IFE Level 2 Certificate in Fire Science, Operations, and Safety

Exam Report on October 2025 Examination

Introduction

This report presents an analysis of candidate performance in the IFE Level 2 Certificate in Fire Science, Operations, and Safety for the October 2025 examination session. The exams consist of multiple-choice questions drawn from a structured question bank, ensuring comprehensive coverage of key competencies.

Please note: all statistics have been rounded to the nearest integer.

Overall Performance

- Pass Rate: 34%
- Average Score: 64
- Score Required for Pass: 70

Performance by Assessment Criteria

(Average percentage of correct answers per assessment criterion)

The highest-scoring assessment criterion was *2.2 Know the main factors to be considered when undertaking a simple fire risk assessment in the workplace* with an average score of 87%.

The lowest-scoring assessment criterion was *7.3 Understand various methods of supplying water to the fireground* with an average score of 34%, indicating an area where candidates may require additional focus.

Section 1: Fire Engineering Science

1. Mathematics

Assessment Criteria	Knowledge and Understanding	Average Score
1.1 Apply an understanding of mathematics to solve problems	• The four basic processes - addition, subtraction, multiplication and division • Processes in respect of fractions, decimals, percentages, ratios and proportions	86%
1.2 Understand basic geometry	• Two dimensional shapes – square, rectangle, quadrilateral, parallelogram, rhombus, trapezium, triangle, circle • Three dimensional objects – cube, cuboid, pyramid, prism, cylinder, cone, sphere	75%
1.3 Undertake calculations in respect of various geometrical shapes and objects	• Area and perimeter of regular and irregular shapes • Volume and capacity of rectangular and circular tanks • Volume and capacity of hose and pipelines	67%

2. Physical Properties of Matter

Assessment Criteria	Knowledge and Understanding	Average Score
2.1 Define and understand the basic physical properties of matter and undertake calculations involving them	• States of matter - solid, liquid, gas • Mass • Density • Relative density (specific gravity) • Vapour density • Liquids of different density • Gases of different density • Melting, boiling and evaporation • Colour • Odour • Conductivity • Hardness	77%

3. Mechanics

Assessment Criteria	Knowledge and Understanding	Average Score
3.1 Define and understand basic terms and undertake calculations involving physical mechanics	• Motion, including gravity, speed, velocity and acceleration • Momentum and Force • Work, Energy (including Potential Energy and Kinetic Energy) and Power • Friction • Simple machines i.e., levers, mechanical advantage	64%

4. Heat and Temperature

Assessment Criteria	Knowledge and Understanding	Average Score

4.1 Understand that heat is a form of energy and demonstrate an understanding of how temperature can be measured	• Measuring temperature
	• Thermometric scales:
	  ○ Celsius or Centigrade
	  ○ Fahrenheit
	  ○ Kelvin or Absolute
	• Other methods of measuring temperature:
	  ○ Air or gas thermometer
	  ○ Using solids
	  ○ Thermocouples
	  ○ Thermistors
	  ○ Comparison by brightness
	  ○ Infrared
		71%

4.2 Define units of heat	• Joule • Calorie	47%

4.3 Define and understand the terms used in the context of heat transfer	• Specific heat
	• Changes of state and latent heat:
	  ○ Latent heat of vaporisation
	  ○ Effect of change of pressure on boiling point and latent heat
	  ○ Latent heat of fusion
	  ○ Cooling
		47%

4.4 Demonstrate an understanding of thermal expansion and the liquefaction of gases and their practical applications	• The thermal expansion of solids:
	  ○ Coefficient of linear expansion
	  ○ Nickel-iron alloy (Invar)
	  ○ Expansion in large metal structures
	  ○ Thermostats (Bi-metallic strips)
	  ○ Coefficients of superficial and cubical expansion of solids
	• The thermal expansion of liquids:
	  ○ Cubical expansion
	  ○ The effect of expansion on density
	• The expansion of gases:
	  ○ Temperature, pressure and volume
	• The liquefaction of gases:
	  ○ Critical temperature and pressure
	  ○ Liquefied gases in cylinders
		41%

4.5 Define and understand the gas laws	• Boyle's Law • Charles's Law • Law of Pressures • The General Gas Law	54%
4.6 Understand the processes of heat transmission	• Conduction • Convection • Radiation	62%

5. Chemistry and Combustion

Assessment Criteria	**Knowledge and Understanding**	**Average Score**
5.1 Define basic chemical terms and describe their structures	• Atoms (protons, neutrons and electrons) • Molecules • Elements • Compounds • Mixture • Radicals • Atomic mass • Molecular mass • Valency • Reactivity	62%
5.2 Understand basic chemical formulae and equations	• The use of symbols to write formulae • Scientific terms (Nomenclature) • Interpret simple formulae and equations	80%

