

REQUIRED SKILLS AND KNOWLEDGE – UEENEEF102AA**KS01-EF102A Telecommunications telephony and switching**

Topic and Description	NIDA Lesson	CARD #
T1. Principles and characteristics of sound encompassing: <ul style="list-style-type: none">• Sound characteristics• Sound waves• Distortion• Attenuation• Resonant frequency• Sound pressure levels	5102-312-130 Introduction to Communications Systems <ul style="list-style-type: none">▪ Define the basic elements that make up communications systems.▪ Describe common circuits and components that are contained in the elements of communications systems.▪ Describe bandwidth as a limiting factor in communications systems.▪ Describe noise as a limiting factor in communications systems.	
T2. Transmission of sound encompassing: <ul style="list-style-type: none">• Compression• Rarefaction• Sound transmission• Wavelength• Inverse square rule (attenuation)• Basic telephone construction	5102-312-160 Telephone Systems <ul style="list-style-type: none">▪ Define the construction of a basic telephone system.▪ Describe the local area telephone network.▪ Describe local area telephone calling.▪ Describe the local loop.▪ Describe the long distance telephone network.▪ Describe a typical long distance hierarchy telephone system.	
T3. Telephone transmitters encompassing: <ul style="list-style-type: none">• Telephone transmitter functions• Telephone transmitter types• Capacitive transmitters• Moving coil transmitters	5102-312-190 Telephone Equipment . <ul style="list-style-type: none">▪ Describe the operation of the mechanical telephone set.▪ Describe the operation of the electronic telephone set.▪ Observe the operation of an electronic telephone set and local loop.▪ Measure signals in the local loop of an electronic telephone set.	337(2)

<p>T4. Telephone receivers encompassing:</p> <ul style="list-style-type: none"> • Telephone receiver functions • Telephone receiver types • 	<p>. 5102-312-190 Telephone Equipment .</p> <ul style="list-style-type: none"> ▪ Describe the operation of the mechanical telephone set. ▪ Describe the operation of the electronic telephone set. ▪ Observe the operation of an electronic telephone set and local loop. ▪ Measure signals in the local loop of an electronic telephone set. 	<p>337(2)</p>
<p>T5. Telephone circuits encompassing:</p> <ul style="list-style-type: none"> • Components • Operation of basic telephone • Operation of basic facsimile machine • Cables used, colour and termination types • 	<p>5102-314-130 Fundamentals of Telecommunications .</p> <ul style="list-style-type: none"> ▪ Define telecommunications. ▪ Identify a basic telecommunications system. ▪ Recognize the difference between wired and wireless. ▪ Describe the mission of the Federal Communications Commission (FCC). ▪ Identify the types of telecommunications systems. <p>5102-314-130 Fundamentals of Telecommunications (cont.)</p> <ul style="list-style-type: none"> ▪ Identify the types of telecommunications systems. <p>5102-314-160 Telecommunications Careers</p> <ul style="list-style-type: none"> ▪ Identify the types of telecommunications careers. ▪ Identify the educational requirements of telecommunications careers. ▪ Describe the certification requirements of the telecommunications industry. <p>5102-314-190 History of Telecommunications</p> <ul style="list-style-type: none"> ▪ Identify innovators in the telecommunications industry. ▪ Describe a brief history of telecommunications. <p>5102-314-220 Special Interest Groups .</p> <ul style="list-style-type: none"> ▪ Describe special interest groups in the telecommunications industry. <p>5102-314-250 Telecommunications Terminology .</p> <ul style="list-style-type: none"> ▪ Recognize terms, jargon, and acronyms associated with the telecommunications industry. ▪ Define telecommunications terms using the appropriate jargon and acronyms. ▪ Identify symbols/flowcharts related to the telecommunications industry. <p>5102-314-310 Connection Links .</p> <ul style="list-style-type: none"> ▪ Define a connection link, a physical link, and an atmospheric link. ▪ Understand the purpose of a connection link. ▪ Understand the effects of bandwidth, attenuation, and EMI. 	

