



# Unit Assessment Record (UAR)

## Engineering Principles (Electrical Networks) (D3PS 04)

Credit Value: 1

**NB: After entering your personal details please pass this document to your tutor for completion and eventual return to COLU. You may wish to retain a copy for your own use.**

TITLE: .....	SURNAME: .....	UNIT TUTOR: .....
FORENAME(s): .....	CENTRE: .....	
HOME ADDRESS: .....	ADDRESS: .....	
.....	.....	
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POST CODE: .....	POST CODE: .....	
HOME TEL: .....	TEL NO: .....	
WORK TEL: .....	FAX NO: .....	
FAX NO: .....	E-MAIL: .....	
E-MAIL: .....	CENTRE CONTACT: .....	

SQA REG. NO: .....	UNIT START DATE: .....
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<b>AUTHENTICATION OF EVIDENCE – INTERVIEW</b>	<b>DATE:</b> .....
PORTFOLIO OF EVIDENCE AVAILABLE	<input type="checkbox"/>
EVIDENCE AUTHENTICATED	<input type="checkbox"/>
ALL OUTCOMES SATISFIED	<input type="checkbox"/>
Please initial as appropriate	
NOTES: .....	
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<b>GRADE</b>			
	REFER	PASS	MERIT
FINAL GRADE:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Please initial as appropriate			
ASSESSOR: .....			DATE: .....



**FOR COLU USE ONLY**

VERIFIER:..... DATE: .....

**Evidence Log** – For each of the performance criteria please clearly identify the evidence within the portfolio that satisfies the criterion fully with respect to the range and evidence requirements as stated in the unit specification.

**1) Apply circuit theorems to d.c. networks**

**TMA Evidence**

**Supplementary Evidence & Location**

(a) The application of Kirchhoff's current and voltage laws to the solution of problems involving d.c. networks is complete and accurate.
(b) The equivalent circuit for a d.c. network is complete and accurate in terms of Norton's and Thévenin's theorems.
(c) Matching of generator to load for maximum power transfer is in accordance with the maximum power transfer theorem.

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**2) Apply complex algebra to the analysis of a.c. networks**

(a) The manipulation of complex variables is correct.
(b) Representation of a series R, L and C circuit by complex impedance is correct.
(c) Representation of a parallel R, L and C circuit by complex admittance is correct.
(d) Calculations involving series and parallel R, L and C circuit parameters are correct in terms of method, representation and units.

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**3) Analyse electrical systems when modelled as two-port networks**

(a) Modelling of a circuit by a two-port network is correct in terms of input and output equations, equivalent circuit, parameters, current convention and units.
(b) Solutions to problems involving the frequency characteristics of a two-port network, capacitively coupled to a parallel RC load, are correct.
(c) Conversion from one set of parameters to another is correct in terms of units, equations and equivalent circuit.

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**4) Analyse three-phase circuits**

(a) Representation of three-phase systems by phasor diagram is correct in terms of scale and annotation.
(b) Solutions to problems involving line and phase values, power and power-factor improvement in balanced three-phase loads are correct.
(c) Analysis of the methods of three-phase power measurement is correct for balanced and unbalanced loads.

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**Assessment Matrix** – The matrix indicates which instruments of assessment, within the primary assessment package, are required to satisfy individual performance criteria.

The column titled **Merit** identifies where particular opportunities exist for candidates to develop their work with a view to satisfying the requirements for the award of merit.

The row titled **Minimum Evidence Requirement** indicates the minimum number of examples required (or times a task must be performed) to satisfy a particular performance criterion.

**Engineering Principles (Electrical Networks)**

OUTCOMES/PERFORMANCE CRITERIA		Qu	1a	1b	1c	2a	2b	2c	2d	3a	3b	3c	4a	4b	4c	5a	5b	Merit	
<b>EVIDENCE</b>	TMA - 1 (v2)	1												X					
		2												X					
		3												X					
		4												X					
		5											X						
		6													X				
	TMA - 2 (v2)	1																X	
		2																X	
		3																X	
		4															X	X	
	TMA - 3 (v2)	1	X																
		2	X																
		3	X	X															
		4		X	X														
		5		X															
	TMA - 4 (v2)	1					X	X											
		2					X		X										
		3					X	X	X										
		4		X							X		X						
		5					X			X	X	X							
MERIT ASSIGNMENT (v2)	1																	X	
	2																	X	
<b>MINIMUM EVIDENCE REQUIREMENT</b>			3	4	1	3	2	2	2	2	1	1	1	4	1	1	4	1	

**Merit Statement**

To gain a pass in this unit, a candidate must meet the standards set out in the outcomes, performance criteria, range statements and evidence requirements.

To achieve a merit in this unit, a candidate must demonstrate a superior or more sophisticated level of performance. In this unit this might be shown in one or more of the following ways:

- (a) integration of theory with practice
- (b) synthesis of two or more outcomes in solving problems
- (c) logical and lucid presentation of work
- (d) depth of further reading and research.