



# **2017 NZFBI ASSOCIATE EXAMINATION**

**Saturday 2 September  
0900 to 1200 hours**

# EXAMINATION RULES AND INSTRUCTIONS TO CANDIDATES

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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 three sections:
  - Section A - Multiple Choice
  - Section B - Long Answer (Compulsory)
  - Section C - Long Answer (Elective)

Candidates are to attempt all questions in Sections A and B, and may answer any three questions from the six questions in Section C.

10. Write the candidate number provided to you in the boxes below:

2	0	1	7	/		
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Answer all questions. Circle the letter beside the answer you think is correct.

**1 mark each**

- A1. Steel loses \_\_\_\_\_ % of its strength at 600°C.
- a) None
  - b) 30%
  - c) 66%
  - d) 50%
- A2. There are three properties of wood that influence its ability to ignite. Which property below is not one of them?
- a) Physical size
  - b) Load
  - c) Preservative treatment
  - d) Moisture content
- A3. The growth phase in a structure fire consists of five parts. What is not part of the growth phase?
- a) Heat starts to build up radiating towards the floor
  - b) There is little unburnt fuel left and gas temperatures decrease
  - c) A flashover occurs
  - d) Two zones are formed being the over-pressure zone and the under-pressure zone
- A4. Two-stroke petrol mix should be carried in what coloured container?
- a) Red
  - b) Blue
  - c) Yellow
  - d) Black
- A5. A backdraught occurring during a structure fire can be very dangerous. Which of the options below is not a sign of an impending backdraught?
- a) Sounds from inside the compartment seemed muffled
  - b) Dense grey-yellow smoke becomes darker as it exits the building
  - c) There is a sudden inrush of air when an opening is made
  - d) Tongues of flame are seen through the hot gas layer

- A6. Combustible metals are classified as what class of fire?
- a) Class A
  - b) Class C
  - c) Class D
  - d) Class K
- A7. When parking an appliance at a motor vehicle crash scene, it should be parked:
- a) With the pump panel facing the incident
  - b) With the appliance windscreen facing the incident scene
  - c) With the pump panel on the opposite side of the truck from the incident scene
  - d) Backed into the incident scene
- A8. At what pressure does the warning whistle operate on a breathing apparatus set?
- a) 45 Bar
  - b) 50 Bar
  - c) 55 Bar
  - d) 60 Bar
- A9. What command/order is given to resume any activity that has been stopped?
- a) Carry on
  - b) As you were
  - c) Get to work
  - d) Fall in
- A10. Tilt slab is common in the construction of commercial buildings. What is the main hazard that they can pose for firefighters?
- a) Either inward or outward collapse
  - b) Height
  - c) Fire loading
  - d) High rack storage
- A11. Which word below does not form part of the phonetic alphabet?
- a) Lima
  - b) Papa
  - c) Alpha
  - d) Indigo

- A12. What is the most likely source of contamination from the equipment listed below at the scene of a fire?
- a) Helmet torches
  - b) Boots and gloves
  - c) Outside scene lighting
  - d) Staging area for spare BA cylinders
- A13. Where should a parts dump be located when completing a vehicle extrication?
- a) Beside the pump rescue tender
  - b) On the outer edge of the support area
  - c) Five metres away from the vehicles
  - d) On a salvage sheet beside the tool staging area
- A14. Which of the options below is not a principal of extinguishing a fire?
- a) Venting the fire
  - b) Smothering the fire
  - c) Starving the fire
  - d) Interrupting the chemical chain reaction
- A15. 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) Safety glasses
  - c) Helmet
  - d) High visibility vest
- A16. When using a PPV fan, when must the ventilation point be created?
- a) Before the PPV fan is directed into the building
  - b) Immediately after the fan is directed into the building
  - c) As soon as possible after the fan is directed into the building
  - d) Once crews have entered the building and are attacking the fire
- A17. When completing the primary survey of a patient, what does the S stand for in the mnemonic DRSABCD?
- a) Safety
  - b) Stand back
  - c) Send for help
  - d) Severity of injuries

