

Template for CBQ units

Unit	Telecommunications Principles 1	
SSC Code	TP1	
SQA Code	H3BR 04	
SCQF Level	5	
SCQF Credit Value	7	
Guided Learning Hours		
Unit summary		
Learning Outcomes The learner will:	Assessment Criteria	
1 Know the electromagnetic spectrum as applied to telecommunications	1.1 Describe the physical properties of electromagnetic radiation 1.2 Describe the relationship between frequency and wavelength 1.3 List the principal bands of the electromagnetic spectrum and their associated frequencies and wavelengths 1.4 Identify the main telecommunications applications of electromagnetic radiation.	
2 Know the relationship between telecommunication circuits and transmission lines	2.1 Identify the circuit properties (Resistance, Capacitance, Inductance and Leakage) of alternating current (AC) circuits 2.2 Describe the effects of circuit properties on transmission lines 2.3 Design an equivalent circuit model of a transmission line using the primary line constants 2.4 Describe characteristic impedance in transmission lines including open circuit, short circuit and matched termination	

<p>3 Know how binary information is transmitted as a digital signal</p>	<p>3.1 Describe the properties of digital signals including frequency, mark space ratio and triggered timing</p> <p>3.2 Describe the advantages of digital signals in terms of regeneration, accuracy and recovery</p> <p>3.3 State why digital signals need to be modulated onto an analogue carrier</p> <p>3.4 Use keying to demonstrate how a digital signal is modulated onto an analogue carrier</p>
<p>4 Understand how an analogue signal is converted to a digital signal</p>	<p>4.1 Explain different ways of converting an analogue signal to a digital signal</p> <p>4.2 Explain linear and non-linear forms of encoding</p> <p>4.3 Calculate signal to noise quantisation errors</p> <p>4.4 Explain Aliasing in telecommunications terms and how it can be overcome</p> <p>4.5 Explain the use, and limitations, of the Nyquist rule in signal sampling</p>
<p>5 Know signal multiplexing</p>	<p>5.1 Describe frequency, synchronous and asynchronous signal multiplexing:</p>
<p>Additional information about the unit</p>	
<p>Guidance on approaches to assessment</p>	<p>Further guidance is set out in the CBQ Assessment principles developed by e-skills UK and agreed by the Joint Awarding Body Forum.</p>
<p>Details of the relationship between the unit and relevant National Occupational Standards or other professional standards</p>	<p>This unit is based on the e-skills UK NOS for IT professionals (PROCOM) available from www.e-skills.com/nos</p>
<p>Location of the unit within the subject/sector classification system</p>	<p>IT Professional</p>
<p>Name of the organisation submitting the unit</p>	<p>e-skills UK</p>