

PRIMEBIT SOLUTIONS

- START YOUR SUCCESS

Advanced Diploma Protocol Testing Course Content

MODULE 1 : UMTS (3G) AND GSM (2G) BASIC

- 2G and 3G Network Architecture - CS & PS domain.
- RAT- FDMA,TDMA,CDMA,WCDMA,DFDMA,SCFDMA.
- SDU,PDU,UMTS N/W Architecture
- UMTS Protocol Architecture
- UMTS Channel

MODULE 2 : LTE STANDARDIZATION (3GPP)

- What is 3GPP?
- 3GPP release and process
- LTE Standardization Phase
- LTE Specification and 3GPP Structure

MODULE 3 : LTE SYSTEM ARCHITECTURE

- EUTRAN, EPC, SAE &EPC Architecture.
- Logical Elements and their Interfaces
- Roaming Architecture configuration
- LTE Architecture with legacy 3GPP interworking with an interface and their protocols.
- LTE identifier - UE Identifier, MME Identifier, TAI Architecture

MODULE 4 : LTE PROTOCOL STACK ARCHITECTURE AND CHANNELS

- Control plane and User plane
- L1,L2,L3 Architecture
- Logical channel,Transport channel,Physical channel
- Control Information (CI), Channel Mapping
- Uu - Control/User plane
- S1 - Control/User plane
- X2 - User/Control plane
- S6a - Control plane
- S3/S4/S5/S8/S10/S11- C plane/U plane
- LTE bearer - Default and Dedicated

MODULE 5 : PHYSICAL LAYER

- EUTRA Air interface capability
- FDD Bands
- TDD Bands
- FDD and TDD Frame Architecture
- TDD UL/DL Configuration
- LTE UE Categories
- Resource grid and Resource block
- OFDMA, SCFDMA, MIMO
- Physical UL and DL Signaling
- Physical UL and DL Control Information
- Physical channels
- UE Power on procedure

MODULE 6 : PHYSICAL LAYER PROCEDURES

- HARQ Procedure, Timing Advance, Power control, Random Access procedure
- Physical layer measurement, UE measurement, eNodeB measurement, Physical layer parameter configuration

MODULE 7 : RLC LAYER

- RLC Architecture and function - TM, AM, UM
- Framing and reordering
- ARQ operation, Window operation
- RLC PDU Format
- SDU Discard and RLC Re-establishment

MODULE 8 : MAC LAYER AND PROCEDURES

- MAC Architecture and function
- MAC PDU format, LCID, LCGID, MAC-CE
- MAC Procedures
 - a) Dynamic and SPS Scheduling
 - b) SR, BSR, and PHR
 - c) Logical channel prioritization
 - d) DRX
 - e) HARQ and TTI bundling
 - f) Measurement gap
 - g) RACH Procedure - Contention and Non-contention

MODULE 9 : PDCP LAYER AND PROCEDURE

- PDCP function and architecture
- Header compression and security
- Data transfer, PDCP PDU format

MODULE 10 : RRC AND NAS LAYER

- RRC states and state transition, SRB & DRB PLMN and cell Selection
- Cell Reselection and access verification
- RRC Layer Architecture and function
- RRC procedures -
 - a) RRC connection establishment
 - b) RRC connection release
 - c) System information
 - d) RRC connection re-establishment
 - e) paging
 - f) RRC connection re-configuration
 - g) Measurement Procedure

MODULE 11 : NAS LAYER - EPS MOBILITY MANAGEMENT PROCEDURE

- NAS state - EMM and ESM
- NAS Authentication procedure
- Security mode control procedure
- Attach procedure
- Detach procedure, TAU procedure
- Service request and extended service request procedure
- Paging procedure

MODULE 12 : NAS - EPS SESSION MANAGEMENT PROCEDURE

- Dedicated EPS bearer context activation
- EPS bearer context activation
- EPS bearer context deactivation
- UE requested PDN connectivity
- UE request PDN disconnect
- UE requested bearer resource allocation
- UE request bearer resource modification

MODULE 13 : UE MOBILITY AND HANDOVER

- RCC connected mode mobility
 - a) Intra LTE H.O within MME pool area
 - b) Intra LTE H.O Inter MME pool area
 - c) Inter RAT H.O - release with read direction
- RCC Idle mode mobility
- Cell Reselection

MODULE 14 : CSFB

- CSFB system architecture
- Voice domain preference and UE usage setting
- CSFB call flow -
 - a) Mobile registration
 - b) Mobile originating call
 - c) Mobile terminating call

MODULE 15 : IMS

- Basic SIP and SDP protocol & their headers
- IMS network architecture
- IMS call flow -
 - a)Registration
 - b) Mobile originating call
 - c) Mobile terminating call
 - d) Emergency call

MODULE 16 : 3GPP SPECIFICATION , PROJECT AND TOOLS

3GPP - 36 series for LTE layers

Analyse 3GPP log, LTE logs

Decoding 3GPP LTE messages and logs

ASN.1 compiler to describe 3GPP layer 3 message format

LTE protocol test lab setup and explanation

Conformance testing

Different types of testing certification

PROJECT -

- Our technical expert will guide the project by explaining how to
- Develop test plans and test cases based on the marketing and design requirements for new features or update existing features.
- Validate the design and test new features, functionalities thoroughly providing thorough coverage to features testing.

- Conformance, IOT, regression, performance and stability testing.
- Discover the bugs, file them using bug tracking tool, verify bugs after the fix and track the bug status
- Reproduce the customer reported bugs, verify the fix and convert it to test case
- Write test cases using TTCN 3, PYTHON or any other tool selected.

TESTING TOOLS -

Bug Tracking tools

Version tools

Software configuration management

Protocol Analyzer and Network Simulator.

Chipset and Log capture tool

3GPP Testing Specification