NZFBI
NZ FIRE BRIGADES' INSTITUTE

2019 NZFBI EXAMINATION
Associate B: Operations

Saturday 7 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:

2	**0**	**1**	**9**	**/**		

Question 1: Multiple Choice 20 Marks

Answer all questions. Circle the letter beside the answer you think is correct. **1 mark each**

1. Steel loses _____ % of its strength at 600°C.

   a) None
   b) 30%
   c) 66%
   d) 50%

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. 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

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 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

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. 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

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. 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

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: Rural Operations — 20 Marks

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

5 marks

i. _____

_____

ii. _____

_____

iii. _____

_____

iv. _____

_____

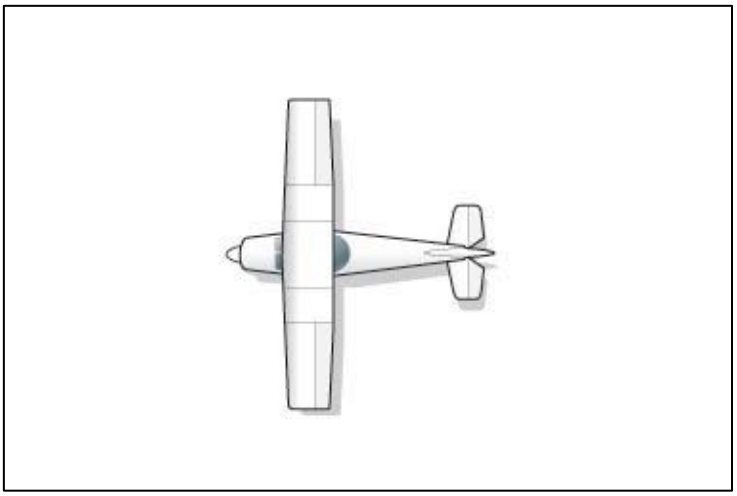
v. _____

_____

2.2 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**



2.3 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. _____

_____

2.4 Under Civil Aviation Rule 91.211 a passenger briefing must be undertaken prior to any take-off.

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

_____

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

i. _____

_____

ii. _____

_____

iii. _____

_____

iv. _____

_____

v. _____

_____

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 decided that ventilation will be carried out and has tasked you to ventilate a compartment. 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: Urban Operations — 20 Marks

5.1 Before donning a BA face mask, what two actions must you complete first? **2 marks**

i. _____

_____

ii. _____

_____

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

_____

_____

_____

_____

5.3 What are the first two things you do in case of sudden air loss while wearing BA? **2 marks**

i. _____

_____

ii. _____

_____

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

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

i.

ii.

5.6 What are two important pieces of information recorded on a BA Tally at the time of deployment?
2 marks

i.

ii.

5.7 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**

5.8 What is meant by hypoxia? **2 marks**

5.9 What actions MUST you take if a BA team fails to return by the time due out? **2 marks**

5.10 When using a PPV fan, who must the PPV fan operator inform in the event of a fan failure? **2 marks**