OFFICE OF THE SENIOR DIVISIONAL SIGNAL & TELECOM ENGINEER, 2nd FLOOR, SANCHALAN BHAVAN, SECUNDERABAD DIVISION, SOUTH CENTRAL RAILWAY, SECUNDERABAD – 500 071

No: C/SG/155/2/3/JE/Tele 30%(PRQ) Date: 14.03.2024

Sr.DPO/SC

Sub: Filling up of vacancies of JE/Tele in level -06 against 30% PRQ in S&T Department of Secunderabad Division.
Ref: Sr.DPO/SC's lr.no. SCR/P-SC/N-10/210(a)/JE(T)/PQR dt.26.02.2024.

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With reference to the above letter, the syllabus and question bank (Soft &Hard copy) for filling up of vacancies of JE/Tele in level 6 of 7th CPC pay matrix in S&T Department of SC division against 30% PRQ is enclosed herewith for information and further necessary action please.

Encl : As above.

Sr.DSTE/SC

Syllabus for selection to the post of Junior (Tele) in LEVEL-6 of 7th CPC pay matrix in S&T Dept of SC Division against 30% PRQ.		
	1. Power plant	• Power supply requirements of various Telecommunication installations (OFC hut, EXCHANGE, Control office, way side station, VF Repeater etc.).such as AC power supply distribution arrangements, DC power plant system. i.e. Number of Battery Banks & Mode of Operation, type and Capacity of Battery and Load requirement. • Basic knowledge of Secondary cells LA, VRLA, Nickel Cadmium cells and other rechargeable cells, their advantages and disadvantages. • Maintenance and of Secondary cells, initial charging, float charging, trickle and boost charging of secondary cells. • Different types of battery chargers used, conventional and SMPS based and Voltage stabilizers. • Standby power supply arrangements like UPS, Solar power Supply arrangements, Generators and its applications. • Requirement of power supply room(s) and Records and Reports to be maintained.
2.	Train traffic control system	• Circuits of various types of control communication including those used electrified areas. 4W/2W control telephones, Emergency portable field telephones, installation, maintenance and diagnostics and testing in electrified and non electrified areas. • HQ control office equipment including DTMF signalling equipment. • Way station selective calling DTMF equipment. Control Patching arrangements, control communication over OFC. • Different types communication systems in use for mid section LC gates and their power supply requirements.
3.	Line plant practice	• Code of practice of various types of underground cables like PIJF multi pair, quad cables, OFC cables and their jointing procedure. • Cable laying practices and protection arrangements while crossing Track, Roads, Water logging areas, culverts and bridges. • Periodical tests and measurements of underground cables and maintenance practice. • Effects of Railway Electrification on Telecom circuits • Effects of 25KV 50 Hz AC Traction on Telecommunications • Mechanism of Induction • Screening factor • I.T.U-T. Recommendations • Psophometric noise • Effects of 25 KVAC Traction on Telecom cable may be reduced • Precautions to be taken for the protection of staff and equipment in 25 KV 50 Hz AC traction territory • Testing of Cables • Types of tests

	• Acceptance tests for 6 Quad PIJF cables • Standard values of various tests • Mandatory Check & Tests to be done before commissioning of • BPAC/SSDAC/MSDAC applications on 4/6 Quad/PIJF cables • Causes for cable failures & precautions • Fault localisation tests • Telecom Quad Cables • Introduction • Construction of PIJF Quad Cable • Colour Code scheme for PIJF Quad Cable • General specification of 4/6 PIJF Quad cable • Specifications of 6 Quad Cable • Present Status of 6 Quad System in Railways • Quad cable along with OFC and without OFC • Guidelines for the use of OFC system and 6 Quad cable in IR • Difference between PIJF u/g Paired and Quad Cables
4. OFC and Digital Multiplexing	• Basic concepts of • OFC cable construction, laying, splicing, termination practices. • Installation, maintenance of OFC and system design concepts. • PDH and SDH digital multiplexing techniques. • Various Digital Multiplexing equipment used for PDH and SDH. • NMS path protection arrangements.
5. Telephone exchanges	• Basic knowledge of • Working principles of SPC exchanges, • Different types of exchanges like ISDN, WLL etc. for various applications and inter exchange connectivity in Railways. • Protective arrangements and line termination devices used in exchanges. • Knowledge of different types of telephones using Digital DECT, DKT and FCT/FWP etc.
6. Passenger Information systems	• Basic Knowledge of • Interactive Voice Response System (IVRS) • Pre recorded Announcement and Auto Announcement System • Train Indicator, Coach Guidance System, at a glance board and their related system hardware and software. Basic concepts of IPIS. • Clocks - Analogue, Digital and GPS based • POET interactive Touch Screen systems etc. • Type of PA system and its usages
7. Video Surveillance systems	• Basic Knowledge of • Hardware and software requirements like different type cameras, servers, backup and NMS • Installation and maintenance of IP based video surveillance systems, Video conference systems and their networking. • Over view of ISS

8. Data communication	• Introduction to Data Communication • Introduction • Data representation • Data components • Fundamental characteristics of data communication • Data flow • Data Transmission • Network • Categories of networks • Topology • Standard organizations • The OSI model (layered approach to data communications) • Basic Knowledge of • Data communication equipments like, Hubs, Switches, • Routers, LAN extenders, media converters, Modems etc. • Concepts of IP networking of UTS/PRS, FOIS, RAILNET, DATA LOGGERS. • Concepts of Voice logging facilities for various applications. • Internet Protocol version – 4,6 • Introduction • IPv 4,6 Networks • IPMPLS
9. Mobile Communication	Very High Frequency (VHF) Mobile Radio Communication • Introduction • Application of VHF Communication on IR • Mode of Operations • VHF Radio Specification (General) • Guidelines for utilization of walkie-talkie/VHF sets on Indian Railways • Frequency allocation for departments • Frequency allocation of VHF sets with the SM • Frequency allocation for block communication by using VHF sets during failure of Block Instrument. • VHF sets provided to operating and maintenance staff • VHF sets provided in ARTs • Communication with level crossing gate • limitations of vhf communication • Installation of VHF communication • Maintenance of VHF communication Cellular Mobile Radio Communication systems • Introduction of GSM –R,MTRC, • Introduction of UHF Communication and usage in Railways, • Introduction to LTE and usage in railways • TCAS

10.Basic Electronics theory & Digital Electronics, Basic Electrical Technology	• Oscillators, RF and AF amplifiers, modulation and demodulation, AVC, AGC and their characteristics. Basic concepts radio frequency wave propagation, antenna systems. • Logic gates, Various Memories ,Logic Circuits • OHMS LAW, Kirchhoff's law • Transformers and various laws
11.Measuring Instruments	• General Introduction • Insulation resistance Measurement ,Insulation tester, • Cable route Tracer • Cable Fault Locator • Digital Earth tester • Measuring units related with Telecommunication systems, • Decibels ,absolute and relative measurement for Power, • Voltage and antenna systems • Transmission measuring set ,transmission loss test ,return loss and insertion loss measurements , Noise measurement , Psophometer and Crosstalk meter • Measuring Instruments used in OFC General Introduction and instruments used • Visual fault locator • Optical Power meter LED and LASER Light source Power Meter • Optical Power Measurement • Optical Time Domain Reflectometer Trace analysis of OTDR
12.TELECOM GENERAL	Rules applying to Railway servants • Rules applying to railway servants generally • Organisation of S&T department • Telecommunication in Indian Railways • Telecom systems in Indian Railways Duties of Telecom technicians and supervisors • Duties of Telecom technicians • Duties of Telecom technicians • Inspection and Testing Reports • Possession and Upkeep of Books of Reference • Accompanying important inspections • Additional instructions for SSE/JE (T) in-charge of Construction Inspections • Annual Inspection Programme • Adherence to Annual Inspection Schedule • Inspection Report • Submission of inspection report • Monitoring the inspection work • Compliance Report • Review of earlier inspections • Locating weak points • Quality of inspection • Inspection Register • Schedule of inspection • Inspection records and reports • Records and reports by DSTE/Sr.DSTE Important Telecom matters

	• BPAC • EC Sockets • New Installations • Important organisations in Telecommunication • International Standards • Indian Standards • PTCC • WPC • Railway Standards • Telecom Directorate • MTBF and MTRR • Registers/documentation to be maintained at Telecom • installations • VHF frequency allocation • Communication requirement for new stations • Structured cabling • AMC and ARC • Requirements of telecom equipment power supplies at station • Codal Life • DESU, DETU and DISTU • JPO and MoU • Official Correspondence • Total Communication Failure
13. General	• Establishment matters of day to day nature including Leave rules, Pass rules, Muster Sheets, DAR, Payment of wages act, Workman compensation act, WRILL, HOER, preparation of rosters for workers. • The Official Languages (Use for Official Purpose of the Union) RULES, 1976 • Imprest stores, Monthly stores returns, preparation of Indents stock and non-stock, Materials at site account, Daily Transaction Register, Returned stores, S 1313 / S 1319 requisition and issue note, works estimates Tool and Plant for maintenance. • Type of Estimates , • Types of tenders • Various works programme. LSWP etc. • Railway Budgets, Demand for grants. • STOCK VERIFICATION • AUDIT INSPECTION

Objective Question Bank

Chapter-1:

1. Frequencies allotted for Tetra based communication systems are _____
   380 - 400 MHz & 410 - 430 MHz bands **(c)**
   a) 260 - 300 MHz & 380 - 400 MHz bands
   b) 260 - 300 MHz & 410 - 430 MHz bands
   c) 380 - 400 MHz & 410 - 430 MHz bands
   d) None

2. The TETRA system does not support railway-signalling applications. **(b)**
   a) The statement is false
   b) The statement is true
   c) It can be decided subject to other conditions
   d) None

3. Mobile Train Radio system installed in Nagpur - Itarsi Section works on __ frequency **(d)**
   a) 260 – 300 MHz
   b) 410 - 430 MHz
   c) 380 - 400 MHz
   d) 314 - 322 MHz

4. UNIVERSAL EMERGENCY COMMUNICATION (UEC) Operates on _____ frequency **(d)**
   a) 146.2 - 151.45 MHz
   b) 260.2 - 300.45 MHz
   c) 159.6 - 162.45 MHz
   d) both a and c

5. Full form of TETRA is _____ **(a)**
   a) Terrestrial Trunk Radio
   b) Train emergency trunk Radio
   c) Telecom terrestrial Radio
   d) None

CHAPTER-2:

1. The frequency band of VHF Communication is 30 to 300 MHz. The Statement is **(a)**
   a) True
   b) False

2. The frequency allotted by WPC (Wireless Planning and Coordination wing of ministry of communication) in VHF for Indian Railways are_____. **(b)**
   a) 130MHz - 140MHz
   b) 146 - 174 MHz
   c) It is not fixed& randomly allotted
   d) both a & b.

