



2006 EXAMINATIONS

UNIT 2

HYDRAULICS AND MATHEMATICS

Saturday 2nd September 2006

SECOND SESSION 1200 to 1400 hours

Ten Minutes are allowed to read through this paper.

Candidates are to **attempt any five questions.**

All questions carry equal marks and may be answered in any order.

Ink or ballpoint pens are to be used for all written work.

Pencil may be used for diagrams or sketches.

All working must be shown.

Marks may be deducted for untidy work.

Spare paper can be obtained from the invigilator if required

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Candidate Number		

QUESTION 1

The effectiveness of a water relay is influenced by the friction loss factors.

A. Explain in mathematical terms how the doubling of each factor will effect the friction loss.

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B. Describe in practical terms how each of these factors can be reduced.

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QUESTION 2

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Structure	15	12	14	9	16	15	18	17	15	14	12	13	170
Vehicle	5	4	6	5	7	5	7	6	5	7	4	4	65
Herbage	10	12	11	6	5	3	6	5	5	6	12	9	90
Minor	16	6	14	3	12	7	15	15	4	9	8	11	120
Hazard	12	10	7	5	6	7	8	5	1	7	2	5	75
Spec Ser	15	12	10	9	5	5	9	9	7	11	13	15	120
False	7	6	8	7	6	6	8	9	4	6	7	6	80
TOTAL	80	62	70	44	57	48	71	66	41	60	58	63	720

From the above table:

A. Draw a graph to show the comparisons between the numbers of calls each month.

B. Draw a pie graph showing the proportion of the total call of each type.

C. Calculate the percentage of calls that were non fire calls

QUESTION 5

Hydraulics is the study of water at rest and in motion and is dependant on the properties of water.

A. Detail the main properties of water

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B. Explain why water is water is so useful as a Firefighting media.

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QUESTION 6

6.1) A cylindrical tank has internal measurements of 3.5 metres in diameter and height of 2.4 metres.

Calculate how long it will take to completely empty this tank when supplying four 22 mm nozzles at a pressure of 625 kPa.

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6.2) Water is discharged through a 25 mm nozzle at 1050 kPa.

Calculate the Jet Reaction in Newtons

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