



2006 EXAMINATIONS

**UNIT 1**

**APPLIANCES AND EQUIPMENT**

Saturday 2<sup>nd</sup> September 2006

FIRST SESSION 0900 to 1100 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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<b>Candidate Number</b>		

**QUESTION 1 - Uniform and Personal Protective Clothing**

**1.1) There are two types of Gas Suits with Breathing Apparatus (formerly known as Level 4 PPE) currently in use with the New Zealand Fire Service, Totally encapsulated and Non-encapsulating.**

Describe the difference between the types

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**1.2) Complete the following true/false statements**

**Chemical Splash Suits with Breathing Apparatus (formerly known as Level 3 PPE)**

A. May be worn at fire incidents involving a significant heat hazard providing exposure to heat is minimized.

	True
	False

B. Must be worn over Structural Firefighting Uniform (formerly known as Level 2 PPE) at a Hazmat incident-

	True
	False

~ continued overleaf ~

C. May be worn over working rig (formerly known as Level 1 PPE) at the wearers discretion.

	True
	False

**Structural Firefighting Uniform**

A. Should be worn by fire suppression crew at motor vehicle accidents

	True
	False

B. Is optional at vegetation fires where there is significant exposure to heat.

	True
	False

**1.3) What are the inspection requirements for a New Zealand Fire Service approved Fire Helmet?**

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**1.4) What is the testing schedule for a Chemical Splash suit?**

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**1.5) In the 'Operational Requirements Manual', there is a requirement for four (4) types of glove.**

List them

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**QUESTION 2 - BA Wearer Requirements**

**2.1) Consider a nine (9) litre breathing apparatus cylinder charged to 200 Bar. Calculate the cylinder duration at an average user consumption rate of forty (40) litres per minute.**

**2.2) If the user in the example above (2.1) handed their BA tally into the Entry Control Officer at 1000 hours, what 'time due out' should be entered on the Entry Control Board?**

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**2.3) List the four (4) actions an Entry Control Officer should take during a BA emergency.**

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**2.4) The 'Breathing Apparatus and Chemical Protective Clothing manual' lists six (6) principles of operation as safe practices. List them.**

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**QUESTION 3 - Knots, Lines and Anchor Points**

**3.1) Using a diagram, illustrate and describe the correct method of getting a low-pressure delivery aloft by line.**

**3.2) Using a diagram, illustrate and describe the bending on of a suction line.**

**3.3) Describe with the aid of a diagram the correct knots and method of hauling aloft the following pieces of equipment.**

A. a length of coiled hose

B short extension ladder

C. an axe

D. a 20L (litre) drum of foam

**QUESTION 4 - Foam**

**Define the following terms in relation to firefighting foam.**

A. Expansion ratio

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B. Produced foam

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C. Fire tetrahedron

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D. Foam concentrate

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E. Aspirated

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F. Foam proportion rate

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G. Foam solution

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H. Pre-treat

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I. Scrubbing

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J. Slugging

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## QUESTION 5 - Fire Service Pumps - Operations

### Characteristics of flow in hose lines.

Complete the following statements with the most appropriate word(s) or unit(s).

- A. "The longer the hose line, the \_\_\_\_\_ the pressure loss"
- B. "The larger the diameter of the hose, the greater the amount of water that can be passed and the lower the \_\_\_\_\_ will be"
- C. "Friction \_\_\_\_\_ with the roughness of the internal hose lining"
- D. "Percolating hose will produce \_\_\_\_\_ friction loss"
- E. "At 1000kPa pump pressure, a 60 metre rubber-lined delivery produces 600 l/m"  
At 800kPa pump pressure, the same delivery will produce \_\_\_\_\_ l/m.

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F. Health and Safety is of primary concern to the New Zealand Fire Service. What is the minimum acceptable Personal Protective Equipment to be worn when operating a pump?

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G. Must a pump operator be qualified in Breathing Apparatus to be qualified?

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**QUESTION 6 - Fire Extinguishers**



**6.1) For the following types of portable fire extinguishers, state:**

- the principle of extinguishment involved,
- the classes of fire for which they are most suitable,
- hazards to operators (if any),
- possible disadvantages.

A. Dry Powder

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B. Water

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C. Foam

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D. Carbon Dioxide

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**6.2) In relation to extinguishers for Class F fires, explain the term 'Saponification'**

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