3. HF Communication on IR are operates on _____ modes **(d)**
   a) Simplex
   b) Half-duplex
   c) Full Duplex
   d) all of the above

4. The average range of a Walkie - Talkie (Hand Held set) is **(c)**
   a) 5 to 6 Km
   b) 8 to 10 Km
   c) 1 to 2 Km
   d) none of the above

CHAPTER-3:

1. In Cellular Communications the Cells are to be _____ separated to avoid Co-channel Interference. **(b)**
   a) Time
   b) Space
   c) Both time and space
   d) None

2. There should be a minimum overlap in order to provide – **(a)**
   a) Seamless Handoff for a Roaming Subscriber
   b) Co-channel Interference.
   c) Both a & b
   d) None

3. Providing Hexagonal shaped cells ensures _____ **(d)**
   a) Maximum coverage area
   b) Minimum transmitting sites
   c) reduced Installation and Maintenance Costs
   d) All the above

4. In Cellular geometry co channel reuse ratio can be expressed as _____ **(a)**
   a) $D/R = \sqrt{3N}$
   b) D/R = 3N
   c) D/R = 3N/2
   d) None

5. Frequency can be reused after _____ no of cells **(b)**
   a) N=6
   b) N=7
   c) N=5
   d) None

6. In a Cluster of Cells, the Main Transmitter, Receiver and Antenna System(BTS) is located at _____ **(b)**
   a) At the Centre of the Cell
   b) At the vertex of the cell
   c) It depends on site condition
   d) None

7. A mobile handset with higher S/N Ratio is assigned a Channel with _____ **(b)**
   a) Higher Reuse Factor
   b) Lower Reuse Factor
   c) Cannot be decided with given data
   d) None of the above

8. Typically Handsets nearer to the Cell-centre are allocated Channels from a _____ **(b)**
   a) Low Frequency Reuse factor
   b) High Frequency Reuse factor
   c) Cannot be decided with given data

e) None

9. Reasons for using sectored antennas in cellular Communication **(b)**
   a) Sector Antennas increase Co-channel Interference and improve the mean S/N ratio
   b) Sector Antennas reduce Co-channel Interference and improve the mean S/N ratio
   c) Sector Antennas reduce Co-channel Interference and reduce the mean S/N ratio
   d) Sector Antennas increase Co-channel Interference and reduce the mean S/N ratio

10 No two adjacent Cells in a Cluster have the same – **(c)**
   a) Radio Channels
   b) Channel frequency
   c) Both a & b
   d) None

CHAPTER-4:

1. Which agency is primarily responsible for development of GSM **(b)**
   a) ANSI b) ETSI
   c) ITU(T) d) None.

2. Mobile station (MS) basically consists of **(a)**
   a) Mobile Equipment (ME) & Subscriber Identity Module (SIM)
   b) IMEI + SIM c) BTS & BSC d) None of the above

3. BTS in general consists of **(d)**
   a) TRX (Transeiver) b) Power Amplifier
   c) Combiner & duplexer d) All of the above

4. The function of SIM card is Storage of subscriber related information. **(a)**
   a) TRUE b) FALSE

5. The mobile station performs the Radio transmission/reception. **(a)**
   a) TRUE b) FALSE

6. BTS is a part of the Base Station Subsystem (BSS) for system management. **(a)**
   a) TRUE b) FALSE

7. Duplexer is used for separating sending and receiving signals to/from antenna. **(a)**
   a) TRUE b) FALSE

8. Encryption of transmission Data Streams are being done at BTS. **(a)**
   a) TRUE b) FALSE

9. Base Station Controller reserves the Radio Channel Frequencies. **(a)**
   a) TRUE b) FALSE

10. The Switching part, is controlled by the Mobile Service Switching Centre (MSC) in GSM.
    a) TRUE b) FALSE **(a)**

11. Subscriber relevant data are kept in a Database called Home Location Register (HLR).
    a) TRUE b) FALSE **(a)**

12. Authentication Centre (AUC), which protects User Identity and allows a Secured Transmission. **(a)**
    a) TRUE b) FALSE

13. GSM-900 band, 935-960MHz for Up-link (MS to BTS) and 890-915 MHz for Down link **(a)**
    a. TRUE b. FALSE

14. The channel spacing in GSM is of 200 KHz. **(a)**
    a. TRUE b. FALSE

15. The Duplex spacing in GSM will be 45MHz (between TX and RX). **(a)**
    a. TRUE b. FALSE

16. The Air Interface is the interface between the BTS and the MS. **(a)**
    a) TRUE b) FALSE

17. The Physical Layer is a 2 Mb/s Digital Connection. **(a)**
    a) TRUE b) FALSE

18. One or more logical channels can be transmitted on a physical channel. **(a)**
    a) TRUE b) FALSE

19. SCH is used to time synchronize the mobile station. **(a)**
    a) TRUE b) FALSE

20. BCCH is used for transmission of system configuration information in a cell. **(a)**
    a) TRUE b) FALSE

21. Full form of ETSI is _____ **(a)**
    a) Europian Telecommunications Standards Institute
    b) Europian Technical Standards Institute
    c) Europian Telecommunications Standards Institute
    d) Engineering & Technology Standards Institute

22. Full form of CDMA is _____ **(c)**
    a) Carrier Division Multiple Access
    b) Carrier Detection Multiple Access
    c) Code Division Multiple Access
    d) Code Detection Multiple Access

CHAPTER-8:

1. GPRS is _____ network. **(a)**
   a) a data network that overlays a second generation GSM network
   b) a voice network that overlays a second generation GSM network
   c) It comes under 3G category of evolution
   d) None

2. In order to integrate GPRS into the existing GSM architecture, a new class of network nodes called _____ are to be introduced **(a & c)**
   a) packet control unit (PCU) in GSM network
   b) GPRS support nodes (GSN)
   c) gateway GPRS support node (GGSN).
   d) Both a & c

3. The internal backbone of GPRS network is _____ . **(a)**
   a) An IP based network
   b) PSTN Network
   c) Circuit switched network
   d) Both

4. Class A mobile station in GPRS Network **(b)**
   a) it can only use one of the two services at a given time
   b) it supports simultaneous operation of GPRS and conventional GSM services.
   c) Simultaneous registration of GPRS & GSM (and usage) is not possible
   d) None

5. Class B mobile station in GPRS Network **(a)**
   a) it can only use one of the two services at a given time
   b) it supports simultaneous operation of GPRS and conventional GSM services.
   c) Simultaneous registration of GPRS & GSM (and usage) is not possible
   d) None

6. Class C mobile station in GPRS Network **(c)**
   a) it can only use one of the two services at a given time
   b) it supports simultaneous operation of GPRS and conventional GSM services.
   c) Simultaneous registration of GPRS & GSM (and usage) is not possible
   d) None

7. Signalling from a GSN to a MSC is done through **(c)**
   a) GGSN network
   b) SGSN network
   c) SS7 network
   d) None

8. The Range of Data Rates provided by GPRS Network **(c)**
   a) from 16 to 64kbps
   b) from 64 to 2048kbps
   c) from 9.6 to 171 kbps
   d) None
9. In order to upgrade from GSM to GPRS the new hardware to be provided in BSC is _____
   a) PDP unit
   b) PCU
   c) Both a & b **(b)**
   d) None
10. The PCU(Packet control unit) provides _____ to the base station subsystem **(c)**
   a) Signalling required for voice
   b) control channels
   c) a physical and logical data interface
   d) None

CHAPTER-9:

1. WLL is also called as **(c)**
   a) Radio in the loop (RITL)
   b) Fixed-radio access (FRA)
   c) Both a & b
   d) None
2. _____is an interface between subscriber's wired devices and WLL network. **(a)**
   a) The fixed subscriber unit (FSU)
   b) The radio subscriber unit (RSU)
   c) The fixed wireless network interface unit (FWNIU).
   d) None of the above
3. To ensure better trade off to fulfill the requirements of high capacity with low service fee, the data rate of channel is fixed at _____ **(a)**
   a) Up to 16Kbps
   b) Up to 32 Kbps
   c) Up to 64 Kbps
   d) None
4. WLL is a system that connects subscribers to the public switched telephone network (PSTN) **(b)**
   a. False
   b. True
5. WLL System includes _____ **(d)**
   a) cordless access systems,
   b) proprietary fixed radio access,
   c) fixed cellular systems
   d) All the above

6. The main challenge involved in implementation of WLL _____ **(a)**
   a) expansion of landscape in service types
   b) Complicated cabling
   c) costly equipment
   d) None of these

Objective Question Bank

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    e) Time
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    g) Both time and space
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   a) it can only use one of the two services at a given time
   b) it supports simultaneous operation of GPRS and conventional GSM services.
   c) Simultaneous registration of GPRS & GSM (and usage) is not possible
   d) None

5. Class B mobile station in GPRS Network **(a)**
   a) it can only use one of the two services at a given time
   b) it supports simultaneous operation of GPRS and conventional GSM services.
   c) Simultaneous registration of GPRS & GSM (and usage) is not possible
   d) None

6. Class C mobile station in GPRS Network **(c)**
   a) it can only use one of the two services at a given time
   b) it supports simultaneous operation of GPRS and conventional GSM services.
   c) Simultaneous registration of GPRS & GSM (and usage) is not possible

d) None

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   c) SS7 network
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   c) Up to 64 Kbps
   d) None

4. WLL is a system that connects subscribers to the public switched telephone network (PSTN) **(b)**
   a. False
   b. True

5. WLL System includes _____ **(d)**
   a) cordless access systems,
   b) proprietary fixed radio access,
   c) fixed cellular systems
   d) All the above

6. The main challenge involved in implementation of WLL _____ **(a)**
   a) expansion of landscape in service types
   b) Complicated cabling
   c) costly equipment
   d) None of these

Objective Question Bank

Chapter-1:

1. The _____ is the physical path over which a message travels. **(b)**
   a) Protocol
   b) Medium
   c) Signal
   d) All the above

2. Frequency of failure and network recovery time after a failure are measured as **(b)**
   a) Performance
   b) Reliability
   c) Security
   d) Feasibility

3. Which topology uses a multipoint connection? **(b)**
   a) Mesh
   b) Star
   c) Bus
   d) Ring

4. _____ refers to the structure or format of the data, meaning the order in which they are presented. **(b)**
   a) Semantics
   b) Syntax
   c) Timing
   d) All of the above

5. Data flow between two devices can occur in a _____ way. **(d)**
   a) simplex
   b) half-duplex
   c) full-duplex
   d) all of above

