Off-job Assessment

Demonstrate and apply knowledge of cable coding, colours, characters, applications, and capacity

(level 4, credits 2) Question 16 and 17

Trainee Name: (First/Last)

Company/Employer:

National Student Number (NSN): (if known)

Skills Number:

Phone Number:

Email:

Introduction

In this assessment

This is a theory assessment.

The Unit Standard is for people engaged in the manufacture of electric switchboards and covers knowledge of electric switchboard circuits.

Please answer all the questions. Write your answers clearly in pen, not pencil.

Please note: each question has a cross reference to the appropriate Unit Standard evidence requirement (ER). A copy of the Unit Standard can be found on the NZQA website, if required http://nzqa.govt.nz/ .

Legislation and Safety

It is very important for your own safety and the safety of colleagues and customers that you follow safe and sound practice when completing electrical work. Safe and sound practice relating to the installation of electrical equipment is defined in AS/NZS: 3000:2007, Electrical Installations (known as the Australian/New Zealand Wiring Rules).

You may refer to current legislation and Standards (such as AS/NZS: 3000:2007) during assessment.

All activities and evidence presented must comply with legislation, policies and procedures, ethical codes, Standards (such as those listed in Schedule 2 of the Electricity (Safety) Regulations 2010), site/industry practice, and any manufacturer's instructions, specification and data sheets.

Assessor/Tutor sign-off

You should give this assessment to your assessor / tutor to be marked.

Your assessor may discuss the outcome of this assessment with you. As with all Unit Standard assessments, you need to prove that are competent in all parts of the Unit Standard. Therefore, you need to answer all the questions correctly.

Your assessor / tutor will advise you if you have answered incorrectly or need to provide more evidence to prove your competence. This may be done verbally. Your assessor / tutor should make notes of any discussions you have regarding this assessment.

Pre-assessment form

Please complete the following, before starting the assessment.

I have completed/produced the following	Yes	No
I understand what is required to achieve competency in this assessment.	☐	☐
I understand what I need to do to submit my assessment material when I have completed it.	☐	☐
I have the knowledge to complete each question.	☐	☐
I understand how I will get my results.	☐	☐
I understand how the appeals process works.	☐	☐
I understand that my results will be reported to NZQA.	☐	☐
I have informed my assessor about any special needs that need to be accommodated.	☐	☐

Question 16

Determine, using the adiabatic equation, which of the cables shown below would be adequate for the following conditions. Show your workings in the box below.

- 70^0C Thermoplastic, PVC cable
- Temperature rise to 1600C which gives k = 115
- Fault current of 5kA
- Disconnection time of 2 seconds

☐ 25mm^2	☐ 35mm^2	☐ 50mm^2	☐ 70mm^2

Question 17

a. Using Table C1 of AS/NZS3000:2007 determine the maximum demand current for the following single domestic electrical installation.

The installation consists of the following

- 45 points of lighting
- 1500W of outdoor lighting
- 55 x 10A socket outlets
- 3.5kW cooking appliances
- 2.5kW of space heating
- 2kW instantaneous water heater

Determine the minimum size of cable required to supply the maximum demand current using the table below.

Conductor Size mm^2	Current Carrying Capacity (A)
1	13
1.5	16
2.5	23
4	30
6	39
10	54
16	72

Note : No other factors need to be taken into account.

Load Group A

Load Group B

Load Group C

Load Group D

Load Group E

Please indicate the final size of cable below that will satisfy the current carrying capacity

☐ 2.5mm^2	☐ 4mm^2	☐ 6mm^2	☐ 10mm^2

Volt Drop

The cable has a 10m run and a maximum volt drop of 5.75V.

Use the table below to determine whether the cable specified for current carrying capacity meets the volt drop requirement

Conductor Size mm^2	mV/A.m
1	51.63
1.5	33
2.5	18
4	11.2
6	7.5
10	4.46
16	2.8

Calculations

Please indicate the final size of cable below that will satisfy both the current carrying capacity and volt drop requirements

☐ 2.5mm^2	☐ 4mm^2	☐ 6mm^2	☐ 10mm^2

Trainee sign off

Sign before giving this assessment and evidence to your assessor

Trainee name:	Skills Trainee Number: NSN (if known):

Declaration:

I have answered all questions.

I confirm that this assessment is my own work.

I understand that there is an appeals process if I am not happy with the assessment decision.

Signature:	Date:

Assessor's feedback to trainee

I confirm that the trainee has completed this assessment. The work shows a level of competence that is appropriate for the unit standard.

Assessor name:	Assessor number:
Signature:	Date:
Email:	

skills.

The Skills Organisation

0508 SKILLS (0508 754 557)

Skills.org.nz