



Australian Government

Assessment Requirements for MEM23111 Select electrical equipment and components for engineering applications

Release: 1

Assessment Requirements for MEM23111 Select electrical equipment and components for engineering applications

Modification History

Release 1. Supersedes and is equivalent to MEM23111A Select electrical equipment and components for engineering applications.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include:

- identifying effects and dangers of electricity including evaluating relevance of work health and safety (WHS), regulatory requirements, standards and codes of practice
- applying life cycle design and sustainability parameters to identification of task
- reviewing sustainability implications, functions and features of electrical devices, machines and systems
- integrating electrical evaluation techniques with overall engineering application requirements including:
 - mechanical
 - fluid power
 - electronic
 - • heating
 - ventilation
 - air conditioning and refrigeration (HVACR) and controller and networking
- assessing and applying basic electrical principles and techniques, software basic analysis and graphic skills and techniques to engineering tasks on at least two occasions
- evaluating suitability of electric power supply for applications on at least two occasions
- applying appropriate calculations and methods for electric motor control
- ensuring safe electrical working practice and compatibility of units in calculations on at least two occasions
- reporting and documenting results of investigation and evaluation including calculations, diagrams, programs and files.

Note: Where a volume and/or frequency is not specified, demonstration must be provided at least once.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- energy source options and sustainability implications of electricity generation, distribution and use

- sustainable sources of energy
- electrically-powered equipment and systems
- electrical-related engineering tasks
- features and function of electrical systems in engineering applications including:
 - sources and reliability of supply including mains, generators and batteries
 - fault and other protection requirements
 - electrical system control and interfacing with other systems
 - maintainability
 - efficiency
 - fitness for purpose
- WHS and regulatory requirements with emphasis on automation safety, codes of practice, standards, risk management and registration requirements
- effects of electricity on humans including dangerous high currents and voltages related to extra low, low and high voltage applications and how these relate to engineering applications
- licensed technical and professional assistance
- electrical laws and theorems
- electrical circuit components
- alternating current (AC) and direct current (DC) electrical supply systems:
 - single and three-phase power
 - power factor
 - distribution systems including transformers, cables and switchboards
 - local area distribution considerations and supply authority requirements
 - typical and possible faults and dangerous situations
 - earthing systems including multiple earth neutral (MEN) system
- circuit protection devices including fuses, thermal relays, circuit breakers and residual current devices
- basic electrical circuits and applications for lighting, motors, controllers, heaters and coolers
- graphical symbols and diagrammatic representation of basic circuits and power supply fundamentals
- electrical power consumption
- electrical measurements and techniques
-

Assessment Conditions

- Assessors must:
 - have vocational competency in selecting electrical equipment and components for engineering applications at least to the level being assessed with relevant industry knowledge and experience

- satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015 or its replacement* and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires.
- Where possible assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions that cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required including relevant workplace procedures, product and manufacturing specifications.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.
-

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>