5.3 Understand the basic chemistry of combustion	• The components of the fire tetrahedron
	• Heat of reaction and calorific value
	• Types of flames and practical examples:
	  ○ Premixed
	  ○ Diffusion
	• Laminar and turbulent flow
	• Flashpoint
	• Fire point
	• Sustained fires
	• Ignition:
	  ○ Spontaneous ignition temperature
	  ○ Self-heating and spontaneous combustion
	  ○ Smouldering
		59%

5.4 Understand the main factors and media involved in the extinction of fire	Factors: • Starvation • Smothering • Cooling • Halting the chemical reaction Media: • Water • Foam • Vaporising liquids • Carbon dioxide and inert gases • Dry chemical powders • Blanketing • Beating out	76%

6. Electricity

Assessment Criteria	**Knowledge and Understanding**	**Average Score**
6.1 Define and understand basic electrical units and their symbols	• Amperes • Volts (Electromotive Force - EMF) • Ohms • Joules • Watts	63%
6.2 Understand and use Ohm's Law	• Principles of Ohm's Law • Undertake Ohm's Law calculations	62%
6.3 Describe the types of electrical supply and current flow in a circuit	• Alternating current (AC) and direct current (DC) • Simple circuitry • The resistance of a circuit	48%

6.4 Understand the purpose, operation and significance of conductors and insulators	• Examples of good and bad conductors • Examples of insulators for different purposes	61%
6.5 Understand the purpose of providing protective devices to electrical circuits	• Understand how a short circuit occurs • Earthing • Fuses • Circuit breakers	70%
6.6 Demonstrate an understanding of electrical hazards and safeguards	• Electrical causes of fire • Prevention of electrical causes of fire	80%

7. Hydraulics

Assessment Criteria	**Knowledge and Understanding**	**Average Score**
7.1 Understand the properties of water and basic principles of hydraulics	• Properties of water • Principal characteristics of pressure • Relationship between pressure and head • Loss of pressure due to friction • Energy changes in water streams • Water power and efficiency • Jet reaction • Water hammer	59%
7.2 Understand how pressure is measured with instruments	• Water gauges (manometers) • Pressure and compound gauges	53%
7.3 Understand the influence of atmospheric pressure on suction lift	• Atmospheric pressure • Suction lift • Siphons	69%

Section 2: Fire and Rescue Operations

1. Incident Command

Assessment Criteria	Knowledge and Understanding	Average Score

1.1. Understand and explain the key principles of Incident Command	• Roles and responsibilities:
	  ○ Command
	  ○ Communications
	• Situational awareness
	• Structuring an incident:
	  ○ Span of control
	  ○ Sectorisation
	  ○ Cordons
	• Risk assessments at an incident:
	  ○ The Firefighter Safety Maxim
	  ○ Risk concepts (Hazard and Risk)
	  ○ Dynamic risk assessment
	  ○ Analytical assessment
	  ○ Personal or individual assessment
	• Risk reduction:
	  ○ Eliminate the risk
	  ○ Reduce the risk
	  ○ Isolate the risk
	  ○ Control the risk
	  ○ Personal Protective Equipment (PPE)
	  ○ Safety Officers
	• Tactical control:
	  ○ Offensive
	  ○ Defensive
	  ○ Emergency evacuation and tactical withdrawal
	  ○ Firefighter emergency
		76%

1.2 Understand the procedures for closing down an operational incident	• Closure and handover • Purpose and content of debriefing • Types of debriefing: hot, cold, critical incident • Identifying and mitigating hazards and risks • Investigations that may be required post-incident • Identifying and preserving potential evidence to support further investigation	85%

2. Search and Rescue

Assessment Criteria	Knowledge and Understanding	Average Score

2.1 Understand the basic principles involved in search and rescue in different contexts	• Operating phases:
	  ○ Locate
	  ○ Access
	  ○ Stabilise
	  ○ Transport
	• Rescues from the built environment, including:
	  ○ Entry into and searching of buildings and collapsed structures
		73%

	○ Release of trapped persons from machinery, lifts, escalators ○ Rescues from sub-surface and confined spaces: tunnels, shafts, vat, silo, sewer, trench, pit, chimney • Rescues from transportation incidents: vehicles, trains, aircraft, ships and boats • Rescues from height • Rescues from water and unstable ground • Rescues from incidents involving hazardous materials	