- A18. When should the first arriving officer of an appliance communicate his first SitRep?
- a) At the time of arrival
  - b) Five minutes after arrival
  - c) Once the initial scene survey is completed
  - d) Ten minutes after arrival
- A19. When working with an oxygen cylinder, you must take certain precautions. Which statement below is incorrect?
- a) Do not put any part of your body over the cylinder or valve
  - b) Lay cylinders on their sides when in use
  - c) Open the pressure-reducing valve quickly to ensure oxygen passes through the valve properly
  - d) Do not use oil or grease on or near cylinders, regulators or hoses
- A20. Which of these lines is not classed as a line carried on an appliance?
- a) General purpose
  - b) Towing line
  - c) Bucket line
  - d) Rescue line
- A21. When beginning the CPR procedure, how long to you “look, listen and feel” for a response from a patient?
- a) 2 seconds
  - b) 5 seconds
  - c) 10 seconds
  - d) 15 seconds
- A22. Who is the lead service agency at a motor vehicle crash scene?
- a) Ambulance
  - b) Fire
  - c) Police
  - d) Vehicle recovery agent
- A23. How much more water will a 70mm hose deliver over a 41mm hose?
- a) Two times
  - b) Three times
  - c) Four times
  - d) Five times

- A24. A status one patient is in what condition?
- a) Moderate
  - b) Critical
  - c) Dead
  - d) Minor
- A25. Who is responsible for wearing a seatbelt in a fire appliance?
- a) The officer in charge of the appliance
  - b) The driver
  - c) The individual
  - d) The officer in charge of the brigade
- A26. What item of equipment should be present when operating a portable pump?
- a) Foam branch
  - b) Fire extinguisher
  - c) Salvage sheet
  - d) Dividing breaching
- A27. The oxygen flow rate for a conscious patient wearing an acute (or simple) breathing mask is:
- a) 1 – 4 litres per minute
  - b) 6 – 8 litres per minute
  - c) 10 – 12 litres per minute
  - d) 14 – 16 litres per minute
- A28. What type of portable pump primer is identified as a manual primer?
- a) Exhaust
  - b) Rotary
  - c) Diaphragm
  - d) All of the above
- A29. A stop message is used on the radio when:
- a) The fire is contained
  - b) No further resources are required at the scene
  - c) The last appliance is leaving the scene
  - d) The appliance has stopped at a running call incident

- A30. When a pump has been primed and water is entering the pump from an open water source, the compound gauge is giving a reading of 30kPa in the red (minus 30 kPa). What is this indicating?
- a) The pressure in the suction hose is 30kPa
  - b) The inlet valve is closed
  - c) Approximately three metres of lift from water level
  - d) Friction loss is 30kPa



Answer all questions in this section:

- Portable Pumps
- Radio Equipment and Procedures
- First Aid

## Question 1    Portable Pumps

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B1.1    List five safety precautions you should take when establishing a portable pump site.    **5 marks**

- i. \_\_\_\_\_  
\_\_\_\_\_
- ii. \_\_\_\_\_  
\_\_\_\_\_
- iii. \_\_\_\_\_  
\_\_\_\_\_
- iv. \_\_\_\_\_  
\_\_\_\_\_
- v. \_\_\_\_\_  
\_\_\_\_\_

B1.2    List five items of equipment you need when conducting operations with a portable pump.    **5 marks**