	<ul style="list-style-type: none"> ▪ Define a metallic link. ▪ Define a non-metallic link. ▪ Identify a fiberoptic link. ▪ State the advantages of a fiberoptic link. ▪ Identify a radio link. ▪ Identify a microwave link. ▪ Identify a satellite link. <p>5102-314-340 Introduction to Network Switching . of switching in a telecommunications network.</p> <ul style="list-style-type: none"> ▪ Describe the four major methods and variations of switching in a telecommunications network. <p>5102-314-370 Broadcast Systems .</p> <ul style="list-style-type: none"> ▪ Identify and discuss the different types of broadcast systems. ▪ Define and explain the role of broadcast systems in telecommunications. ▪ Explain the purpose and use of the Global Positioning System. <p>5102-314-400 Spread Spectrum Modulation .</p> <ul style="list-style-type: none"> ▪ Identify the different techniques of spread spectrum modulation. ▪ Define and explain the purpose of spread spectrum modulation. ▪ Describe the PN sequence generation in spread spectrum systems. ▪ Describe the need and process for synchronization and preamble in spread spectrum systems. <p>5102-314-430 Cellular Telephony .</p> <ul style="list-style-type: none"> ▪ Describe the theoretical and physical structures of a cellular telephone system and discuss the different multiplexing techniques used. ▪ Define cellular telephony and associated terminology. ▪ Explain the process of a cellular telephone call and state the difference between the original mobile telephone and cellular telephone. <p>5102-314-460 Information Systems</p> <ul style="list-style-type: none"> ▪ Describe LAN, WAN, and MAN computer networks. ▪ Identify the topologies and common components of the various types of networks. ▪ Define the term network and associated terminology. ▪ Understand the RF and IR wireless networks and explain the benefits they provide. 	
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	<ul style="list-style-type: none">▪ Describe the use of spread spectrum in wireless networks. <p>5102-314-490 Satellite Systems</p> <ul style="list-style-type: none">▪ Describe satellite telecommunications systems including satellite types and capabilities.▪ Understand the advantages and disadvantages of satellite radio.▪ List multiple access techniques and common satellite electronic circuits.	
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<p>T6. Overview of earthing and protection encompassing:</p> <ul style="list-style-type: none"> • Function of earthing • Earthing requirements 		
<p>T7. Customer switching systems (CSS), interfaces and devices encompassing:</p> <ul style="list-style-type: none"> • System Distribution Frames (SDF) • Power fail and line interface requirements (e.g. Indial, ISDN, Rotary Groups, Extension, Tie-line circuits and the like) 		
<p>T8. Installation of CSS encompassing:</p> <ul style="list-style-type: none"> • Documentation • CPR rules • CSS interfaces • CPR rules for SDFs 		
<p>T9. Installation and termination requirements overview encompassing:</p> <ul style="list-style-type: none"> • ACMA regulations and requirements • Technical standards • Programming of CSS • Metering and Public/Pay Phones 		
<p>T10. Hazards encompassing:</p> <ul style="list-style-type: none"> • Electronic components and circuits • Printed circuit boards 		180

<ul style="list-style-type: none"> • Physical • Static discharge • Chemical 		
KS02-EF102A Telecommunications Open CPR regulations		
<p>T1 Cabling provider rules encompassing:</p> <ul style="list-style-type: none"> • Cabling registrars, auditors and inspectors • Mandatory and voluntary requirements for cabling work • Registration 		
<p>T2 General installation requirements encompassing:</p> <ul style="list-style-type: none"> • Cabling provider rules requirements • Earth potential rise • Catenary cabling systems • Optical fibre and coaxial cabling systems • Conduits • Surge suppression devices 		
<ul style="list-style-type: none"> • T3 Cable distribution devices encompassing: • Cable distribution devices • Clearances • General requirement 		
<ul style="list-style-type: none"> • T4 Indoor cabling encompassing: • General requirements for indoor cabling • Required minimum clearances • Damp situations 		

<ul style="list-style-type: none"> • Applications 		
<p>T2 Cable identification encompassing:</p> <ul style="list-style-type: none"> • Plans and drawing • Labelling • Documentation 		
<p>T3 Building structures, materials and sequencing encompassing:</p> <ul style="list-style-type: none"> • Building types • Timber frame • Brick veneer • Double brick • Metal frame • Parts of a building • Sequence of construction • Stages of construction where electrical work is completed • Environmental and heritage awareness purpose and regulations 		
<p>T4 Cable installation encompassing:</p> <ul style="list-style-type: none"> • Hazards • Cable damage prevention • Cable dispensers • Cable enclosures • Types • Fixing • Regulations • Distribution boxes and back mounts • Systems 		

<p>T5 Termination Boundaries and devices encompassing:</p> <ul style="list-style-type: none"> • Electrical connections • Hazards • Regulations 		
<p>T6 Cable preparation and terminations and hauling mechanisms encompassing:</p> <ul style="list-style-type: none"> • Indoor Methods • Outdoor Methods 		
<p>T7 Earthing concepts encompassing:</p> <ul style="list-style-type: none"> • MEN System • Communication Earthing System • Telecommunication Reference Conductor • Earthing Cable Shield • Testing • Earth Barriers • Purpose of earth testing instruments • Earth Potential Rise • Earthing test procedures • Interpretation of results 		
<p>T8 Surge suppression and system encompassing:</p> <ul style="list-style-type: none"> • Purpose 		

<ul style="list-style-type: none"> • Types • Operation • Installation Techniques • Earthing requirements 		
<p>T9 Cable shielding and interference encompassing:</p> <ul style="list-style-type: none"> • EMI/RFI Principles • Sources • Reduction Techniques • Earthing Cable Shields 		
<p>T10 Telecommunication earthing systems encompassing:</p> <ul style="list-style-type: none"> • Hazards • Solutions • Installation • Termination • Line taps • Testing 		