3. Firefighting

Assessment Criteria	Knowledge and Understanding	Average Score
3.1 Understand the phases of fire growth and associated dangers	• Fire load • Phases of fire growth: ○ Incipient phase ○ Growth phase ○ Fully developed phase ○ Decay phase • Flashover • Backdraught	87%
3.2 Understand of operational planning and procedures	• Initial response to a fire • Assessing the incident • Safety considerations • Environmental considerations • Methods of entry • Isolating utilities • Locating the fire • Selecting the correct firefighting method • Methods of application	51%
3.3 Understand the basic principles involved in firefighting in different contexts	• Incidents in the built environment involving fires in: ○ Buildings under construction or demolition ○ Derelict buildings ○ High rise properties ○ Buildings with atriums, basements and tunnels ○ Roofs ○ Commercial premises ○ Buildings with where industrial/petrochemical processes take place ○ Hospitals, health care and educational establishments ○ Prisons and places of lawful detention ○ Places of research and laboratories. ○ Historical buildings, museums and galleries ○ Waste, recycling and renewable energy sites • Fires involving transportation by road, rail, air and waterways	83%

	• Wildfires: rural areas, forests, heath land, wildland, crops, bush etc. • Farms, farm buildings, processes and equipment	

4. Compressed Air Breathing Apparatus (BA)

Assessment Criteria	Knowledge and Understanding	Average Score
4.1 Understand the composition of air, the purpose of the main components of a compressed air breathing apparatus set and duration times	• Composition of air • Standard breathing apparatus set • Duration times	60%
4.2 Understand operational responsibilities and procedures to be followed when using breathing apparatus (BA) at an incident	• Responsibilities and roles of personnel involved • Breathing apparatus entry control procedures • Procedural rules to be followed by breathing apparatus wearers • Communications • Standby and relief arrangements • Emergency arrangements • Testing and maintenance procedures to be adopted • Role of BA Entry Control	80%
4.3 Understand the general BA search and rescue principles in structures	• Briefing, debriefing and recording • Compartment search procedure • Directional search procedure • Left/right hand orientation • Action on locating casualties • Emergency arrangements	75%
4.4 Explain the purpose, types and use of guidelines	BA guidelines: • Purpose • Types - Main, Branch, Personal • Use and options	74%

5. Ventilation

Assessment Criteria	Knowledge and Understanding	Average Score

5.1 Understand the purpose and use of ventilation and the main techniques that can be adopted at a fire	• Definition of ventilation
	• Purpose of ventilation
	• Types of ventilation:
	  ○ Natural
	  ○ Forced
	• Ventilation strategies:
	  ○ Offensive
	  ○ Defensive
	  ○ Post-fire strategies
		52%

6. Preventable Damage (Salvage)

Assessment Criteria	Knowledge and Understanding	Average Score
6.1 Understand the value of adopting preventable damage control practices, together with the tactical considerations and basic techniques that can be adopted	• Causes of damage • Safety controls • Phases of damage control Phase 1: ○ Minimum use of firefighting media ○ Covering goods and contents ○ Moving goods and contents ○ Damming and removal of water Phase 2: ○ Reducing water damage ○ Reducing smoke damage ○ Protecting adjoining property Phase 3: ○ Drying premises ○ Removing covers ○ Protecting items from deterioration ○ Protection from the weather ○ Security	66%

7. Water Supplies and Hydrants

Assessment Criteria	Knowledge and Understanding	Average Score
7.1 Know the main sources of water supplies and their distribution	• Water sources: ○ Rivers ○ Reservoirs ○ Underground • Distribution of water supplies • Pressure and flow in mains: ○ Special fire mains	74%
7.2 Know the main types of hydrants and their components	• Siting and fixing • Types and components: ○ Sluice valve ○ Screw down ○ Outlets and standpipes	57%
7.3 Understand various methods of supplying water to the fireground	• Water carrying • Water relaying • Hose layers • High Volume Pumping units	34%

8. Environmental Considerations

Assessment Criteria	Knowledge and Understanding	Average Score
8.1 Understand the actions that can be taken to minimise damage to the environment	Pollution control hierarchy: • Contain at source • Contain close to source • Containment on the surface • Contain in the drainage system • Contain on, or in, the watercourse	69%