6. _____ refers to the physical or logical arrangement of a network. **(c)**
   a) Data flow
   b) Mode of operation
   c) Topology

d) None of the above

7. _____ is a collection of many separate networks. **(b)**
   a) WAN
   b) An internet
   c) a LAN
   d) None of the above

8. The process-to-process delivery of the entire message is the responsibility of the _____ layer. **(b)**
   Network
   a) Transport
   b) Application
   c) Physical

9. Mail services are available to network users through the _____ layer. **(d)**
   a) Data link
   b) Physical
   c) Transport
   d) Application

10. As the data packet moves from the upper to the lower layers, headers are _____. **(a)**
    a) Added
    b) Removed
    c) Rearranged
    d) Modified

11. When a host on network A, sends a message to a host on network B, which address does the router look at?
    (b)
    a) Port
    b) Logical
    c) Physical
    d) None of the above

12. The _____ layer is responsible for moving frames from one hop (node) to the next. **(b)**
    a) Physical
    b) Data link
    c) Transport
    d) None of the above

Chapter-2:

1. _____ is a type of transmission impairment in which the signal loses strength due to the different propagation speeds of each frequency that makes up the signal. **(b)**
   a) Attenuation
   b) Distortion
   c) Noise

d) Decibel

2. A _____ signal is a composite analog signal with an infinite bandwidth. **(a)**
   a) Digital
   b) Analog
   c) either (a) or (b)
   d) neither (a) nor (b)
3. Which encoding method uses alternating positive and negative values for 1s? **(d)**
   a) NRZ-I
   b) RZ
   c) Manchester
   d) AMI

4. In a _____ scheme, all the signal levels are on one side of the time axis, either above or below. **(c)**
   a) Polar
   b) Bipolar
   c) Unipolar
   d) All of the above

5. In _____ schemes, the voltages are on the both sides of the time axis. For example, the voltage level for 0 can be positive and the voltage level for 1 can be negative. **(a)**
   a) Polar
   b) Bipolar
   c) Unipolar
   d) All of the above

6. In _____ the level of the voltage determines the value of the bit. **(b)**
   a) NRZ-I
   b) NRZ-L
   c) Both (a) and (b)
   d) Neither (a) nor (b)

7. In Manchester and differential Manchester encoding, the transition at the middle of the bit is used for _____. **(c)**
   a) Bit transfer
   b) Baud transfer
   c) Synchronization
   d) None of the above

8. In _____encoding, we use three levels: positive, zero, and negative. **(b)**
   a) Unipolar
   b) Bipolar
   c) Polar
   d) None of the above

9. _____ substitutes eight consecutive zeros with 000VB0VB. **(c)**
   a) B4B8

b) HDB3
c) B8ZS
d) None of the above

Chapter-3:

1. HDLC is an acronym for _____. **(c)**
   a) High-duplex line communication
   b) Half-duplex digital link combination
   c) High-level data link control
   d) Host double-level circuit
2. Flow control is needed to prevent _____. **(b)**
   a) Overflow of the sender buffer
   b) Overflow of the receiver buffer
   c) Bit errors
   d) Collision between sender and receiver
3. When data and acknowledgment are sent on the same frame, this is called _____. **(c)**
   a) Back packing
   b) Piggy packing
   c) Piggy backing
   d) A good idea
4. The shortest frame in HDLC protocol is usually the _____ frame. **(c)**
   a) Information
   b) Management
   c) Supervisory
   d) None of the above
5. Which error detection method uses ones complement arithmetic? **(b)**
   a) Simple parity check
   b) Checksum
   c) Two-dimensional parity check
   d) CRC
6. Which error detection method consists of just one redundant bit per data unit? **(c)**
   a) Two-dimensional parity check
   b) CRC
   c) Simple parity check
   d) Checksum
7. Which error detection method involves polynomials? **(a)**
   a) CRC
   b) Simple parity check
   c) Two-dimensional parity check

d) Checksum

8. The Hamming code is a method of _____. **(d)**
   a) Error detection
   b) Error correction
   c) Error encapsulation
   d) (A)and (B)
9. What is the efficiency of 4B/5B block encoding? **(b)**
   a) 60 percent
   b) 80 percent
   c) 20 percent
   d) 40 percent

10. What is the hexadecimal equivalent of the Ethernet address 01011010 00010001 01010101 00011000 10101010 00001111 **(a)**
    a. 5A-11-55-18-AA-0F
    b. 5A-88-AA-18-55-F0
    c. 5A-81-BA-81-AA-0F
    d. 5A-18-5A-18-55-0F

Chapter-4:

1. Identify the class of IP address 191.1.2.3. **(b)**
   a) Class A
   b) Class B
   c) Class C
   d) Class D

2. A subnet mask in class B has nineteen 1s. How many subnets does it define? **(b)**
   a) 128
   b) 8
   c) 32
   d) 64

3. Given the IP address 18.250.31.14 and the subnet mask 255.255.0.0, what is the subnet (network) address? **(d)**
   a. 18.9.0.14
   b. 18.0.0.14
   c. 18.31.0.14
   d. 18.250.0.0

4. _____ is a client-server program that provides an IP address, subnet mask, IP address of a router, and IP address of a name server to a computer. **(b)**
   a) NAT
   b) DHCP
   c) CIDR
   d) ISP

5. In _____, each packet of a message need not follow the same path from sender to receiver. **(b)**
   a. The virtual approach to packet switching
   b. The datagram approach to packet switching
   c. Message switching
   d. None of the above
6. In _____ routing, the mask and destination addresses are both 0.0.0.0 in the routing table. **(a)**
   a) Default
   b) Next-hop
   c) Network-specific
   d) Host-specific

7. In which type of switching do all the packets of a message follow the same channels of a path? **(a)**
   a) Virtual circuit packet switching
   b) Message switching
   c) Datagram packet switching
   d) None of the above

8. A routing table contains _____. **(d)**
   a) The destination network ID
   b) The hop count to reach the network
   c) The router ID of the next hop
   d) All the above

9. An area border router can be connected to _____ **(d)**
   a) Only another router
   b) Only another network
   c) Only another area border router
   d) Another router or another network

10. Which type of network using the OSPF protocol can have five routers attached to it? **(a)**
    a) Transient
    b) Stub
    c) Point-to-point
    d) All the above

11. Which layer produces the OSPF message? **(d)**
    a) Data link
    b) Transport
    c) Application
    d) Network

12. OSPF is based on _____. **(c)**
    a) Distance vector routing
    b) Path vector routing

c) Link state routing
d) (A) and (B)

13. _____ is a multicasting application. **(d)**
    a) Teleconferencing
    b) Distance learning
    c) Information dissemination
    d) All the above

14. Dijkstra's algorithm is used to _____. **(d)**
    a) Create LSAs
    b) Flood an internet with information
    c) Create a link state database
    d) Calculate the routing tables

15. RIP is based on _____. **(d)**
    a) Link state routing
    b) Dijkstra's algorithm
    c) Path vector routing
    d) Distance vector routing

Chapter-5:

1. Dial-up modems are **(c)**
    a) Synchronous
    b) Simplex
    c) Asynchronous
    d) None of the above

2. Modem pair required for WAN connectivity over leased lines are **(b)**
    a) Asynchronous V.35 + G.703
    b) Synchronous V.35 + G.703
    c) Synchronous V.35 + V.35
    d) None of the above

3. ADSL modem uses modulation method **(a)**
    a) QAM + FDM
    b) TDM+FSK
    c) FDM+FSK
    d) All above

4. HDSL modem uses line coding technique **(d)**
    a) HDB3
    b) 2B1Q
    c) Manchester

d) AMI

5. DSLAM stands for _____ **(c)**
   a) Digital Synchronous Line Multiplexer
   b) Digital line access multiplexer
   c) Digital subscriber line access multiplexer
   d) None of the above

Chapter-6:

1. IEEE standard for WLAN is **(a)**
   a) 802.11
   b) 802.2
   c) 802.3
   d) 802.10

2. Access Protocol for WLAN is **(c)**
   a) CSMA
   b) CSMA / CD
   c) CSMA / CA
   d) None of the above

3. BSSID of access point is **(c)**
   a) 48 bit IP address
   b) 32 bit MAC address
   c) 48 bit MAC address
   d) None of the above

4. RF band used for WLAN is **(b)**
   a) 0.4 GHz
   b) 2.4 GHz
   c) 1.2 GHz
   d) None of the above

5. The bandwidth available in 802.11a WLAN is **(b)**
   a) 2 Mbps
   b) 54 Mbps
   c) 11 Mbps
   d) 108 Mbps

Objective Question Bank

1. Ethernet provides access to the network using **(d)**
   a. CSMA/CA
   b. CSMA
   c. OFDM
   d. CSMA/CD

2. Ethernet networks typically will be found in **(c)**
   a. Ring Topology

b. Mesh topology
c. Star Topology
d. Bus Topology

3. 100 BASE-T type of Ethernet uses **(d)**
   a. Coaxial cable
   b. Optical Fiber cable
   c. Switch board cable
   d. UTP/STP cable

4. The maximum length of UTP/STP cable **(b)**
   a. 100 MM
   b. 100 Meters
   c. 500 Meters
   d. 2 KM

5. Ethernet Technology usually suffers from **(d)**
   a. Noise
   b. Attenuation
   c. High resistance
   d. Broadcast/Collisions

6. 10 Base-2 uses **(a)**
   a. Coaxial cable
   b. Optical Fiber cable
   c. FS cable
   d. UTP/STP cable

7. In 10BASE-2 the maximum cable run **(b)**
   a. 100 Meter
   b. 185 Meter
   c. 500 Meter
   d. 5 KM

8. In 10BASE-5the maximum cable run **(c)**
   a. 100 Meter
   b. 185 Meter
   c. 500 Meter
   d. 2 KM

9. 10Gigabit Ethernettype of Ethernet supplies **(c)**
   a. 1000 Billion bits per second
   b. 100 billion bits per second
   c. 10 billion bits per second
   d. 1 Billion bits per second

10. The length of the MAC address **(d)**
    a. 32 bit
    b. 128 bit

c. 16 bit
d. 48 bit

11. Traditional Network Switch operate at **(a)**
    a. Layer-2
    b. Layer-3
    c. Layer-1
    d. Layer-4

12. The Terminal Server allows **(a)**
    a. RS232 to 10/100 Base-T Ethernet
    b. RS232 to rs232
    c. Ethernet to Ethernet
    d. RS232 to Parallel

13. NeTS (Network Terminal Server) is a **(b)**
    a. Switch
    b. Router
    c. Terminal Server
    d. All above

14. The hardware (or) MAC address is burnt on which part of NIC **(b)**
    a. RAM
    b. ROM
    c. Flash
    d. NVRAM

15. A switch controls flow of data using **(c)**
    a. IP address
    b. Port address
    c. MAC address
    d. None of above

