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National Programme Unit

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Unit Title:	Circuit Networks and Power Distribution

Graded Unit Code:	GA33EEE05	Ungraded Unit Code:	UA33EEE05

Pathway(s):	Construction and the Built Environment Science and Engineering
Module(s):	Electrical and Electronic Engineering

Level:	3	Credit Value:	3
Valid from:	31st July 2021	Valid to:	31st July 2026

The following QAA grade descriptors must be applied if you are delivering the graded version of this unit:

1	Understanding of the subject
3	Application of skills
7	Quality

LEARNING OUTCOMES	ASSESSMENT CRITERIA	
The learner will:	**The learner can:**	
1. Understand the use of circuit theorems in the solution of A.C. and D.C. circuit problems	1.1	Use the Principle of Superposition to solve circuit problems
	1.2	Explain the ideal concepts of constant current and constant voltage sources
	1.3	Deduce constant current and constant voltage equivalent circuits for practical sources and convert from one type of equivalent circuit to the other
	1.4	Use Thevenin's and Norton's theorems to solve problems
	1.5	Solve problems for resistive loads using the maximum power transfer theorem
	1.6	Derive the turn's relationship for transformer matching and apply it to problems

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LEARNING OUTCOMES	ASSESSMENT CRITERIA	
The learner will:	**The learner can:**	
2. Understand the basic theory of balanced three-phase circuits	2.1	With reference to the UK National Grid, describe the three-phase electricity supply network and explain the reasons for its use
	2.2	Describe star and delta (3 wire and 4 wire) methods of connection and explain their use for power distribution
	2.3	Solve problems using the relationship between line and phase quantities under balanced conditions
	2.4	Show that power dissipation in a three-phase load is the sum of single-phase powers
	2.5	Show that the power in a balanced three phase load is $\sqrt{3}.V_{line}I_{line}cos\varphi$