9. Appliances and Equipment

Assessment Criteria	Knowledge and Understanding	Average Score

9.1 Describe the basic operating principles of pumps and primers	• Non-centrifugal pumps:
	  ○ Positive displacement pumps
	  ○ Ejector pumps
	• Centrifugal pumps
	• Pump characteristics
	• Multi-stage pumps
	• Regenerative (peripheral) pumps
	• Vehicle mounted pumps
	• Primers for vehicle mounted pumps:
	  ○ Reciprocating primers
	  ○ Water ring
	• Portable pumps
	• Primers for portable pumps
	• High Volume Pumping units
	• Pump instrumentation:
	  ○ Pressure and compound gauges
	  ○ Water tank contents
	  ○ Flowmeters
	  ○ Tachometer (rpm)
	  ○ Fuel tank contents
	  ○ Oil pressure
	  ○ Engine coolant temperature
		40%

9.2 Understand how water is distributed on the fireground and identify factors involved in enabling efficient operation of pumps	• Pump operation and distribution of water on the fireground
	• How to get a pump to work from:
	  ○ a hydrant
	  ○ open water
	• Identification of faults and defects
	• Cavitation
	• Crackling jets
		41%

9.3 Describe the construction and main characteristics of good firefighting delivery and hard suction hose and their couplings	• Delivery hose • Hard suction hose • Storage and care of hose • Deterioration of hose • Hose couplings and fittings	54%

9.4 Describe the types and use of firefighting branches, nozzles and monitors	• Branches without control facilities
	• Branches with control facilities
	• Hose reel branches
	• Ultra High Pressure (UHP) systems
	• Monitors:
	  ○ Portable
	  ○ Trailer and appliance
	  ○ Fixed
		78%

9.5 Describe the basic design and use of fire and rescue service portable ladders and aerial appliances	• The principal parts of portable ladders
	• The main types of portable ladders:
	  ○ Short extension
	  ○ 9 and 10.5 metres
	  ○ 13.5 metres
	  ○ Roof
	• Aerial appliances:
	  ○ Turntable ladders
	  ○ Hydraulic platforms
	  ○ Aerial ladder platforms
	• The terminology used with fire and rescue service ladders and aerial appliances
		72%

9.6 Understand the applications, properties, characteristics, construction, use and maintenance of fire and rescue service ropes and lines	• Operational applications
	• Properties and characteristics of:
	  ○ Natural fibres
	  ○ Nylon
	  ○ Polyester
	  ○ Polyolefin
	  ○ Aramid fibre
	  ○ Wire rope
	• Categories of rope:
	  ○ General purpose
	  ○ Rescue or personal fall protection
	  ○ Floating
	• Storage and maintenance
		59%

9.7 Describe the purpose and use of breathing apparatus ancillary equipment	• Entry Control board • Entry Control tally • Personal lines • Guidelines and identification tallies	75%

9.8 Describe the properties of firefighting foam, the main types of concentrate and their uses	• The main properties of firefighting foam
	• Expansion ratios
	• Typical uses of Low, Medium and High expansion foams
	• The main types of Protein based concentrate:
	  ○ Protein (P)
	  ○ Fluoroprotein (FP)
	  ○ Film-forming fluoroprotein (FFFP)
	  ○ Alcohol resistant (AR-FFFP)
	• The main types of Synthetic based concentrate:
	  ○ Synthetic detergent (SYNDET)
	  ○ Aqueous film forming foam (AFFF)
	  ○ Alcohol resistant (AR-AFFF)
	  ○ Fluorine free foam (FF & AR-FF)
	  ○ Class A foam
	  ○ Training foam
		59%

9.9 Understand the types and operation of different foam making equipment	• Foam making equipment:
	  ○ LX hand held foam making branches
	  ○ LX foam generators
	  ○ LX foam monitors
	  ○ Compressed air foam systems (CAFS)
	  ○ MX hand held foam making branches
	  ○ MX foam pourers
	  ○ HX foam generators
	• Induction and injection equipment:
	  ○ In line inductors
	  ○ Round the pump proportioners
		51%

9.10 Know the purpose of basic types of equipment that may be used for rescue purposes at Road Traffic Collisions (RTCs) or similar incidents	• Safety equipment:
	  ○ Personal Protective Equipment (PPE)
	  ○ Hard protection
	  ○ Soft protection
	  ○ Windscreen sheet
	  ○ Ram supports
	  ○ Airbag restraint
	• Vehicle stabilisation:
	  ○ Step blocks
	  ○ Cribbing blocks
	  ○ Side stability systems
	  ○ Jacks
	  ○ Ropes/lines
	  ○ Ratchet straps
	• Extrication equipment:
	  ○ Pneumatic equipment
	  ○ Hydraulic tools
	  ○ Electrical saws
	  ○ Lifting and pulling equipment
	  ○ Power tools
	  ○ Hand tools
		53%