16. Routers are used to connect **(c)**
    a. Similar LANs
    b. Dissimilar LANs
    c. Different networks
    d. None of the above

17. 100BASE-FXtype of Fast Ethernet runs over **(c)**
    a. UTP/STP
    b. Coaxial cable
    c. Fiber optical cable
    d. Radio waves

18. In coaxial Ethernets, the transmission is **(b)**
    a. Full duplex
    b. Half duplex

c. Simplex
d. All

19. The standard complaint & cost effective solution for connecting dumb terminal and thin clients at remote site for PRS – UTS integration is **(d)**
    a. Statmux
    b. Terminal Server
    c. DCM
    d. NeTS

20. Frequency Band of VSAT **(d)**
    a. C – Band
    b. KU – Band
    c. Extended C – Band
    d. All

21. Wired Ethernet standardized under IEEE **(c)**
    a. 802.11
    b. 802.16
    c. 802.3
    d. 802.4

22. 1000BASE-T (Gigabit Ethernet) standardized under IEEE **(b)**
    a. 802.3u
    b. 802.3ab
    c. 802.3z
    d. None

23. All 4 pairs are used in Ethernet transmission **(b)**
    a. 10 Mbps
    b. >1000Mbps
    c. 100 Mbps
    d. All

24. CRC checks are done at Layer **(a)**
    a. Layer-2
    b. Layer-3
    c. Layer-1
    d. Layer-4

25. Collisions are totally controlled in a LAN using device **(b)**
    a. HUB
    b. SWITCH
    c. ROUTER
    d. FIREWALL

26. The difference between traditional router and L-3 switch **(b)**
    a. Router has all Ethernet ports only
    b. L-3 switch has all Ethernet ports only

c. Functional difference
d. None

27. VSAT Topology **(d)**
    a. Star
    b. Mesh
    c. Ring
    d. Star and Mesh

28. Railnet is a **(c)**
    a. Extranet
    b. Internet
    c. Intranet
    d. Piconet

29. IP Addressing scheme for Railnet is **(b)**
    a. Public
    b. Private
    c. Automatic private
    d. None

30. IP Address is used in Railnet **(a)**
    a. 10 series
    b. 192 series
    c. 172 series
    d. 1 series

31. IP nos. allotted to Web server on Railnet as a uniform measure are **(b)**
    a. 192.X.2.19
    b. 10.x.x.19
    c. 10.x.2.19
    d. 172.168.x.19

32. IP nos. allotted to Router on Railnet as a uniform measure are **(c)**
    a. 192.X.2.1
    b. 10.x.x.1
    c. 10.x.2.1
    d. 172.16.x.1

33. Subnet mask used for Railnet is **(a)**
    a. 255.0.0.0
    b. 255.255.0.0
    c. 255.255.255.0
    d. 255.255.255.128

34. The Railnet domain is **(c)**
    a. railnet.com

b. railnet.in
c. railnet.gov.on
d. railnet.org

35. Internet gateways of Railnet (RTEL) **(d)**
    a. Delhi/Mumbai
    b. Kolkata
    c. Madras
    d. All

36. Railnet uses **(d)**
    a. Dedicated leased lines
    b. Dialup lines
    c. BSNL/VSNL isdn lines
    d. RTEL MPLS

37. FOIS stand for **(a)**
    a. FREIGHT OPERATIONS INFORMATION SYSTEM
    b. FLIGHT OPERATIONS INFORMATION SYSTEM
    c. FREIGHT OPERATIONS INTERNET SYSTEM
    d. None

38. FOIS network is for **(d)**
    a. Rack management system
    b. Terminal management system
    c. RR generation
    d. All

39. Architecture of FOIS network is based on **(b)**
    a. Star topology
    b. Mesh topology
    c. Mixed (Star + Mesh)
    d. None

40. Applications on FOIS network on **(c)**
    a. Master – Slave mode
    b. Main frame mode
    c. Client – Server mode
    d. All of the above

41. Back bone connectivity of FOIS network is on **(c)**
    a. VSAT links
    b. 64 Kbps data lines
    c. 2 Mbps data lines
    d. All

42. Application Servers of FOIS are located at **(d)**
    a. Divisional Hq.

b. Zonal Hq
c. Rly Board
d. CRIS / NDLS

43. The additional services provided through PRS network are **(d)**
    a. IVRS
    b. POET
    c. Rapid display
    d. All the above

44. The PRS network is operated through nos. of regional centers. **(b)**
    a. 4
    b. 5
    c. 3
    d. 1

45. The main objective of PRS in Indian Railway is to provide **(a)**
    a. reserved tickets
    b. un reserved tickets
    c. Freight booking
    d. flight booking

46. CONCERT is developed by **(b)**
    a. Rly Board
    b. CRIS
    c. Individual Railways
    d. IRISET

47. The main objective of UTS in Indian Railway is to provide **(b)**
    a. reserved tickets
    b. un reserved tickets
    c. Freight booking
    d. flight booking

48. UTS will provide the facility to purchase Unreserved Ticket **(c)**
    a. 4 Months advance
    b. 3 Months advance
    c. 3 days' advance
    d. 1 day advance

49. The Passengers can cancel their UTS tickets from any station atleast **(a)**
    a. 1 day advance
    b.3 days advance
    c. Any day
    d. 3 Months advance

50. On the day of journey, the UTS ticket can be cancelled from station from which the journey was to commence. **(b)**

a. from any station
b. the journey starting station
c. the journey ending station
d. Station where ticket purchased

51. The backend architecture of UTS is **(b)**
a. 3 tiered
b. 4 tiered
c. 2 tiered
d. 1 tiered

52. UTS can provide computerized unreserved tickets through **(d)**
a. hand held terminals
b. smart card
c. automatic vending machines
d. All above

53. Application is dividing into modules **(d)**
a. ticketing subsystem
b. fare
c. UDM/TDM
d. All

54. UTS developed using **(d)**
a. Sybase
b. C++
c. UNIX.
d. All

55. The Dynamic protocol used for unification of PRS & UTS is **(b)**
a. RIP
b OSPF
c. IGRP
d. None of the above

56. The round trip time for smooth working between client terminal and server is **(d)**
a. 20 - 40m sec
b. 60 - 80 m sec
c. 100 - 110 m sec
d. 130 - 150 m sec

57. Tier 2 location in an area shall be limited to _____ % of total area **(a)**
a. 4 - 5 %
b. 100 %
c. 50 %
d. 90 %

58. Number of locations per area shall not exceed **(c)**

a. 30
b. 50
c. 70
d. 60

59. Topology used for PRS & UTS unification is **(d)**
    a. Inverted Tree
    b. Partial Mesh
    c. Mesh
    d. Combination of a & b

60. UTS means **(d)**
    a. Unit Ticketing system
    b. Unique Ticketing system
    c. Unified Ticketing system
    d. Unreserved Ticketing system

Objective Question Bank

Chapter-1:

1. Some examples of devices or quantities which are digital in their behavior are _____ **(c & d)**
    a. Atmospheric pressure.
    b. Day & night temperature.
    c. Toggle switch.
    d. Relay.

2. The Octal system has a base of _____
    (c)

a. 2
b. 4
c. 8
d. 16

3. Which number system has a base of 16
    (c)

a. Decimal
b. Octal
c. Hexadecimal
d. None

4. How many bits are required to store one BCD digit? **(d)**
    a. 1
    b. 2

c. 3
d. 4

5. A group of bits that can be accessed at a time in parallel by a central processing unit is called _____. **(c)**
   a. nibble.
   b. byte.
   c. word.

6. A group of 8 bits is called as a _____. **(b)**
   a. nibble.
   b. byte.
   c. word.

Chapter-2:

1. A logic gate can have _____ **(d)**
   a. only one input and many outputs.
   b. many inputs and only one output.
   c. many inputs and many outputs.
   d. one or many inputs and only one output.

2. OR gate is one of the _____ gates. **(c)**
   a. universal gate
   b. combinational gate
   c. basic gate

3. NOR gate is OR gate followed by _____ **(c)**
   a. AND gate.
   b. NAND gate.
   c. NOT gate.
   d. None of the above

4. Logic of EX-OR gate is of _____ parity. **(a)**
   a. odd parity
   b. even parity
   c. no parity
   d. none of the above

5. The logic gate which inverts its input is _____gate **(d)**
   a. NOR gate
   b. NAND gate

c. AND gate
d. NOT gate.

6. NAND is equivalent to a _____ gate **(c)**
   a. AND gate plus OR gate
   b. AND gate plus NOR gate
   c. AND gate plus NOT gate

7. The complement of the sum is equal to the _____. **(b)**
   a. sum of the complements.
   b. product of the complements.
   c. complement of the products.
   d. none of the above.

8. The complement of the product is equal to the _____ **(b)**
   a. complement of the sum.
   b. sum of the complements.
   c. product of the complements.
   d. none of the above .

Chapter-3:

1. Application of Decoder is in_____. **(a, b & c)**
   a. Microprocessors.
   b. memory chips.
   c. multiplexers for selecting logic.
   d. none of the above.

2. A Full Adder adds _____ bits at a time. **(a)**
   a. 3 bits at a time.
   b. 2 bits at a time.
   c. 4 bits at a time.
   d. None of the above

3. Multiplexer is a _____digital device **(a)**
   a. Many input to one output
   b. One output to many output
   c. One input to one output
   d. Many input to many output

4. The selection logic in multiplexer is provided by a _____. **(b)**
   a. Clock.
   b. Decoder.
   c. Register.
   d. None of the above.

Chapter-4:

1 A Flip Flop works on the principle of _____ **(c)**
   a. Astabale multivibrator.
   b. Monostable multivibrator.
   c. Bistable multivibrator.
   d. None of the above.

2. The prohibited state in SR flip flop which needs to be avoided is **(d)**
   a. S=R=0
   b. S=0, R=1
   c. S=1, R=0
   d. S=1, R=1

3. T flip flop finds its application in frequency division since it divides the clock frequency by_____ **(a)**
   a. 2
   b. 4
   c. 2n-1
   d. 4n-1

4. In a Delay (D) flip flop,_____after the propagation delay **(c)**
   a. Input follows input
   b. Input follows output
   c. Output follows input
   d. Output follows output

5. T flip flop is mainly used for constructing _____. **(a)**
   a. Frequency dividers.
   b. Registers
   c. Counters.
   d. Nnone of the above

6. Which one of the flip flops can be called as a Universal flip flop? **(d)**
   a. D Flip flop
   b. T Flip flop
   c. SR Flip flop
   d. JK Flip flop

Chapter-5:

1. A counter is made up of _____ flip flops. **(d)**
   a. SR Flip flop
   b. D Flip flop
   c. T Flip flop
   d. T Flip flops or JK Flip flops

2. Generally, for constructing down counters _____ triggered flip flops are used. **(a)**
   a. +ve edged
   b. -ve edged
   c. Both +ve edged & -ve edged
   d. None of the above

3. Among the following sequential logic circuits, which circuits are adopted for the designing of a sequence generator? **(c)**
   a. Shift registers
   b. Counters
   c. Both a & b
   d. None of the above

4. Registers are constructed using _____ only. **(a)**
   a. D Flip-flops
   b. T Flip-flops
   c. JK Flip Flops
   d. SR Flip-flops

5. A digital Demultiplexer has _____ **(b)**
   a. Many inputs and a single output selectively.
   b. A single input and many output.
   c. Many inputs and many outputs.
   d. None of the above.

