



THE INSTITUTION OF FIRE ENGINEERS
Founded 1918 • Incorporated 1924

IFE Level 3 Certificate in Fire Science, Operations, Fire Safety and Management

Unit 1: Fire Engineering Science (Y/505/5749)

SAMPLE QUESTIONS

Introduction

This document has been provided to aid candidates in their preparation for the IFE Level 3 certificate in Fire Science, Operations, Fire Safety and Management. The document is in two parts:

Part 1: A selection of sample questions mapped to the syllabus for Unit 1: Fire Engineering Science.

Part 2: A copy of the front cover of the examination paper, enabling candidates to familiarise themselves with the instructions for responding to the examination paper.

Part One - Sample Questions

General Information about the Examination

The examination is one hour in duration. There are two sections:

Section One

There are 15 marks available for this section of the examination. It contains 15 multiple choice questions and each question is worth one mark. Questions may target any assessment objective identified within the unit. Candidates should attempt all questions in this section of the examination.

Section Two

There are 35 marks available for this section of the examination. Questions in this section take the form of short written answer questions and provide candidates with the opportunity to

demonstrate their knowledge and understanding across the content specified in the unit. The marks allocated to each question are shown on the examination paper. Candidates should attempt all questions in this section of the examination.

Sample Multiple Choice Questions

If a gas within a container is heated to four times its original temperature, what effect will that rise in temperature have on the pressure of the gas?

- a) The pressure of the gas will decrease by a quarter
- b) The pressure of the gas will increase fourfold (Ans)
- c) The pressure of the gas will decrease by a half
- d) The pressure of the gas will increase twofold

Syllabus reference: 3.6

Which of the formulae below is correct for calculating the Jet Reaction (R) of a nozzle, when pressure is expressed in bars and diameter in millimetres?

- a) $R = \frac{1.57 Pd^2}{10}$ Newtons (Ans)
- b) $R = \frac{10}{175 Pd^2}$ Joules
- c) $R = \frac{157Pd^3}{10}$ Newtons
- d) $R = \frac{157 Pd}{10}$ Newtons

Syllabus reference: 4.1

What is the Water Power (WP) of a pump delivering 2,300 litres of water per minute at a pressure of 6 bars? (Answer expressed in Kilowatts.)

- a) 23 kW (Ans)
- b) 230 kW
- c) 2,300 kW
- d) 23,000 kW

Syllabus reference: 4.1

Lead, platinum, copper and aluminium are examples of:

- a) elements (Ans)
- b) compounds
- c) mixtures
- d) hydroxides

Syllabus reference: 5.1

Water would not be a good choice of extinguishing media when dealing with burning magnesium because a reaction between water and magnesium could lead to the production of which flammable product?

- a) Oxygen
- b) Carbon monoxide
- c) Hydrogen (Ans)
- d) Methane

Syllabus reference: 5.5

If a power supply of 5 Volts is applied to a circuit with 50 Ohms resistance, what is the resulting current? (Answer expressed in Amperes.)

- a) 250 Amps
- b) 55 Amps
- c) 10 Amps
- d) 0.1 Amps (Ans)

Syllabus reference: 6.1

Sample Short Written Answer Questions

Guidance note to candidates: When responding to short answer questions, candidates are advised to note the instructions provided in the question and also the number of marks available. For example, a question that includes the instruction “state three” and indicates that there are three marks available requires three brief points; likewise, a question with an instruction to “explain” something and which has six marks allocated to it requires six in-depth points relevant to the question in order to secure each of the marks available.

Explain what is meant by the term Force. Using an example, demonstrate how Force is calculated. (4 Marks)

Syllabus reference: 2.2

Explain, using examples, how an increase in heat affects solids. (6 marks)

Syllabus reference: 3.6

- a) Define the term jet reaction and state how this is measured.
- b) Calculate the reaction of the water leaving a 25mm nozzle if the pressure is 7 bar. (6 marks)

Syllabus reference: 4.1

- a) Define the term compound and illustrate your answer with appropriate examples.
- b) Define the term mixture and illustrate your answer with appropriate examples. (4 marks)

Syllabus reference: 5.1

Define Ohm’s Law and, using examples, show how Ohm’s Law can be applied to solve electrical problems. (4 marks)

Syllabus reference: 6.2

Part Two - Examination Paper Instructions

Instructions for candidates undertaking the examination are provided on the front cover of the question paper. A copy of the front cover is provided below.

Candidates are required to complete the answers to the multiple choice questions on the relevant page of the answer book (page 2, which is on the reverse of the front cover of the answer book). A copy of the format of this page is provided below.

L3C1



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SAMPLE EXAMINATION PAPER FRONT COVER

Instructions to Candidates

1. You **must** use the answer book to record all of your answers.
2. This examination paper contains two sections. You must answer **all** questions in both sections of the examination paper.
3. At the end of the examination, the answer book and this question paper will be collected by the invigilators. You will not be allowed to keep any examination stationery.
4. The time allowed for this examination is **one hour**.

EXAMINATION REFERENCE NUMBER

CENTRE NUMBER

CANDIDATE NUMBER

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Sample Answer Book Cover

Instructions to Candidates

1. Write your **Examination Reference Number**, **Centre Number** and **Candidate Number** in the correct spaces at the top of this page. Please do not write in the grid below.
2. The answers to the multiple choice questions must be recorded on page 2 in this answer book. The responses to the written response questions should be provided on the lined paper in this answer book.
3. You should use a pencil when your answers to section 1 (multiple choice); the answers to questions in section 2 of the examination should be written in pen.
4. Any rough work should be crossed out.
5. At the end of the examination, the question paper and this answer book will be collected by the invigilators. You will not be allowed to keep any examination stationery.

Section	Multiple Choice Questions	Short Written Response	Marker's Initials	Total Mark	Grade
Original Mark					
Moderated Mark					
Final Mark					

MULTIPLE CHOICE QUESTION ANSWER SHEET

Please use a pencil to record your answers.

Please identify **only** one of the four options provided

Mark your answers by striking them through like this:

1 [a] [b] ~~[c]~~ [d]

Please do NOT mark with ticks, crosses or circles. If you make a mistake, erase it completely.

1 [a] [b] [c] [d]

11 [a] [b] [c] [d]

2 [a] [b] [c] [d]

12 [a] [b] [c] [d]

3 [a] [b] [c] [d]

13 [a] [b] [c] [d]

4 [a] [b] [c] [d]

14 [a] [b] [c] [d]

5 [a] [b] [c] [d]

15 [a] [b] [c] [d]

6 [a] [b] [c] [d]

7 [a] [b] [c] [d]

8 [a] [b] [c] [d]

9 [a] [b] [c] [d]

10 [a] [b] [c] [d]

Score: