Electrical Power Network Engineer

Core Technical Knowledge Asessment Guidance

Stage 1 Knowledge Test (KT) Assessment Requirements

This guidance is provided to support apprentices and their providers to gain an understanding of the range and level of knowledge they will need to successfully complete each of the 6 knowledge categories which the assessment is based upon.
Apprentices will complete a standardised multiple-choice knowledge assessment consisting of 40 questions. The assessment will be conducted in a 60 minute time period utilising an electronic or paper-based question paper and will be graded distinction, pass or fail. The assessment will test the apprentices' core technical knowledge of the 6 topic areas detailed in Annex A of the Electrical Power Networks Engineer Assessment Plan, which are shown below. The questions have been developed and standardised by the EUIAS in consultation with representative employers.

Each apprentice will take their knowledge test in a suitably controlled environment under exam conditions in the presence of an invigilator. The invigilator may be sourced from the employer but will be approved by the EUIAS and must operate in accordance with their guidance. The multiple-choice paper will be marked by an independent representative sourced by the EUIAS, following an agreed marking guide or by electronic means.
The knowledge assessment will be open book, meaning students will be allowed to have available and refer to any material that they wish to consult during the assessment. This material may include training manuals, company policies and procedures etc. However they will not be allowed to have access to the internet.

- 60 min electronic or paper based invigilated assessment
- 40 x open book multi choice questions across 6 Core Knowledge areas
- Marked by an independent representative from an Assessment Organisation
- Pass Mark 80% - 89% = Minimum of 32 correct answers
- Distinction Mark – 90% - 100% = Minimum of 36 correct answers

End Point Assessment Plan - Knowledge Test Categories (KT)	Quantity
1.0 CTK) Electrical power principles: alternating current/direct current theories; dynamic/static engineering systems; application of electrical and electronic circuit theory; the use of complex wave forms	7
2.0 (CTK) Three-phase systems with consideration being given to harmonics and their effects and the methods of power distribution	7
3.0 (CTK) Electricity network design, capabilities, complexities, operations and topologies; operation and limitations of plant and equipment	7
4.0 (CTK) The operation of the electricity network in normal and fault conditions	7
5.0 (CTK) Safe systems of work and risk management; the application of Electricity Supply Standards, Regulations including environmental requirements. These are Health and Safety at Work Act 1974, Electricity at Work Regulations 1989, Management of Health & Safety at Work Regulations 2003, Control of Substances Hazardous to Health (COSHH) Regulations 2002, The Electricity Safety, Quality and Continuity Regulations 2002, The Environmental Protection Act 1990	8
6.0 (CTK) The key interfaces of the electricity network and the impact of those interfaces	4

Core Technical Knowledge (CTK) Assessment Guidance

CKT Group 1.0 Electrical power principles: alternating current/direct current theories; dynamic/static engineering systems; application of electrical and electronic circuit theory; the use of complex wave forms

For this section apprentices will need to have a good understanding of –

- The formulae used for common power calculations and principles
- Power factor and its effect and control
- The connection of instruments to measure amps, watts and volts in circuits

CKT Group 2.0 Three-phase systems with consideration being given to harmonics and their effects and the methods of power distribution

For this section apprentices will need to have a good understanding of –

- The connection and winding arrangement of three phase transformers
- The effect and control of lagging and leading voltage
- The fundamental cause, effect and control of harmonics

CKT Group 3.0 Electricity network design, capabilities, complexities, operations and topologies; operation and limitations of plant and equipment

For this section apprentices will need to have a good understanding of –

- UK generation, transmission and distribution voltages and regulatory tolerances
- UK distribution earthing principles, techniques and values
- The common methods used for voltage control
- The principles and methods used for circuit protection

CKT Group 4.0 The operation of the electricity network in normal and fault conditions

For this section apprentices will need to have a good understanding of –

- The equipment used to measure and control circuit voltage and current
- The typical types of network faults and the methods used to control them
- The typical types and capabilities of equipment used to conduct switching
- The principles of switching and controlling networks in normal and fault conditions

CKT Group 5.0 Safe systems of work and risk management

For this section apprentices will need to have a good understanding of –

- The principles and techniques used for risk identification and management
- The types, purpose and information contained in typical operational safety documents used to achieve safety from the system
- The fundamental requirements of UK legislation and relevant regulations relating to the control and management of work / persons on or near electrical networks

CKT Group 6.0 The key interfaces of the electricity network and the impact of those interfaces

For this section apprentices will need to have a good understanding of –

- The purpose, responsibilities and operating principles of the UK power regulator
- The methods and principles used by the regulator to control pricing
- The responsibilities placed upon employers for the safety, quality and continuity of the UK electricity supply