Chapter-6:

1. One of the common type of RAM is **(c)**
   a. EEPROM
   b. Mask ROM
   c. DRAM

2. Actually RAM should be called as _____ memory. **(c)**
   a. Read/Write
   b. Volatile memory
   c. Read/Write & Volatile
   d. Nonvolatile memory

3. Main disadvantage of EEPROM is _____. **(a)**
   a. It takes longer time for programming.
   b. It can be erased electrically.
   c. Requires ultraviolet light for erasing.

4. Among all types of memory devices which one you think as the best? _____. **(a)**
   a. Flash RAM.
   b.ROM.

c. PROM.
d .EPROM.

Chapter-7:

1. Application of Codes in digital systems is to _____. **(d)**
   a. To represent numerals & characters.
   b. To represent alphabets of languages.
   c. To represent numbers & text characters.
   d. To represent all the above a, b &c.

2. BCD is mainly used for _____. **(c)**
   a. representing the 10 numerals in decimal number system .
   b. representing the numerals using 4-bit binary codes.
   c. representing the 10 numerals in decimal number system using 4-bit binary code.

3. Conversion from Binary to Gray code involves _____ **(d)**
   a. Keeping the first Gray digit as same as the first binary digit.
   b. Add each pair of adjacent bits in binary to get the next Gray digit.
   c. Disregard any carries.
   d. Involves all the above a, b, & c procedure.
4. Unicode is a _____ bit code. **(c)**
   a. 4-bit code
   b. 8-bit code
   c. 16-bit code
   d. 32-bit code

5. ASCII is a _____bit code **(b)**
   a. 4-bit code
   b. 7-bit code
   c. 8-bit code
   d. 16-bit code

Chapter-8:

1. The mostly used and popular logic families are_____ **(d)**
   a. Diode logic.
   b. High threshold logic.
   c. Metal oxide semiconductor logic.
   d. TTL & CMOS.

2. _____logic families consume very low current **(c)**
   a. Transistor-Transistor logic
   b. Diode Transistor logic
   b. Resistor Transistor logic
   c. Complementary Metal Oxide Semiconductor Logic

3. Max. Sink current of TTL devices is _____ **(b)**

a .2mA. Max.
b .16mA. Max.
C. 5mA
d. 10Ma

4. Fan-in of digital gate means **(a)**
   a. Number of inputs a gate can have
   b. Number of outputs a gate can have
   c. Number of input and outputs a gate can have
   d. Number of gates that each gate can drive

5. Sourcing current is _____ **(a)**
   a. current supplied by the logic device.
   b. current accepted by the logic device.
   c current supplied and accepted by the logic device.
   d. none of the above.

Objective Question Bank

Chapter-1:

1. An electromagnetic wave consists of _____. **(a)**
   a. Both electric and magnetic fields.
   b. an electric field only
   c. A magnetic field only
   d. Non-magnetic field only

2. What is the lowest layer of the ionosphere? **(d)**
   a. F1
   b. F2
   c. E
   d. D

3. Frequencies in the UHF range propagate by means of **(d)**
   a. Ground waves
   b. Sky waves
   c. Surface waves
   d. Space waves

4. Fading due to interference between direct and reflected rays. **(c)**
   a. atmospheric-multipath
   b. Fresnel zone
   c. reflection-multipath
   d. Rayleigh fading

5. What layer is used for high-frequency day time propagation? **(a)**
   a. D Layer

b. E Layer
c. F1 Layer
d. F2 Layer

6. By which name/s is an ionospheric propagation, also known as? **(c)**
   a**.** Sea wave propagation
   b. Ground wave propagation
   c**.** Sky wave propagation
   d. All of the above

7. Velocity of a radio wave in free space. **(d)**
   a.186, 000 miles per sec
   b. $300x10^6$ meters per sec
   c.162, 000 nautical miles per sec
   d. All of the above

8. Diffraction of electromagnetic waves **(d)**
   a. is caused by reflections from the ground
   b. arises only with spherical wave fronts
   c. will occur when the waves pass through a large slot
   d. may occur around the edge of a sharp object

9. Microwave signals propagate by way of the **(a)**
   a. Line of sight propagation
   b. Sky wave
   c. Surface wave
   d. Standing wave

10. The ionosphere causes radio signals to be **(c)**
    a. Diffused
    b. Absorbed
    c. Refracted
    d. Reflected

11. Ground wave communications is most effective in what frequency range? **(a)**
    a. 300 KHz to 3 MHz
    b. 3 to 30 MHz
    c. 30 to 300 MHz
    d. Above 300 MHz

12. The ionosphere has its greatest effect on signals in what frequency range? **(b)**
    a. 300 KHz to 3 MHz
    b. 3 to 30 MHz

c. 30 to 300 MHz
d .Above 300 MHz

13. Electromagnetic Waves are refracted when they _____. **(a)**
    a. pass into a medium of different dielectric constants
    b. are polarized at right angles to the direction of propagation
    c. encounter a perfectly conducting surface
    d. pass through a small slot in a conducting plan

14. Fluctuation in the signal strength at the receiver. **(b)**
    a. Interference b. Fading
    c. Tracking d. Variable frequency

15. Two or more antennas are used separated by several wavelengths **(a)**
    a. Space diversity
    b. Frequency diversity
    c. Hybrid diversity
    d. Polarization diversity

16. Two or more receivers are used using a single antenna. **(b)**
    a. Space diversity
    b. Frequency diversity
    c. Hybrid diversity
    d. Polarization diversity

17. What is the relation in degrees of the electric and magnetic fields in an electromagnetic wave? **(b)**
    a. 180^0. b. 90^0
    c. 270^0 d. 45^0

18. A diversity scheme wherein the receiver receives two fading signals from two different directions. **(c)**
    a. Frequency diversity
    b. Time diversity
    c. Angle diversity
    d. Space diversity

19. The range of frequency band termed as super high frequency (SHF) is within _____. **(c)**
    a. 30 GHz – 300 GHz
    b. 30 MHz – 300 MHz
    c. 3 GHz – 30 GHz
    d. 300 MHz – 3 GHz

20. The range of frequency band termed as high frequency (HF) is within _____. **(b)**

a. 300KHz – 300 KHz
b. 3 MHz – 30 MHz
c. 30MHz – 300MHz
d. 300 MHz – 3 GHz

21. What is selective fading? **(b)**
a. A fading effect caused by small changes in beam heading at the receiving station
b. A fading caused by phase difference between radio wave components of the same transmission as experienced at the receiving station
c. A fading caused by large changes in the height of the ionosphere as experienced at the receiving station
d. A fading effect caused by the time difference between the receiving and transmitting stations

22. What are electromagnetic waves? **(c)**
a. Alternating currents in the core of an electromagnet
b. A wave consisting of two electric fields at right angles to each other
c. A wave consisting of an electric field and a magnetic field at right angles to each other
d. A wave consisting of two magnetic fields at right angles to each other

23**.** To increase the transmission distance of a UHF signal, which of the following should be done? **(b)**
a. Increase antenna gain
b. Increase antenna height
c. Increase transmitter power
d. Increase receiver sensitivity

24. Electromagnetic waves transport **(d)**
a. Wavelength
b. Charge
c. Frequency
d. Energy

25. Line of sight communications is not a factor in which frequency range? **(c)**
a. VHF
b. UHF
c. HF
d. Microwave

26. Way(s) of propagating electromagnetic waves: **(d)**
a. Ground-wave propagation
b. Space wave propagation
c. Sky-wave propagation
d. All of these

Chapter-2 ANTENNA

1. The process of inter changeability of receiving and transmitting operations of antennas is known as **(b)**
   a. Polarization
   b. Reciprocity
   c. Efficiency
   d. Counterpoise

2. The antenna gain relative to the isotropic radiator is **(a)**
   a. dB
   b. dB_d
   c. dB_i
   d. All the above

3. The antenna gain relative to a dipole antenna is **(b)**
   a. dB
   b. dB_d
   c. dB_i
   d. All the above

4. The angular separation between the half-power points on an antenna's radiation pattern is the **(d)**
   a. Bandwidth
   b. Front-to-back ratio
   c. Lobe distribution
   d. Beam width

5. At which angles does the front to back ratio specify an antenna gain? **(a)**
   a. 0° & 180°
   b. 90° & 180°
   c.180° & 270°
   d.180° & 360°

6. What is the nature of radiation pattern of an isotropic antenna? **(a)**
   a. Spherical
   b. Dough-nut
   c. Elliptical
   d. Hyperbolic

7. Which conversion mechanism is performed by parabolic reflector antenna? **(b)**
   a. Plane to spherical wave
   b. Spherical to plane wave
   c. Both a & b
   d. none of the above

8. Which kind of polarization is provided by Ground plane antennas? **(d)**
   a. Plane
   b. Elliptical
   c. Circular
   d. vertical

9. Which property/ies of antenna is/are likely to be evidenced in accordance to Reciprocity theorem? **(d)**
   a. Equality of impedances
   b. Equality of directional patterns
   c. Equality of effective lengths
   d. All of the above

10. Smart antennas can be categorized as **(d)**
   a. Single input, multiple out (SIMO)
   b. Multiple input, single output (MISO)
   c. Multiple input, multiple output (MIMO)
   d. All of the above

11. The beam width in directive antennas is _____ in the sectorial antenna **(a)**
   a. Narrower than **b. Same as**
   c. Broader than **d. None of the above**

12. The Smart antennas can be classified as **(c)**
   a. Switched beam antennas
   b. Adaptive Array antennas
   c. Both a & b
   d. None of them

13. The features of Smart antenna is/are **(d)**
   a. Signal gain
   b. Inference rejection
   c. Power efficiency
   d. All of the above

14. Omni directional antennas always have _____ polarization **(b)**
   a. Horizontal
   b. Vertical
   c. Both a & b
   d. None of them

15. An Antenna is classified based on **(d)**
   a. Frequency

b. Size
c. Directivity
d. All of the above

16. The magnetic field of an antenna is perpendicular to the earth. The antenna's polarization **(b)**
a. is vertical
b. is horizontal
c. is circular
d. Cannot be determined from the information given

