Portfolio Assessment Cover & Feedback Sheet

UEENEEG108A (SIN S7325) – Trouble-shoot and repair faults in low voltage electrical apparatus and circuits

Student Name:					
Assessment Date:		**Assessment #**	**1**	**ATTEMPT #**	

STUDENT DECLARATION
I certify that I understand the assessment instructions (see page over) and the submitted work is my own.

Signed: _____

Assessment Notes

This folio of evidence must be completed by due date_____
Pass Mark 100%

Assessor Feedback	
Performance demonstrated by this assessment is:	Satisfactory **(S)** or Not Yet Satisfactory **(NYS)**

Assessor Comment: **The student's result was: _____%**

Review all the worksheets and/or exercises.
☐ Attend evening tutorials.
☐ Join a study group.
☐ Apply for a retest before the end of your enrolment period.
☐ Other:

Notes:
1. You are allowed two assessment attempts in the enrolment period.
2. Failure to achieve a Satisfactory Result within the enrolment period will require re-enrolment.
3. You have the right to appeal your assessment result.

Assessor Name:	Assessor Signature:
Date assessment outcome and feedback received on:	Student Signature:

Instructions

1. Attempt ALL questions and write answer in the space provided.

2. Follow all instructions given by your assessor.

3. For multiple choice questions, choose the *most* correct answer.

4. All diagrams must be neat and labelled.

5. All material handed in must have your full name on it.

6. All calculations and numerical answers must be shown correct to two decimal places and include both the unit of measurement and metric prefix if applicable.

7. Time allowed and aids permitted are indicated on the test paper.

8. Programmable and/or graphic calculators are not permitted.

9. All bags, text books, pencil cases etc. must remain on the floor. Only the required pens, pencils, erasers, calculators are to be on the work surface.

10. Consult your assessor for assistance if required.

11. **NO** collaboration of **any** description between students.

12. You may not leave the assessment room without the assessor's permission. If you leave without your assessor's permission, your assessment attempt will be terminated and assessed as Not Yet Satisfactory.

13. Mobile phones must be **Switched Off** and placed in your bag for the duration of the assessment. If your mobile device is seen, 'rings' or vibrates during the assessment, your assessment attempt will be terminated and assessed as Not Yet Satisfactory.

14. If the assessment is interrupted for any reason, a new assessment will be attempted at a time determined by your assessor.

15. Verbal and written feedback will be given to you after the assessment.

Signing the Student Declaration on the front page indicates that you have read and agree to follow these instructions.

1.	At what a.c voltage range is a person required to have a licence to perform electrical work in W.A?		
2.	Why must appliances, equipment and installations be tested to an appropriate standard?		
3.	What is the standard that relates to testing and inspection of in service electrical equipment?		
4.	What six mandatory tests must be carried out on all installations before connecting to power?		
	1		
	2		
	3		
	4		
	5		
	6		
5.	When testing the current draw of a three phase S.C.I. motor ,what current readings should not be seen on your test meter?		
	A	Nothing more than name plate amps	
	B	No more than 20% over name plate amps	
	C	Approximately equal current draw in each phase.	
	D	Anything under name plate amps	
6.	What could be a possible outcome if the over temperature energy cut-out on a storage hot water service failed in the closed position and the thermostat contacts welded together?		
7.	When fault finding machinery, who should be consulted to determine the correct sequence of operation?		
8.	What is the minimum IR reading that must be obtained when testing a sheathed heating element?		
9.	A motor's overload should always be set about 20% higher than nameplate amps. True or false?		

10.	Would the thermostat contacts for a refrigeration unit be closed or open before powering for the first time?		
11.	If a single phase motor trips the circuit breaker when plugged into one GPO but operates correctly when plugged into another, what fault or faults are indicated, if any, and is the motor safe to use?		
12.	What resistance reading should you expect to see when testing with an ohm meter across the active and neutral connection of a 3600W storage HWS with power disconnected? Show calculations.		
13.	What is the purpose of an over temperature energy cut out in a storage HWS circuit?		
	A	A safety device designed to stop over pressurization of hot water tanks.	
	B	A safety device designed to monitor and regulate temperature, by sensing supply current and interrupting the supply voltage at predetermined limit.	
	C	Not required in storage hot water systems.	
	D	A device designed to monitor and regulate temperature, by sensing water temp and interrupting the supply voltage at a predetermined limit.	
14.	Describe two faults common to capillary tube thermostats.		
	1.		
	2.		
15.	Can a voltage controlled thermostat be swapped for a current controlled thermostat?		
16.	Why is the equipotential bond disconnected when testing the continuity of the protective earth of a HWS?		
17.	If the capacitor in a 36w fluorescent luminaire was open circuited, would the circuit breaker trip?		
18.	If a single phase, split phase motor fails to start without mechanical assistance, what is a likely fault?		
	A	Start winding has an open circuit.	
	B	Run winding has a short to earth.	
	C	Centrifugal switch is failing to disconnect.	
	D	Capacitor has a short circuit.	