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_
- v. \_\_\_\_\_

B1.3 List five things you need to consider to ensure continuity of water supply when you are pumping from open water. **5 marks**

i. \_\_\_\_\_  
\_\_\_\_\_

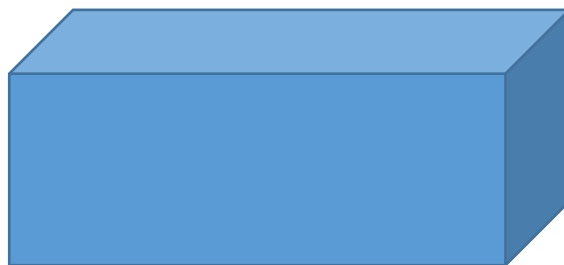
ii. \_\_\_\_\_  
\_\_\_\_\_

iii. \_\_\_\_\_  
\_\_\_\_\_

iv. \_\_\_\_\_  
\_\_\_\_\_

v. \_\_\_\_\_  
\_\_\_\_\_

B1.4 Calculate the volume in litres of rectangular tank measuring 2.5m deep x 9m long x 4m wide. **2 marks**



B1.5 Mud, silt, vegetation, stones, and rubbish in the water supply can block the suction hose strainer and reduce the volume that the portable pump can deliver. Detail three ways of ensuring that the intake of contaminants through the pump can be reduced. **3 marks**

i. \_\_\_\_\_

\_\_\_\_\_

ii. \_\_\_\_\_

\_\_\_\_\_

iii. \_\_\_\_\_

\_\_\_\_\_

## Question 2 Radio Equipment and Procedures

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B2.1 List four things you must check as part of your regular maintenance checks of radio equipment.

**4 marks**

i. \_\_\_\_\_

\_\_\_\_\_

ii. \_\_\_\_\_

\_\_\_\_\_

iii. \_\_\_\_\_

\_\_\_\_\_

iv. \_\_\_\_\_

\_\_\_\_\_

B2.2 There are two terms used to describe to the caller how well their transmission is heard. What are the two terms and give one example of a report you would transmit using these terms. **3 marks**

i. \_\_\_\_\_

\_\_\_\_\_

ii. \_\_\_\_\_

\_\_\_\_\_

B2.3 Describe the procedure to make an emergency call on the radio.

**1 mark**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

B2.4 Spell the word "radio" using the phonetic alphabet.

2 marks

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B2.5 What do the following K codes mean?

4 marks

- a. K1 \_\_\_\_\_
- b. K11-1 \_\_\_\_\_
- c. K32 \_\_\_\_\_
- d. K35 \_\_\_\_\_
- e. K46-1 \_\_\_\_\_
- f. K47 \_\_\_\_\_
- g. K66 \_\_\_\_\_
- h. K6 \_\_\_\_\_

B2.6 What is the difference between a KE and KO?

2 marks

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B2.7 There are some commonly used words and phrases in standard radio procedures. For each word describe its meaning.

4 marks

- a. Acknowledge  
\_\_\_\_\_  
\_\_\_\_\_

b. Out

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c. Over

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d. Say again

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### Question 3 First Aid

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B3.1 To check for a person's level of responsiveness, AVPU is a simple reminder. List the four levels of responsiveness and briefly describe each of them. **4 marks**

i. \_\_\_\_\_

\_\_\_\_\_

ii. \_\_\_\_\_

\_\_\_\_\_

iii. \_\_\_\_\_

\_\_\_\_\_

iv. \_\_\_\_\_

\_\_\_\_\_

B3.2 You and your crew must perform CPR continuously once in attendance at a cardiac arrest. Name four situations when you can stop performing CPR. **4 marks**

i. \_\_\_\_\_

\_\_\_\_\_

ii. \_\_\_\_\_

\_\_\_\_\_

iii. \_\_\_\_\_

\_\_\_\_\_

iv. \_\_\_\_\_

\_\_\_\_\_



B3.3 Describe the procedure for clearing an airway obstruction (choking) in adults and children.

**4 marks**

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B3.4 List four signs of inadequate breathing.

**4 marks**

- i. 

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- ii. 

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- iii. 

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- iv. 

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B3.5 Briefly describe a bag mask resuscitator and name a situation where the bag mask may need to be used.