17. Yagi antennas have again from **(b)**
a. 5 to 10 dBi
b. 10 to 20 dBi
c. 20 to 30 dBi
d. None of the above

18 Which mode of propagation is adopted in HF antennas? **(a)**
a) Ionospheric
b) Ground wave
c) Tropospheric
d) all of the above

19. Which type of wire antennas are also known as dipoles? **(a)**
a. Linear b. Loop
c. Helical d. All of the above

20. Linear polarization can be obtained only if the wave consists of _____ **(c)**
a. E_x
b. E_y
c. Both E_x & E_y & in phase
d. Both E_x & E_y & out of phase

21. Radiation pattern is _____ dimensional quantity **(b)**
a. Two b. Three
c. Single d. None

22. An antenna made up of a driven element and one or more parasitic elements is generally referred to as a **(d)**
a. Hertz antenna
b. Marconi antenna
c. Collinear antenna
d. Yagi antenna

23. What is an antenna? **(d)**
a. Impedance matching device
b. Sensor of electromagnetic waves

c. Transducer between guided wave & free space wave
d. Metallic device for radiating or receiving radio waves

24. The shape of the electromagnetic energy radiated from or received by an antenna is called the **(c)**
a. signal shape
b. electromagnetic pattern
c. radiation pattern
d. antenna pattern

25. Types of polarization are **(b)**
a. Two types
b. Thee types
c. Four types
d. None of the above

26. The frequency range in which the Yagi-Uda antennas operate is around 30 MHz to 3GHz **(a)**
a. **TRUE** **b. FALSE**

27. Front to back ratio is defined as the ratio of the power radiated in desired direction to the power radiated in the opposite direction. **(a)**
a. **TRUE** **b. FALSE**

28. Antenna is a device which transforms an RF signal travelling in a conductor into electromagnetic wave in a free space
(a)
a. **TRUE**
b. FALSE

29. A ground plane antenna transmits a horizontally polarized signal
(b)
a. TRUE
b. FALSE

30. An Isotropic antenna is an imaginary antenna that radiates power equally in all the directions **(a)**
a. **TRUE**
b. FALSE

31. A Smart Antenna reduces the multipath effects
(a)
a. TRUE
b. FALSE

Objective Question Bank

Chapter-1:

1. In a measurement system the transducer is the **(a)**
   a. Input element
   b. Processing device
   c. Signal conditioning device
   d. Output element

2. The basic principle of a D'Arsonal instrument is the same as that of a **(d)**
   a. Moving Iron instrument
   b. Induction instrument
   c. PMMC instrument
   d. Moving coil instrument

3. The internal resistance of an ammeter must be very low for **(d)**
   a. High sensitivity
   b. High resolution
   c. Maximum voltage drop across the meter
   d. Minimum effect on the current in the circuit

4. Which of the following meter has a linear scale **(d)**
A. Thermocouple meters
B. Moving Iron meters
C. Hot wire meter
D. PMMC meter

5. A measure of the reproducibility of the measurement is known as **(c)**
A. Accuracy
B. Fidelity
C. Precision
D. Resolution
ANS. **C**

6. A digital volt meter has 4 and ½ digit display, the one volt range can be read upto **(c)**
A. 9999
B. 9.99
C. 1.9999
D. 0.19999
ANS. **C**

8. If the voltmeter resistance is increased the error in the reading given by the voltmeter will
A. Increase
B. Decrease
C. Increase or decrease depending upon the value of measurement
D. Be independent of voltmeter resistance
ANS. **B**

9. An instrument has a sensitivity of 1000 ohms per volt. On 100 volt scale the instrument will have internal resistance of
A. 10 ohms
B. 10,000 ohms
C. 1 Mega ohms
D. 1000 ohms
ANS. **C**

10. A voltmeter using a 50 micro ampere meter has a sensitivity of
A. 20 Kilo ohms per volt
B. 50 Kilo ohms per volt
C. 20 00 ohms per volt
D. 20 Mega ohms per volt
ANS. **A**

11. The basic A to D converter used in a digital volt meter is
A . Phase converter
B. Current converter
C. voltage to time converter
D. Frequency converter
ANS. **C**

12. The error of an instrument is normally given as a percentage of
A . Measured value
B. Mean value
C. Full scale value
D. RMS value
ANS. **C**

13. Decibal measurement of power is a purely absolute value and **dBm** measurement is a relative value.
A. TRUE
B. FALSE
Ans. **B** (False)

14. **0 dBm** signal produces .775 volts RMS across a 600 ohm resistance
A. TRUE
B. FALSE
Ans. **A** (True)

Q.12 . **33 dBm** is equal to
A. 4 watts
B. 6 watts
C. 8 watts
D. 2 watts
Ans. **D**

Q.13 . The resolution of a DVM with four digits is 1 % .
A. TRUE
B. FALSE
Ans. **B** (False)

Q.14 . A shunt in a current meter is a resistance connected across the meter to decrease the range
A. TRUE
B. FALSE
Ans. **B** (False)
Q.14 . Transducer is a device that converts one form of power to another.
A. TRUE
B. FALSE
Ans. **B** (False)

Q.15 Moving coil instruments can be used for both AC and DC applications
A. TRUE
B. FALSE

Ans. **B** (False)

Q.16 . Dual slope integration meters are capable of rejecting noise and their accuracy is independent of clock and time constant
A. TRUE
B. FALSE
Ans. **A** (True)

Q.17 . Integrated circuit no. 7106 belongs to the family of A / D converters
A. TRUE
B. FALSE
Ans. **A** (True)

Q.18 . Measurement cycle performed by A / D converters
A. Auto Zero
B. Integrate
C. Read
D. All of the above
Ans. **D**

Q.19 . Calibration of the work standard instruments are done with instruments having Primary reference standard
A. TRUE
B. FALSE
Ans. **B** (False)

CHAPTER -2

Q.1 . A Megger is usually
A. A moving iron type instrument
B. Electrostatic type instrument
C. hot wire tyre instrument
D. Moving coil tyre instrument
Ans. **D**

Q.2 . Murray and Varley loop tests are for short circuit and ground faults in the cables
A. TRUE
B. FALSE
Ans. **A** (True)

Q.3 . The instrument used normally to check insulation is
A. Multimeter
B. AVO meter
C. Tong Tester
D. Megger
Ans. **D**

Q.4 . Megger is a true OHM meter
A. TRUE
B. FALSE
Ans. **A** (True)
Q.5 . Badly insulated circuits in a cable can create leakage currents between lines and earth
A. TRUE
B. FALSE
Ans. **A** (True)

Q.6 . Pulse Echo and Time Domain Reflectometry are the basic principles used for tracing cable faults
A. TRUE

B. FALSE
Ans. **B** (False)

Q.7 . Receiver in the sensor block of a cable route tracer should be
A. Sensitive
B. Highly Sensitive
C. Selective
D. Both highly Sensitive and highly Selective
Ans. **D**

Q.7 . Transmission measuring sets are used for measuring
A. Signal levels and transmission loss
B. Insertion loss
C. Return loss
D. All of the above
Ans. **D**

Q.8 . Return loss is the measure of reflection due to mismatch of impedance at line side
A. TRUE
B. FALSE
Ans. **B** (False)

Q.9 . For a measurement on transmission line the insertion loss should be minimum and return loss should be maximum .
A. TRUE
B. FALSE
Ans. **B** (False)

Q.10 . Loading effect can be reduced by using low sensitivity meters / instrument.
A. TRUE
B. FALSE
Ans. **B** (False)

CHAPTER -3

Q.1 . Selective level meters work on the principle of Super Heterodyne Receivers
A. TRUE
B. FALSE
Ans. **A** (True)

Q.2 . Selective level meters can be used for both selective and wide band measurements.
A. TRUE
B. FALSE
Ans. **A** (True)

Q.3 . Thermistor sensors are semiconductors with positive temperature coefficients.
A. TRUE
B. FALSE
Ans. **B** (False)
Q.4 .Thermocouple sensors is a chip with two identical thermocouples connected in series with a DC voltmeter.
A. TRUE
B. FALSE
Ans. **A** (True)

Q.5 . Frequency counters user for Microwave applications are of
A. Reciprocal method type

B. Direct method type
C. Heterodyne method type
D. All of the above
Ans. **C**

Q.6 . Latches used in counters are simple memory circuits that hold the first count and improves the readability .
A. TRUE
B. FALSE
Ans. **B** (False)

Q.7 . Frequency counters use Schmitt Trigger circuits for frequency counting because it works between defined hysteresis limits .
A. TRUE
B. FALSE
Ans. **A** (True)

CHAPTER -4

Q.1 .Optical Visual fault locators allow users to detect fiber faults upto five kilometers
A. TRUE
B. FALSE
Ans. **A** (True)

Q.2 .LED Transmitters on Visual Fault Locators for multimode fibers support short bandwidths and short distances
A. TRUE
B. FALSE
Ans. **A** (True)

Q.3 .The sensors of optical Power Meter covers a wave length range of 800-1700 nano Meters and power range between - 60 dBm to +30 dBm
A. TRUE
B. FALSE
Ans. **A** (True)

Q.4. Magnitude of Rayleigh's back scatters is greater than the Freznel reflection when observed on an OTDR
A. TRUE
B. FALSE
Ans. **B** (False)

Q.5 . Rayleigh's back scatters is useful in tracing the continuity of the OFC when observed on an OTDR
A. TRUE
B. FALSE
Ans. **A** (True)

Q.6 . Digital Signal Processor and Analog to Digital converter are the integral parts of a OTDR
A. TRUE
B. FALSE
Ans. **A** (True)

Q.7 . The trace shown on X axis of an OTDR screen denotes the function of time .
A. TRUE
B. FALSE

Ans. **A** (True)

Q.8 . Splice is indicated by a reflection event on OTDR trace .
A. TRUE
B. FALSE
Ans. **B** (False)

CHAPTER -5

Q.1 . Spectrum analyzer examines the Spectral composition of EM waves consisting of the following wave forms
A. Electrical
B. Optical
C. Power
D. All of the above
Ans. **D**

Q.2 . Spectrum analyzer is a Time domain device
A. TRUE
B. FALSE
Ans. **B** (False)

Q.3 . A Data Network analyzer is basically a protocol analyzer.
A. TRUE
B. FALSE
Ans. **A** (True)

Q.4 . Sweep Spectrum analyzer is a digital instrument working on Super heterodyne principle
A. TRUE
B. FALSE
Ans. **B** (False)

Q.5. Fast Fourier Transfer Spectrum analyzer converts signals to digital form for digital analysis.
A. TRUE
B. FALSE
Ans. **A** (True)

