:** 06/05/2004

#M18

**Answer all questions**

1. a) Using any method, solve the following:

$$2x^2 - 3x - 4 = 0$$

b) Factorize the following expression

$$6mx - 3nx + 2my - ny$$

2. Solve the following formulae:

a) Given that  $a = 4$ ,  $b = -2$  and  $c = -3$ , calculate the value of  $\frac{b^2}{a} + \frac{2c}{b}$

b) If  $l = \sqrt{\frac{3m}{5}}$ , express  $m$  in terms of  $l$

3. Let  $U = \{\text{Form 5S of 50 students}\}$

$T = \{\text{18 students who play tennis}\}$

$C = \{\text{33 students who play cricket}\}$

$F = \{\text{28 students who play football}\}$

No students play both tennis and football. All of the students who play neither tennis nor football play cricket. Sixteen of the students who play tennis and thirteen of the students who play football also play cricket. Draw a Venn Diagram to represent the information above. Indicate the number of elements in each set.

4. The height in centimeters of a sample of seedlings were recorded and grouped as shown below.

<b>Height (cm)</b>	3 - 7	8 - 12	13 - 17	18 - 22	23 - 27
<b>Number of seedlings</b>	5	16	23	12	4



- a) Calculate the total number of seedlings in the sample. Provide an estimate of the mean height of the seedlings in the sample.
- b) Using a scale of 2 cm to represent a height of 5 cm on the x-axis, and 2 cm to represent 5 seedlings on the y-axis, draw on graph paper, a histogram to represent the data in the table.
- c) Calculate the probability that a seedling selected at random measures at maximum 12 cm.

5. a) Solve the following simultaneous equations using the **matrix method**

$$\begin{aligned} 4x - 4y &= 2 \\ 7x + 2y &= 17 \end{aligned}$$

- b) A hen can lay either white eggs or brown eggs. Three white eggs and two brown eggs weigh 1.3 pounds, while five white eggs and four brown eggs weigh 2.4 pounds. Find the weight of each colour of egg.

6. A plane takes off at an angle of elevation of  $25^\circ$  to the ground. After 30 seconds, the plane has travelled a horizontal distance of 3500 metres.

- a) Sketch a diagram to represent the information above  
 b) Calculate the height of the plane after 30 seconds

7. The coordinates of the points L and N are (5,6) and (8,2) respectively.
- State the coordinates of the midpoint, M, of the line LN
  - Calculate the gradient of the line LN

Determine the equation of the straight line LN

8. The functions,  $f$  and  $g$  are defined by

$$f(x) = \frac{x}{3} + 1 \text{ and}$$

$$g(x) = 2x - 1$$

- Calculate  $g(-3)$
- Find in its simplest form
  - $f^{-1}(x)$
  - $g^{-1}(x)$