19.	A single phase shaded pole motor fails to start. What is the most likely cause?		
	A	Winding has burnt out.	
	B	Bearings have dried out.	
	C	Fan blade is jammed.	
	D	Any of the above.	
20.	What is the minimum I.R. result for a 415v motor ?		
21.	If an iron is tested and the IR result was 0.7MΩ, is the iron fit for service?		
22.	What is the minimum I.R. result for a common toaster?		
	What possible outcome could there be if the M.E.N. link was left off after testing an installation?		
23.	Why must circuit neutrals be disconnected when checking installation connections?		
24.	What piece of equipment is used to reliably test an armature for shorted turns?		
25.	Which table in A.S.3000 is used to determine correct fault loop impedance values?		
26.	What precautions must be taken when replacing very old metal cased capacitors?		
27.	What resistance would be expected when testing between windings of a transformer?		
28.	If the incoming active and neutral to a domestic installation were transposed, what possible adverse effect could this have upon the installation?		

29.	What can cause bad vibrations in a motor?		
	A	Out of balance loads attached to motors.	
	B	Bent shaft on coupling.	
	C	Shims worn away in couplings attached to loads.	
	D	All of the above.	
30.	How does a simmerstat control the temperature of an electric hotplate?		
31.	Steam is coming out of the relief valve of an instantaneous H.W.S. What is the most likely cause?		
32.	State the AS/NSZ 3000:2007 requirements for the protection against restarting or reversal. State the AS/NZS Clause number.		
	AS/NZS Clause: _____		
33.	In what configuration are 3 phase instantaneous hot water units normally connected?		
34.	An R.C.D is still tripping after all appliances on the circuit have been unplugged. What additional test should be performed?		
35.	A 3 phase S.C.I. delta connected motor windings measure 10Ω,10Ω and 20Ω when measured between terminals with links still in place. What is the most likely fault?		

The following pages of test results must be completed in class and signed by your lecturer to confirm competence.

Lecturer Name:	Signature:
Student Name:	Signature:
Date:	Date:

1. TEST AND REPORT ON ELECTRICAL EQUIPMENT:

Appliance

Equipment ID			
Visual Inspection			
Inspected and report	Item	Good	Bad
Continuity of earth conductor			
Test Equipment			
Test Result			
Continuity of Element			
Test Equipment			
Insulation resistance			
Test Equipment			
Test Points and Test Results			
Is this equipment safe to use	Yes☐	No☐	
Description of any fault(s) found			

Three Phase Motor

Equipment ID						
Visual Inspection						
Inspected and report	Item				Good	Bad
Continuity of earth conductor						
Test Equipment						
Test Result						
Continuity of windings						
Test Equipment						
Insulation resistance						
Test Equipment						
Test Points and Test Results						
Is this equipment safe to use			Yes ☐		No ☐	
Description of any fault(s) found						

Three Phase Transformer

Equipment ID			
Visual Inspection			
Inspected and report	Item	Good	Bad
Continuity of earth conductor			
Test Equipment			
Test Result			
Continuity of windings			
Test Equipment			
Insulation resistance			
Test Equipment			
Test Points and Test Results			
Is this equipment safe to use		Yes☐	No☐
Description of any fault(s) found			

2. Test a simulated domestic installation for electrical compliance:

Inspection and Test Data Sheet

Visual Inspection

Item	Comments & Details	Good	Bad
General			
Consumer's Mains			
Switchboard			
Wiring Systems			
Electrical Equipment			
Earthing			

Continuity & Resistance of the Earthing System

Circuit	Earth Conductor Size	Rating Circuit Breaker	Measured Value	Maximum Value
Main Earth		Not Applicable		

Insulation Resistance

Test	Measured Value	Minimum Permissible Value
Active to Neutral – PEN (Mains)		
Active/Neutral to Earth (Mains)		
Active/Neutral to Earth (Installation)		

Polarity & Correct Circuit Connections

Circuit	Polarity		Connections	
	Correct	Incorrect	Correct	Incorrect
Power - 1				
Power - 2				
Lighting - 1				
Lighting - 2				
Air Conditioner				
HWS				
Hot Plate				
Oven				
Short Circuit Test				

Earth Fault-Loop Impedance

Power Not Available

Circuit	Conductor Size		Rating Circuit Breaker	Measured Value R_{phe}	Maximum Permissible Value R_{phe}
	Active	Earth			
Power-1					
Power-2					
Air Conditioner					

Faults Found