Q.6 . Sweep Spectrum analyzer is a Scalar instrument that can only measure phase details and not amplitude of the given frequencies signals under test.
A. TRUE
B. FALSE
Ans. **B** (False)

Q.7 . Fast Fourier Transfer Spectrum analyzer can capture transient events effectively.
A. TRUE
B. FALSE
Ans. **A** (True)

Q.8 . Scalar Network Analyzer can make measurements and analysis of signals under test on both amplitude and phase.
A. TRUE
B. FALSE
Ans. **B** (False)

Q.9 . Vector Network Analyzer measures both amplitude and phase properties of signals.
A. TRUE
B. FALSE

Ans. **A** (True)

Q.10. Spectrum analyzer are used to examines the following characteristics of unknown signals
A. Carrier levels
B. Side bands and Harmonics
C. Phase Noise
D. All of the above
Ans. **D**

Q.11. Network Analyzer always looks for known frequency signals because it is a stimulus response system.
A. TRUE
B. FALSE
Ans. **A** (True)

Q.12 . Data Network Analyzer is basically a
A. Packet Analyzer
B. Protocol Analyzer
C. Sniffer
D. All of the above
Ans. **D**

Q.13 . SDH / PDH Transmission Analyzer supports only out of service mode .
A. TRUE
B. FALSE
Ans. **B** (False)

Q.14 . SDH Analyzer can perform analysis of BER , Jitter& Wander as well as quality of Clock signals .
A. TRUE
B. FALSE
Ans. **A** (True)

Q.15 . CATS the automation software used in SDH analyzer makes it an Virtual Instrument.
A. TRUE
B. FALSE
Ans. **A** (True)

Q.16 . Signal Structure in a SDH / PDH Transmission Analyzer defines the activity physical layer.
A. TRUE
B. FALSE
Ans. **A** (True)

Q.17 . Performance statistics collected by an SDH analyzer are EB, BBE, ES,SES , UAS as per G.826 recommendations .
A. TRUE
B. FALSE
Ans. **A** (True)

Objective Question Bank

Chapter-1:

1. What is the purpose of loading in an underground Telecom Cable **(a)**
   a. To reduce transmission loss
   b. To decrease cross talk
   c. To reduce noise

d. To increase attenuation

2. What is the length of loading section for a 6quad cable **(a)**
   a. 2000 mtrs
   b. 1830 mtrs
   c .2500 mtrs
   d. 1900 mtrs

3. What is the maximum capacitance unbalance permitted in a loading section **(c)**
   a. 30 pf
   b. 20 pf
   c. 40 pf
   d. 10 pf

4. The unbalance in capacitive couplings of quad cable causes **(c)**
   a. Noise
   b. Attenuation
   c. Cross talk
   d. Distortion

5. Unbalance of Earth couplings in VF circuits causes **(a)**
   a. Noise
   b. Cross talk
   c. Attenuation
   d. Doistortion

6. The capacitance unbalance between side circuit 2 of quad no1 with respect to side circuit 1 of quad no.1 is **(c)**
   a. K9
   b.K10
   c.K11
   d.K12

7. Over Head lines are not fit for Tele communication circuits in RE area because of **(b)**
   a. conductors do not have insulation
   b. interference of Induced voltage by 25kv
   c. conductors are thick
   d. High cross talk

8. The purpose of twisted pair cables in telecom cables is **(a)**
   a. To reduce cross talk
   b. To give strength
   c. Ease in manufacturing
   d. To avoid signal loss

9. At what distance condenser joint is done in a loading section of 6 quad cable **(b)**

a. 915 mtrs
b. 1000mtrs
c. 1200mtrs
d. 1220 mtrs

Chapter-2:

1. Telecom switch board cables are used for **(b)**
   a. Outdoor telecom wiring
   b. Indoor telecom wiring
   c. Electrical switch board wiring
   d. Underground telecom wiring

2. The characteristic impedance of a switch board cable is **(b)**
   a. 500 Ω b.600Ω
   c.470Ω d.1120Ω

3. Purpose of rip cord in a switch board cable is **(a)**
   a. To facilitate the removal of PVC sheath.
   b. To remove the insulation of the conductor
   c. To route the cable through pipes
   d. To uncoil the cable

4. Expand UTP cable **(d)**
   a.Unscreened twisted pair
   b. Unused twisted pair
   c. Unusual twisted pair
   d. Unshielded twisted pair

5. In general, CAT cables are connected with_____ type of connecters **(b)**
   a. RJ 15 b. RJ 45
   c. RJ11 d. RJ9

6. In STP cables _____ is used as screen **(a)**
   a. Aluminium foil
   b. Aluminium wires
   c. Aluminium sheath
   d. Copper sheath

7. The co-axial cable's usual impedance shall be _____ or _____ Ohms **(c)**
   a. 40-60 or 70-90
   b. 40-60 or 70-100
   c. 40-50 or 70-80
   d. 20-40 or 30-40

8. RG 8 cable can be used upto the length of _____. **(d)**

a. 600 mtrs
b. 800mtrs
c. 400 mtrs
d. 500mtrs

9. The material used for conductor in telecom cables is high conductivity_____. **(b)**
   a. Insulated copper
   b. Annealed copper
   c. Silver coated copper
   d. Aluminium coated copper

10. What is the colour code of 37th pair in a 50 pair switch board cable_____. **(a)**
    a. Orange & red
    b. Blue & red
    c. Green & red
    d. Slate & white

11. Specification of Switch Board cable is_____ **(d)**
    a. IS 434-Part-1/1964
    b. RDSO Spec. No:IRS:TC 41/97 (Amd. 2)
    c. IS-694-Part /1964)
    d. TEC Spec.No: GR/WIR/06/03 of March 2002

12. UTP cable that transmits up to 16Mbps is _____ **(d)**
    a. Cat 1
    b. Cat 2
    c. Cat 3
    d. Cat 4

13. UTP cable that transmits at up to 10 Mbps is _____ **(a)**
    a. cat 3
    b..Cat 2
    c. Cat 4
    d. Cat 1

Chapter-3:

1. Expand PIJF _____ **(a)**
   a. Polyethylene insulated jelly filled
   b. Polyester insulated jelly filled cable
   c. Polymer insulated jelly filled
   d. Polyvinyl insulated jelly filled

2. RDSO spec. for PIJF telephone Cable is_____ **(a)**
   a. IRS-TC: 41/97
   b. TEC Spec.No: GR/WIR/06/03 of March 2002
   c. IS 434-Part-1/1964
   d. IS-694-Part /1964)

3. The colour code of pair number 16 in a 20 pair PIJF cable _____ **(d)**
   a. Black & slate
   b. Balck & yellow
   c. Blue & black
   d. Blue & yellow

4. In 20 pair PIJF cable, conductor insulation main colours are _____ and mate colours are _____ **(c)**
   a. 4 & 5
   b. 3 &5
   c. 5 & 4
   d. 6 & 4

5. The number of units in 20 pair cable are _____ **(b)**
   a. 5
   b. 4
   c. 6
   d. 3

6. The number of units in 50 pair cable are _____ **(c)**
   a. 2
   b. 4
   c. 5
   d. 6

7. The number of units in 100 pair cable are _____ **(a)**
   a. 5
   b. 4
   c. 6
   d. 7

8. How many binding tapes are used for identifying each unit in PIJF pair cable are _____. **(b)**
   a. 4
   b. 5
   c. 3
   d. 6

9. Entry of moisture / water is prevented by _____in PIJF cable **(c)**
   a. Alunimium sheath
   b. GI armour
   c. Jelly
   d. All of the above

10. Amour in UG cable gives_____ **(a)**
   a. Mechanical strength
   b. Prevents the entry of water
   c. Provides screening
   d. Prevents the entry of moisture

11. Loop resistance of 0.51 mm conductor dia pijf cable is____ **(a)**
   a. 184 Ω
   b. 180 Ω
   c. 192 Ω
   d. 194 Ω

Chapter-4:

1. The induction by A.C traction system in Telecom circuits is due to_____ couplings **(d)**
   a. Electrostatic and galvanic
   b. Electromagnetic and transformer
   c. Electric and magnetic
   d. Electrostatic and electromagnetic

2. Cumulative build up of induced voltage in U/G telecom cable is prevented by _____ **(b)**
   a. Matching transformers
   b. Isolation transformers
   c. Current transformers
   d. Step down transformers

3. Psophometric voltage in the telecommunication circuits should not exceed _____ mV **(b)**
   a. 3mv
   b. 2mv
   c. 4mv
   d. 5mv

4. The screening factor of Aluminium sheath/screen is always _____than unity **(c)**
   a. More
   b. Equal to
   c. Less
   d. Higher

5. Isolation transformers are used to _____ **(a)**

a. To reduce Induced voltage due to catenary
b. For impedance matching
c. For balancing of circuits
d. For reducing noise

6. Under normal conditions of traction power system the longitudinally induced voltage in the telecommunication cable should not exceed _____V **(a)**
   a. 60 v
   b. 70 v
   c. 80 v
   d. 90 v

7. Maximum permissible induced voltage in an U/G telecom cable is_____ **(a)**
   a. 150 V
   b. 160 V
   c. 140 V
   d. 170 V

8. Isolation transformers are introduced at a regular intervals of approximately ____ Kms **(d)**
   a. 19 kms
   b. 20kms
   c. 10 kms
   d. 17 kms

9. The induced voltage in an U/G telecom cable due catenary per km is_____ **(b)**
   a. 6.75 V
   b. 8.75 V
   c. 7.75 V
   d. 5.50 V

10. Isolation transformers are provided at _____ **(d)**
    a. Repeaters
    b. Test room
    c. At EC sockets
    d. Cable huts

Chapter- 5: Telecom quad cables

1. The Transmission loss in 0.9 mm conductor dia quad cable is_____db/km **(a)**
   a. 0.63
   b. 0.25
   c. 0.38
   d. 0.69

2. 4 Wire system is used in U/G cable is because of _____ **(b)**
   a. To have two wires as stand by
   b. Amplifiers are used
   c. Using cable huts in between
   d. For future usage

3. RDSO specification of 4/6 PIJF quad cable of 0.9 mm dia conductor is _____ **(a)**
   a. IRS:TC: 30/2005 ver.2
   b. IRS:TC: 40/2005ver.2
   c. IRS:TC 50/2005 ver.2
   d. IRS:TC: 30/2015 ver.2

4. RDSO specification of 4/6 PIJF quad cable of 1.4 mm dia conductor is _____ **(b)**
   a. IRS:TC: 30/2005 ver.2
   b. RDSO/SPN/TC/72-07
   c. IRS:TC 50/2005 ver.2
   d. RDSO/SPN/TC/82-07

5. 1.4 mm dia conductor 4/6 quad cable is used when the distance between the block stations is_____ **(d)**
   a. More than 30 kms
   b. More than 10 kms
   c. More than 15kms
   d. More than 25kms

