

## **BARCamm - SKILLS AND KNOWLEDGE ASSESSMENT SPECIFICATIONS**

### **KNOWLEDGE EVIDENCE**

Candidates are required to give satisfactory responses to either oral or written questions on EACH of the following:

1. Principles of Refrigeration control
2. Functions of expansion valves and pressure regulators in refrigeration systems
3. Operating principles of sensors (transducers) (e.g. platinum resistance sensors, thermistor (PTC & NTC)
4. Operating principles of combined sensing and output devices (e.g. thermostat, pressure stat, liquid level, high pressure, low pressure)
5. Operating principles of output devices including relay contactors and solid state switches such as thyristors, triac and solid state relay
6. Operating principles of continuously variable outputs i.e. analogue outputs, pulse width modulation
7. Principles of defrost strategy
8. Determination of control and alarm set points
9. Parameters and parameter setting for control systems
10. Communication networks
11. Data display systems
12. Installation and testing procedures for common sensors (e.g. thermocouple, pressure sensor)
13. Installation and testing of output devices e.g. relays and contactors
14. Fault finding using appropriate instrumentation
15. Plant log sheets and site documentation
16. Defect reporting
17. EMC Requirements ( The Electromagnetic Compatibility Directive 89/336/EEC)
18. Methods of noise transmission (e.g. galvanic, capacitive, inductive, electromagnetic)
19. Cable installation, segregation, testing and suppression
20. Operating principles of energy absorption devices such as suppressors and varistors
21. The IEE Regulations (current edition) in particular
22. Electrical hazards encountered when working on electronic control and monitoring systems
23. Risk assessment and permit to work

## **PERFORMANCE CRITERIA**

The assessor must observe each candidate performing the following practical activities.

1. Install and test temperature and pressure controls, relays and contactors.
2. Segregate power/control cables and signal cables to keep Electromagnetic Compatibility (EMC) noise to an acceptable minimum
3. Connect suppressors correctly.
4. Disconnect electronic controllers during circuit high voltage testing.
5. Set typical parameter for a typical controller.
6. Access a local user interface to obtain/change set points.
7. Fine tune a set point using a local interrogation unit (LIU).
8. Obtain data from a data display system.
9. Fault finding using a systematic approach.
10. Select, check and use appropriate instrumentation e.g. voltmeter, ammeter, ohmmeter.
11. Select, check and use appropriate safety and personal protective equipment.
12. Carry out appropriate hazard and risk assessment.
13. Complete work permit and obtain signature from authorised person.