



## College of Agriculture, Fisheries and Forestry

### Trade Diploma in Agriculture, Fisheries and Forestry

#### AFF402 - Applied Mathematics

#### EXAMINATION QUESTION PAPER

Examination Date:		Reading Time:	0830 –0840hrs
Duration:	3 hours	Starting Time:	0840hrs
Examiner:	JoeliCati	Finishing Time:	1110 hrs

#### INSTRUCTIONS TO STUDENTS:

1. You are allowed extra 10 minutes of reading time during which you are **NOTALLOWED** to write.
2. Begin each answer on a fresh page and use both sides of the sheet.
3. Write your candidate number at the top of each attached sheet.
4. **Insert** all written foolscaps, graph paper, drawing paper, etc. in their correct sequence and secure with string.
5. Write clearly the number(s) attempted on the top of each sheet.
6. There are ten (10) questions. **ANSWER ALLQUESTIONS.**

Question 1

Simplify the following:

- a)  $3\{a^2 - 2a[a + b - b(2a + 7) + 2a^2 - (4a^2 + 3)]\}$
- b)  $4\{x^3 - x^2[3 + y - 2x] + 2y(3x^2 - x + 5) + 2xy\}$

(10 marks)

Question 2

Perform the complex multiplication and division:

- a)  $(3x^2 - 4x + 7) \times (x + 6)$
- b)  $(16x^3 - 48x^2 + 59x - 30) \div (4x - 5)$

(10 marks)

Question 3

- a) Simplify and solve the fraction:

$$\frac{4q + 3}{5} + \frac{2 - q}{4} - \frac{2q - 3}{10}$$

- b) Solve the simultaneous equation:

$$6p - 5q = 75 \dots \dots \dots (1)$$

$$5p - 3q = 53 \dots \dots \dots (2)$$

(10 marks)

Question 4

A hatchway has an area of  $328 \text{ m}^2$  and its perimeter is 73 m, find its length and breadth.

(10 marks)

Question 5

Transpose to make  $x$  the subject:

$$\frac{x}{a} + \frac{x - b}{b} = 1$$

(10 marks)

**Question 6**

Listed in the table below is the number 30-second radio advertising spots purchased by each of the 45 members of the Greater Buffalo Automobile Dealers Association last year.

- a) Organize the data into a stem and leaf display.
- b) Around what values do the numbers of advertising spots tend to cluster?
- c) What is the fewest number of spots purchased by the dealer?
- d) What is the largest number purchased?

96	93	88	117	127	95	113	96	108	94	148	156
139	142	94	107	125	155	155	103	112	127	117	120
112	135	132	111	125	104	106	139	134	119	97	89
118	136	125	143	120	103	113	124	138			

(10 marks)

**Question 7**

Arriving in the classroom one day, teacher found nobody there. She recorded just how late each person was, as given in this frequency table:

How late (min)	Number of students
0 and under 1	5
1 and under 2	7
2 and under 3	6
3 and under 4	4
4 and under 5	2
5 and under 6	3
6 and under 7	1
7 and under 8	0
8 and under 9	1
Over 9	0

- a) Show this summary as a frequency histogram
- b) Show this summary as a percentage histogram

(10 marks)

### Question 8

For the following sample, find:

- Mean
- Mode (s)
- Median
- Standard deviation
- Range

7.42	6.85	6.92	7.21	7.32
8.01	8.25	6.84	7.41	6.93
7.21	7.32	8.04	6.98	6.82

(10 marks)

### Question 9

In the formula below, make  $x$  the subject and find its value if  $s = 37.61$  and  $t = 45.93$

$$s = \sqrt{\frac{t-x}{t+x}}$$

(10 marks)

### Question 10

- Prove that  $\log 4 + \log 9 - \log 6 = \log 2 + \log 3$
- Write the following as the logarithm of a single number  $\log 5 + \log 12 - \log 15$

(10 marks)