**2 marks**

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B3.6 Detail the procedure for inserting an Oropharyngeal airway (OPA) into a patient's mouth.

**2 marks**

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Answer any three questions of the following six questions:

- Aerial Operations
- Urban Operations
- Firefighting Equipment
- Fire Science
- Community Education
- Dry Firefighting Techniques

If more than three questions are answered, the first three questions will be marked.

## Question 1 Aerial Operations

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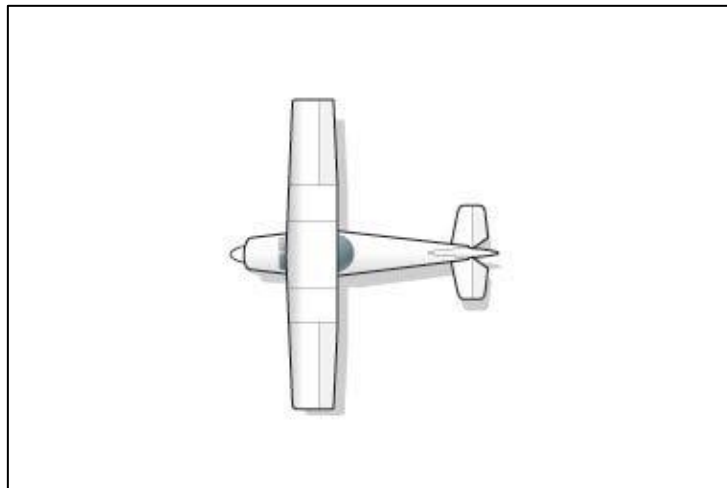
C1.1 When setting up a site for helicopter operations what are five critical factors to consider?

5 marks

- i. \_\_\_\_\_  
\_\_\_\_\_
- ii. \_\_\_\_\_  
\_\_\_\_\_
- iii. \_\_\_\_\_  
\_\_\_\_\_
- iv. \_\_\_\_\_  
\_\_\_\_\_
- v. \_\_\_\_\_  
\_\_\_\_\_

C1.2 On the diagram below identify:

- a. The preferred and prohibited approach zone by using arrows or shading the areas and label each; and
  - b. Name and identify at least two fixed wind aircraft components that are hazardous to personnel.
- 4 marks**



C1.3 Identify and describe five factors to consider in site selection for an area to carry out helicopter operations. **5 marks**

- i. \_\_\_\_\_  
\_\_\_\_\_
- ii. \_\_\_\_\_  
\_\_\_\_\_
- iii. \_\_\_\_\_  
\_\_\_\_\_
- iv. \_\_\_\_\_  
\_\_\_\_\_
- v. \_\_\_\_\_  
\_\_\_\_\_

C1.4 Under Civil Aviation rule 91.211 a passenger briefing must be undertaken prior to any take-off.

a. Who should give the briefing? **1 marks**

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b. What are five key points that must be covered in a briefing? **5 marks**

i. 

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ii. 

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iii. 

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iv. 

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v. 

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## Question 2 Urban Operations

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C2.1 Before donning a BA face mask, what two actions must you complete first?

**2 marks**

i. \_\_\_\_\_  
\_\_\_\_\_

ii. \_\_\_\_\_  
\_\_\_\_\_

C2.2 When doing a low-pressure test, how long do you hold your breath and what do you look for?

**2 marks**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

C2.3 What are the first two things you do in case of sudden air loss while wearing BA?

**2 marks**

i. \_\_\_\_\_  
\_\_\_\_\_

ii. \_\_\_\_\_  
\_\_\_\_\_

C2.4 In the entrapment procedure, how do you attract attention to your situation? **2 marks**

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C2.5 List any two examples of harmful substances that can make an irrespirable atmosphere. **2 marks**

i. 

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ii. 

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C2.6 What are two important pieces of information recorded on a BA Tally at the time of deployment? **2 marks**

i. 

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ii. 

