



2018 NZFBI EXAMINATION

Associate B: Operations

Saturday 1 September
1300 to 1500 hours

EXAMINATION RULES AND INSTRUCTIONS TO CANDIDATES

1. Ten minutes will be allowed prior to the commencement of the examination for candidates to read the question paper, but they are not permitted to commence the examination until instructed.
2. Candidates are prohibited from introducing any books or papers of any kind into the examination room.
3. Candidates are not to communicate with, copy from each other, or communicate with anyone outside the examination room. Cellular phones are not permitted in the examination room.
4. Slide rules and silent non-programmable calculators may be used, subject to the scrutiny and satisfaction of the examination supervisor.
5. All written work must be completed in ink or good ball point pen, with drawings and/or diagrams in pencil. Drawing instruments may be used and are to be supplied by the candidate. Marks may be deducted for untidy work.
6. All answers are to be written in the combined question/answer books which will be handed in at the end of the examination. You can request additional paper from the examination supervisor if required.
7. Candidates should ensure that only their allocated examination number appears in the answer book. Do NOT write your name or brigade in the answer book or use them in the text of any of your answers – if required, use fictitious identification.
8. Candidates accept to abide by the rules of the New Zealand Fire Brigades Institute and accept the examination result as final. No correspondence will be entered into.
9. This examination contains five questions. Candidates are to attempt all questions.
10. Write the candidate number provided to you in the boxes below:

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Question 1: Multiple Choice

20 Marks

Answer all questions. Circle the letter beside the answer you think is correct.

1 mark each

1. What percentage of a helicopter's maximum loading is desirable for better aircraft performance?
 - a) 70%
 - b) 80%
 - c) 90%
 - d) 100%

2. Which type of gas is not detected by a Fire and Emergency NZ multi- gas detector?
 - a) Hydrocarbons
 - b) Oxygen
 - c) Hydrogen Sulphide
 - d) Carbon Dioxide

3. When dealing with liquid fuels involved in a fire, it is important to think about miscibility because:
 - a) You can use water to fight flammable liquids
 - b) Many flammable liquids are not miscible, and water will sink below the flammable liquid
 - c) Many flammable liquids are not miscible, and water will stay on top of the flammable liquid
 - d) Many flammable liquids have their energy absorbed by water

4. Your crew officer has asked you to advise FireComm of a fire believed to be of a suspicious nature. What is the appropriate K-code?
 - a) K10
 - b) K11-1
 - c) K12
 - d) K19

5. A high pressure / low volume portable pump (such as a Wajax) is rated to flow 100 litres per minute at what pressure?
 - a) 700kPa
 - b) 1000kPa
 - c) 1500kPa
 - d) 1800kPa

6. At a certain temperature, the vapour of a liquid will "flash" momentarily when a flame is placed near it but will not continue to burn. What is this called?
- a) Boiling Point
 - b) Flash Point
 - c) Limit of Flammability
 - d) Spontaneous Ignition Temperature
7. Timber chars at the rate of how many millimetres per minute?
- a) 0.6
 - b) 0.8
 - c) 1.0
 - d) 1.2
8. The part of an exit way that is protected from the effects of fire by fire rated construction, external walls, or by distance when exposed to open air is called a what?
- a) Safe Path
 - b) Means of escape
 - c) Fire Separation
 - d) Fire Cell
9. Who is the lead service agency at a motor vehicle crash scene when a vehicle is on fire?
- a) Ambulance
 - b) Fire
 - c) Police
 - d) Vehicle recovery agent
10. When conducting a controlled burn, what is the absolute minimum distance between the fire and other vegetation or buildings.
- a) 30 metres
 - a) 50 metres
 - b) 80 metres
 - c) 100 metres
11. Community education relies on Firefighters meeting with the public to promote fire prevention. This is achieved by targeting which community sectors?
- a) Homeowners
 - b) Public entertainment areas
 - c) Schools
 - d) All of the above

12. What is not the responsibility of a standby crew providing scene protection at a fire?

- a) Maintain the control of hazards
- b) Minimise the continuing impact of pollutants on the environment
- c) Minimise the impact of the fire on nearby residential or business operations
- d) Maintain the security of buildings, their contents, or FENZ equipment

13. Organic solids are classified as what class of fire?

- a) Class A
- b) Class C
- c) Class D
- d) Class K

14. Water is an effective extinguishing agent due to:

- a) Its cooling effect because of its high latent heat of vaporisation
- b) Its high latent heat of vaporisation, and its high specific heat
- c) Its high specific heat
- d) Its easy availability

15. What is this piece of equipment called?



- a) Multi-gas Detector
- b) Radiation Detector
- c) Timber Moisture Meter
- d) Photo Ionisation Meter

16. Whose responsibility is it to investigate cause of vegetation fires outside urban districts?

- a) Incident Controller
- a) Preliminary Fire Investigator
- b) Specialist Fire Investigator
- c) Rural Fire Authority Investigator

17. Which item of PPE listed below is not mandatory but often added following a risk assessment at a motor vehicle crash scene?
- a) Gloves
 - b) Helmet
 - c) Safety glasses
 - d) High visibility vest
18. Steel loses _____ % of its strength at 550°C.
- a) None
 - b) 30%
 - c) 50%
 - d) 66%
19. What colour is the LACES card provided to firefighters?
- a) Green
 - b) Pink
 - c) Purple
 - d) Yellow
20. The Golden Hour concept states that a casualty in a vehicle crash has 60 minutes from the time of the crash to be located, treated, extricated, stabilised, transported and delivered for surgical treatment. How long is the allocated time from PRT arrival to completed extrication?
- a) 5 minutes
 - b) 10 minutes
 - c) 20 minutes
 - d) 30 minutes

Question 2: Fireground Operations

20 Marks

- 2.1. A local farmer has approached you to discuss a controlled burn they intend to light, and they have asked you for some advice as part of their planning arrangements. Detail some advisory points for their consideration.