9.11 Understand the purpose and use of portable fire extinguishers	• Extinguisher standards:
	  ○ Performance requirements
	  ○ Information display
	• Types of extinguishers:
	  ○ Water
	  ○ Foam
	  ○ Dry powder
	  ○ Carbon dioxide (CO_2)
	  ○ Wet chemical
		44%

9.12 Understand the purpose and use of drones	• Use of drones in fire and rescue operations
	• Facilities provided by drones:
	  ○ Camera to provide live feedback
	  ○ detection of heat sources
	  ○ detection of temperature
	  ○ loudspeaker to communicate to people below
	  ○ spotlights over scene
		58%

Section 3: Fire Safety

1. Elements of Construction

Assessment Criteria	Knowledge and Understanding	Average Score
1.1 Demonstrate a basic knowledge of the principal types of building construction	• Solid or traditional • Structural steel frame • Reinforced concrete • Precast reinforced concrete • Framed and component • Modular • Portal frame • Prefabricated methods e.g., Structural Insulated Panels (SIPS) and Cross Laminated Timber (CLT)	58%
1.2 Understand the elements of structure, their behaviour in fire and the methods used to improve fire resistance	• Beams • Columns • Floors • Roofs • Stairs and stairways • Walls (load-bearing and non-load-bearing) • Demountable partitions • Windows • Doors and shutters • Sandwich panels • External cladding	46%
1.3 Understand the use and composition of building materials, their behaviour in fire and the methods used to improve fire resistance	• Timber • Masonry • Building blocks • Building slabs • Steel and other metals • Cement • Concrete (reinforced and pre-stressed) • Stone • Building boards • Glass • Insulating materials • Paint • Plastics	51%
1.4 Understand the passive fire protection systems and methods that support fire resistance	• Compartment walls and floors • Protected shafts and protecting structures – lifts and escalators • Fire resisting doors and other enclosures • Active fire barrier systems • Building separation • Fire stopping and cavity barriers • Ductwork • Dampers	54%

2. Fire Safety Practice

Assessment Criteria	Knowledge and Understanding	Average Score
2.1 Understand the basic principles of means of escape in case of fire	• To include: ○ Means of escape ○ Occupancy ○ Construction ○ Evacuation time ○ Travel distance ○ Escape route ○ Places of safety (Reasonable and Total) ○ Management control ○ Responsible person	65%
2.2 Know the main factors to be considered when undertaking a simple fire risk assessment in the workplace	• Aims of a fire risk assessment: ○ Identify fire hazards ○ Identify people at risk ○ Evaluate, remove, reduce and protect from risk ○ Record, plan, inform, instruct and train ○ Review	87%
2.3 Know the main areas of advice to prevent fire in the home and the action to be taken in the event of fire	• Provision of domestic smoke alarms • Planning a safe escape route • Main areas of risk including: ○ In the kitchen ○ Electrics ○ Furniture ○ Cigarettes ○ Candles	75%

3. Automatic Fire Detection

Assessment Criteria	Knowledge and Understanding	Average Score
3.1 Understand the basic principles of Automatic Fire Detection (AFD) and describe the types of detectors and systems	• Definition of a detector • Smoke detectors: ○ Ionisation ○ Optical ○ Multi-sensor or combined • Heat detectors • Domestic smoke alarms • Other types of detectors: ○ Video ○ Linear beam ○ Flame ○ Aspirating	48%

3.2 Understand the operation and control of simple fire alarm systems	• Control and indicating equipment
	• Power supplies
	• Zones
	• Alarm signals:
	  ○ Audio
	  ○ Visual
	  ○ Sensual
		57%

4. Fixed Installations

Assessment Criteria	**Knowledge and Understanding**	**Average Score**

4.1 Describe the main types of fixed installation, their principal components and applications	• Automatic sprinkler systems:
	  ○ Water supplies
	  ○ Fire and rescue service inlets
	  ○ Types of system
	  ○ Controls, gauges and alarms
	  ○ Sprinkler heads
	  ○ Fast response sprinklers
	  ○ Domestic sprinklers
	• Drenchers:
	  ○ Roof
	  ○ Wall or curtain
	  ○ Window
	• Water spray projector systems:
	  ○ High velocity
	  ○ Medium velocity
	• Water mist systems
	• Foam installations:
	  ○ Low expansion
	  ○ High expansion
	• Rising mains:
	  ○ Wet
	  ○ Dry
	• Hose reels
	• Private hydrants
	• Extinguishing systems not using water:
	  ○ Carbon dioxide
	  ○ Dry powder
	  ○ Inert gas
		51%