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C2.7 When carrying out decontamination, outer clothing and equipment must be washed with a minimum flow rate. What is the required flow rate during the decontamination and for how long is this flow required to be maintained? **2 marks**

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C2.8 What is meant by hypoxia?

**2 marks**

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C2.9 What actions **MUST** you take if a BA team fails to return by the time due out?

**2 marks**

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C2.10 When using a PPV fan, who must the PPV fan operator inform in the event of a fan failure?

**2 marks**

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### Question 3    Firefighting Equipment

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C3.1    Name four types of firefighting hoses commonly used on fire appliances in New Zealand.

**4 marks**

i. \_\_\_\_\_

\_\_\_\_\_

ii. \_\_\_\_\_

\_\_\_\_\_

iii. \_\_\_\_\_

\_\_\_\_\_

iv. \_\_\_\_\_

\_\_\_\_\_

C3.2    What are four of the triggers for a standard test procedure for in-service hose?

**4 marks**

i. \_\_\_\_\_

\_\_\_\_\_

ii. \_\_\_\_\_

\_\_\_\_\_

iii. \_\_\_\_\_

\_\_\_\_\_

iv. \_\_\_\_\_

\_\_\_\_\_

C3.3 Name three types of BA cylinders currently in use with Fire and Emergency New Zealand.

**3 marks**

i. \_\_\_\_\_

\_\_\_\_\_

ii. \_\_\_\_\_

\_\_\_\_\_

iii. \_\_\_\_\_

\_\_\_\_\_

C3.4 How often are the following breathing apparatus cylinders hydrostatically tested?

**2 marks**

• Steel \_\_\_\_\_

• Composite \_\_\_\_\_

C3.5 Name three pieces of equipment used for gaining access to a locked building with a roller door and a locked internal door.

**3 marks**

i. \_\_\_\_\_

\_\_\_\_\_

ii. \_\_\_\_\_

\_\_\_\_\_

iii. \_\_\_\_\_

\_\_\_\_\_

C3.6 When using a PPV fan, who must the PPV fan operator inform in the event of a fan failure?

**2 marks**

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C3.7 What are the types of fire extinguishers are generally found on fire appliances?

**2 marks**

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## Question 4 Fire Science

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C4.1 Connect each box with an arrow which outlines the definition on the opposite side. **6 marks**

heat energy

exothermic reaction

fire plume

flash point

fire point

vapour

a chemical reaction that gives off heat

the lowest temperature a fuel will keep burning if the original ignition source is removed

a gas state (substances turn into their vapour form when heated to their appropriate temperature)

a form of energy transferred by a change in temperature

the gases and other combustion products that rise upwards during a fire

the lowest temperature that the flammable vapours given off by a fuel will ignite momentarily if an ignition source is present



## Question 5 Community Education

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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**

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C5.4 Detail one of the ways to make a FAIP referral to Fire and Emergency New Zealand staff. **1 mark**

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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**

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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.



## Question 6 Dry Firefighting Techniques

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C6.1 List five hand tools that can be used for fighting vegetation fires and describe what they are used for. **5 marks**

i. \_\_\_\_\_  
\_\_\_\_\_

ii. \_\_\_\_\_  
\_\_\_\_\_

iii. \_\_\_\_\_  
\_\_\_\_\_

iv. \_\_\_\_\_  
\_\_\_\_\_

v. \_\_\_\_\_  
\_\_\_\_\_

C6.2 Explain the following fireline construction techniques using hand tools: **5 marks**

a. Use of natural barriers  
\_\_\_\_\_

b. Avoidance of heavy fuels  
\_\_\_\_\_

c. Width of the fireline  
\_\_\_\_\_

d. Height of overhanging vegetation

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e. Trenching on slopes

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C6.3 Explain how hot spots are identified.

**2 marks**

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C6.4 Explain how the following actions assist with mop-up:

**8 marks**

a. Extinguishing

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b. Isolating

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c. Containing

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d. Seeking assistance

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