4 marks

Before the burn:

During the burn:

After the burn:

- 2.2. Firefighting water supplies come in three basic groups. Name the three groups and give an example of a type of supply for each group.

3 marks

2.3. Identify and describe five things to look for when identifying a water supply for its suitability for firefighting operations.

5 marks

2.4. Describe each of the following definitions in terms of a light pump water supply.

4 marks

Open circuit relay

Water point

Friction loss

Class A foam

Static water supply

Fire suppressant

Charged line

Wetting agent

2.5. Fill in the gaps in the table below with either the fault or the solution based on the problem.

4 marks

Problem	Fault	Possible solutions
Failure to prime, or prime lost		Repeat priming to ensure the suction hose and pump case are full to overflowing
	Air leaking into suction	
		Increase the depth of the suction strainer – dig a hole or dam flow if necessary
Poor pump output		Clean debris off strainer
	Leaves and organic matter on bed of lake clogging strainer	
	Pump at limit of drafting capacity	
		Increase flow into a portable dam to maintain water level
Cavitation		Reduce throttle setting, and consider ways to improve the supply

Question 3: Fire Science

20 Marks

You have arrived at an under-ventilated fire in a residential house. Your crew will need to ensure there are no people inside and find the location of the fire before extinguishing it. Smoke is puffing out around the doors, windows, and eaves.

- 3.1 Explain how a fire in a compartment develops and then degrades based on the “Four Phases of Fire” principle. The four phases are included below.

4 marks

Incipient Stage

Growth Stage

Fully developed State

Decay Stage

- 3.2 Explain in detail what the impending signs of backdraft are.

4 marks

3.3 Define the actions to take by firefighting crews before entering or making an opening in a compartment?

4 marks

3.4 Your officer has tasked you to ventilate a compartment. You have decided that ventilation will be carried out. What are the benefits of ventilation?

4 marks

3.5 Name the four methods of extinguishing a fire.

2 marks

3.5 Give an example of each type of extinguishing method identified above.

2 marks

Question 4: Fire Investigation

20 Marks

4.1 Firefighters must consider everything they take into a fire scene is a potential source of contamination. It's important to ensure contamination does not occur. Name four common sources of contamination.

2 marks

i. _____

ii. _____

iii. _____

iv. _____

4.2.1 As a firefighter the "need to observe" is very important. There are some key points a Specialist Fire Investigator may need to know from you to help with their enquiries following a fire. Name the four types of observations.

2 marks

i. _____

ii. _____

iii. _____

iv. _____

4.2.2 Detail what characteristics of the four observations are of interest to a Specialist Fire Investigator.

2 marks

i. _____

ii. _____

iii. _____

iv. _____

4.4 Complete the table entries below.

3 marks

Smoke that is.....	Can indicate....

4.5 Detail four control measures to ensure that access to the fire scene is controlled and limited to aid in scene preservation.

4 marks

4.6 When should an Officer request the attendance of a Specialist Fire Investigator?

3 marks

4.7 When should Police be notified?

1 mark

4.8.1 The media will often attend an incident of interest and may approach the incident controller for comment. Give four examples of what information the incident controller may say to the media.

2 marks

4.8.2 The incident controller may emphasise any relevant topics to the media based on the incident. Give two examples of topics to emphasise.

1 mark

Question 5: Fire Risk Management

20 Marks

C5.1 What are four aspects of the role of a Fire Risk Management Officer?

4 marks

i. _____

ii. _____

iii. _____

iv. _____

C5.2 There are eight “at risk” groups that Fire and Emergency New Zealand focuses on to provide fire safety resources to enhance community education. Name five of the groups.

5 marks

i. _____

ii. _____

iii. _____

iv. _____

C5.3 Briefly summarise the Fire and Awareness Intervention Programme (FAIP) and state the age range of the target audience.

2 marks

C5.4 Detail one of the ways to make a FAIP referral to Fire and Emergency New Zealand staff.

1 mark

C5.5 Detail the objectives of the “Get Firewise” programme. Include the process of teaching, the school years involved, and at least one key message.

5 marks

C5.6 Below are some of Fire and Emergency New Zealand’s fire safety messages. Fill in the missing words:

3 marks

- _____ chimneys are safe chimneys
- Don’t drink and _____
- Have no doubt of two ways out. Make sure you have an _____ plan.
- Fire is fast. Get out, stay _____
- Put ashes in a _____ bucket to cool. They can start a fire for up to _____ days.