



Australian Government

Assessment Requirements for MEM23117 Evaluate microcontroller applications

Release: 1

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Modification History

Release 1. Supersedes and is equivalent to MEM23117A Evaluate microcontroller 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 and assessing compliance with work health and safety (WHS) and regulatory requirements, and risk management procedures
- identifying microprocessor-related systems and components, integrating principles and techniques
- assessing suitability of programming
- investigating sustainability implications of microprocessor-related applications
- assessing and applying basic electrical and electronic control principles, controller programming principles and techniques, software basic analysis, and graphics skills and techniques on at least two occasions
- evaluating components of applications against application specifications for safety, economy and fitness for purpose on at least two occasions
- reporting and documenting processes and results of evaluation, including layouts, programs and flow charts or state diagrams.

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:

- features of microcontrollers and related control system component applications used in engineering environments
- compliance requirements of WHS, regulations, codes of practice, standards and risk assessment
- appropriate technical and professional assistance
- effects of electricity on humans, dangerous high currents and voltages and automated systems, and regulatory requirements related to extra low, low and high voltage applications
- hardware functions, options and integration with microprocessor applications
- software for microcontrollers

- input devices and sensors, output devices and actuators, controller, interfacing and signal conditioning, communications, human-machine interfaces (HMIs), graphical user interfaces (GUIs), and networking options for devices
- appropriate use of microprocessor related terminology
- microcontroller features and function including:
 - volatile and non-volatile memory and data storage
 - one-time programmable and reprogrammable microcontrollers
 - typical microcontroller architecture characteristics
 - central processing unit (CPU) functions
 - interrupt structures
 - input/output (I/O) functions
 - timers and clocks
 - logic
 - programming methods and techniques.
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Assessment Conditions

- Assessors must:
 - have vocational competency in evaluating microcontroller 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.
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Links

Companion Volume implementation guides are found in VETNet -

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