6. The insulation resistance between each conductor in a quad shall not be less than _____ ohms per kilometer **(b)**
   a. 200MΩ/km
   b. 100MΩ/km
   c. 400MΩ/km
   d. 500MΩ/km

7. Purpose of Poly Aluminium sheath in a quad cable is_____ **(a)**
   a. To prevent the entry of moisture
   b. To provide screening
   c. To protect the conductors from damage
   d. To reduce induced voltages

8. The colours of conductors of quad no 5 in 6 quad cable is_____ **(c)**
   a. Black, white, red, slate
   b. Blue, white, red, slate
   c. Yellow, white, red, slate
   d. Green, white, red, slate

9. The resistance of conductor in a quad cable is_____ **(a)**

a. 28Ω/km
b. 56Ω/km
c. 58Ω/km
d. 26Ω/km

10. The characteristic impedance of a 6 quad cable is_____ **(d)**
    a. 600Ω
    b. 1120Ω
    c. 56Ω
    d. 470Ω

Chapter-6: Cable Laying Practices

1. What is the minimum distance should be maintained between the OHE masts and the cable_____ **(b)**
    a. 5.00 mtrs
    b. 5.75 mtrs
    c. 6.00mtrs
    d. 6.75mtrs

2. All new Telecom cables shall be laid close to _____. **(c)**
    a. Near way station
    b. Near the track
    c. Near the railway boundary
    d. Near the telecom equipment room

3. The normal depth of the trench for Telecom Cable is _____ **(a)**
    a. One metre
    b. 1.5 metre
    c. 1.8 metre
    d. 2 metres

4. The standard drum length of 4/6 quad cable is_____. **(a)**
    a. One km
    b. Two kms
    c. 500 mtrs
    d. 460 mtrs

5. Tapping diagram consists of _____ **(b)**
    a. Reasons for each tapping
    b. Location of each tapping
    c. Distance between the tappings
    d. No. of tappings

6. The derivation cable used in 4/6 quad cable system is _____ **(c)**
    a. 6 quad cable
    b. 4 quad cable
    c. PIJF cable

d. SWBD cable

7. Telecom cable shall be laid in _____pipes for a length of _____on either side of TSS **(a)**
a. Rcc pipes & 300mtrs
b. Gi pipes & 200 metres
c. Troughs & 200 mtrs
d. HDPE & 200 mtrs

8. The cable route indicators are to be placed at every_____ meters on normal path **(a)**
a. 50 mtrs
b. 100 mtrs
c. 70 mtrs
d. 60 mtrs
ANS: a

9. On each side of major girder bridge a cable reserve of ____ meters to be provided **(b)**
a. 20 mtrs
b. 10 mtrs
c. 15 mtrs
d. 5 mtrs
ANS: b

10. On each side of minor bridge a cable reserve of ____ meters to be provided **(c)**
a. 7 mtrs
b. 6mtrs
c. 5mtrs
d. 4mtrs
ANS: c

11. A cable reserve of ____ meters to be provided at every joint loop **(a)**
a. 3 mtrs
b. 4mtrs
c. 5mtrs
d. 2mtrs
ANS: a

12. The widly used cable laying method for U/G cables is **(d)**
a. Laying solid
b. Drawing through ducts
c. Laying in PVC pipes
d. Laying direct in the ground
ANS: d

CHAPTER-7: Jointing of Under Ground Cables

1. The impedance ratio of matching transformer used for VF circuits in unloaded quad cable is _____ **(b)**
a. 470: 600 Ω
b. 470:1120 Ω
c. 470 :470 Ω
d. 1120 :1120 Ω

2. “Branch off clip” is used for _____ joint only. **(c)**
   a. normal joint
   b. loading coil joint
   c. derivation joint
   d. condenser joint

3. RDSO specification for RTSF jointing kit is _____ **(a)**
   a. IRS-TC: 77/2012
   b. IRS-TC: 79/2012
   c. IRS-TC: 77/2011
   d. IRS-TC: 77/2014

4. The purpose of tinned copper braid in RTSF jointing kit is **(c)**
   a. To provide continuity between the GI armours of both the cables
   b. To provide continuity between the poly al sheaths of both the cables
   c. To provide continuity between the Al. screening of both the cables
   d. For providing continuity between the conductors

5. The purpose of jelly in RTSF jointing kit **(a)**
   a. To prevent entry of water
   b. To provide good conductivity
   c. To avoid short circuit
   d. For providing mechanical support

6. Induced voltages in 6 quad cable is eliminated by earthing **(c)**
   a. GI armour
   b. Poly. Al. sheath.
   c. Al.screenig wires
   d. Aluminium foil

7. The impedance ratio of matching transformer used for block circuits in unloaded quad cable is _____ **(c)**
   a. 470:600 Ω
   b. 1:2 Ω
   c. 470:1120 Ω
   d. 1120: 600 Ω

8. The value of loading coil connected in each limb of a 6 quad cable is____ **(d)**
   a. 118mH
   b. 88mH
   c. 44mH
   d. 59mh

9. The rdso spec for jointing kit used for PIJF telephone cables is _____ **(b)**
   a. IRS/TC/41/97
   b. IRS-TC-57/2006
   c. IRS.TC.77-2012
   d. IRS.TC.77-2013

10. Purpose of sealant tape in the RTSF kit is_____ **(a)**
    a. To cover the metallic projections
    b. To wrap the conductors
    c. To seal the joint
    d. To prevent entry of water

Chapter-8: Testing of Cables

1. Insulation resistance of quad cable shall be tested with _____ Megger after completion of jointing of cables. **(a)**
    a. 100 V
    b. 250 V
    c. 500 V
    d. 1000 V

2. Transmission loss test shall be carried out with a tone frequency of _____ **(b)**
    a. 1000 c/s
    b. 800 c/s
    c. 600 c/s
    d. 400 c/s

3. Cross Talk has to be measured with _____ frequency for VF Circuits **(b)**
    a. 800 c/s
    b. 1000 c/s
    c. 1200 c/s
    d. 1500 c/s

4. Periodicity of conduction test carried out on a quad cable is_____ **(b)**
    a. Weekly
    b. Monthly
    c. Quarterly
    d. Yearly

5. Periodicity of insulation resistance test carried out on a quad cable is_____ **(d)**
    a. Monthly
    b. Quarterly
    c. Half yearly
    d. Yearly

6. Periodicity of transmission loss test carried out on a quad cable is_____ **(b)**
    a. Fortnightly
    b. Monthly
    c. Quarterly
    d. Half yearly

7. Periodicity of cross talk test carried out on a quad cable is_____ **(d)**

a. Fortnightly
b. Monthly
c. Weekly
d. Quarterly

8. Periodicity of psophometric noise test carried out on a quad cable is____ **(c)**
   a. Fortnightly
   b. Monthly
   c. Quartely
   d. Yearly

9. What is the tone frequency applied for cross talk test on BPAC circuits_____ **(d)**
   a. 1000 c/s
   b. 5000 c/s
   c. 150 k c/s
   d. 155 k c/s

10. Low insulation fault can be localized with the help of _____ **(d)**
    a. Multi meter
    b. Megger
    c. Earth tester
    d. Digital cable fault locator

11. In digital cable fault locator, which mode is used to find out open/ short circuit fault _____ **(c)**
    a. Low insulation
    b. Insulation resistance
    c. Pulse echo reflection
    d. Foreign potential

Chapter-9: Quad Cable Maintenance

1. Before disconnecting Block, BPAC and IB circuits for testing of Quad cable _____ has to obtained from Station Master **(a)**
    a. Disconnection memo
    b. Disconnection note
    c. Disconnection order
    d. Disconnection booklet

2. The purpose of Integrated Cable path diagram is _____ **(d)**
    a. To locate the path
    b. To carry out tests
    c. For maintenance
    d. To protect the cables

3. BPAC circuit in quad cable shall be tested from _____ to _____ **(b)**
    a. station to station
    b. location to location
    c. section to section
    d. division to division

4. Quad cable has to be tested periodically by JE/T on _____basis **(b)**
    a. Weekly
    b. Monthly
    c. Quarterly
    d. Yearly

5. Quad cable has to be tested periodically by SSE/T_____ **(c)**
    a. Weekly & monthly
    b. Monthly & quarterly
    c. Quarterly & yearly
    d. Half yearly & yearly

6. Quad cable has to inspected by Officers once in_____ **(c)**
   a. Quarterly
   b. Half yearly
   c. Yearly
   d. Monthly

7. The insulation resistance of the 6 quad cable should be greater than ____ MΩ **(b)**
   a. 5
   b. 10
   c. 20
   d. 50

Objective Question Bank

CHAPTER-1:

1. Sound intensity is expressed in watts/$cm^{2.}$ **(a)**
   a) True
   b) False

2. The lowest acoustic pressure that gives rise to a sensation of hearing is called threshold of audibility. **(a)**
   a) True
   b) False

3. The highest pressure to which the ear can respond without experiencing pain is called threshold of pain. **(a)**
   a) True
   b) False

4. Sound pressure and sound pressure level are analogous to voltage and voltage level in the field of electricity. **(a)**
   a) True
   b) False

5. Acoustic impedance of a sound medium is the complex quotient of the sound pressure and the particle velocity multiplied by the unit of the area. **(a)**
   a) True
   b) False

6. Threshold of pain is 140 db. **(a)**
   a) True
   b) False

7. Threshold of hearing is 20 db. **(a)**

a) True
b) False

CHAPTER-2:

1. Pressure operated microphones employ a diaphragm with only one surface exposed to the sound source. **(a)**
   a) True
   b) False

2. A velocity microphone is one in which the electrical output substantially corresponds to the instantaneous particle velocity in the addressed sound wave. **(a)**
   a) True
   b) False

3. Ribbon microphones are velocity-operated microphones. **(a)**
   a) True
   b) False

4. The carbon, crystal, dynamic and capacitor microphones are pressure-operated microphones. **(a)**
   a) True
   b) False

5. Dynamic microphones do not employ output transformers. **(a)**
   a) True
   b) False

6. The output impedance of a dynamic microphone is approximately 20 Ohms. **(a)**
   a) True
   b) False

7. Capacitive microphones are high impedance microphones. **(a)**
   a) True
   b) False

8. Condenser microphones require polarizing voltage. **(a)**
   a) True
   b) False

9. Sensitivity is the amount of voltage developed or generated by the microphone for an applied sound pressure at a test frequency of 1000 Hz. **(a)**
   a) True

b) False

10. Frequency Response is the ability of a microphone to produce a proportionate output to the sound pressure applied for the specified range of frequencies. **(a)**
    a) True
    b) False

CHAPTER-3:

1. The function of the loudspeaker is to convert electrical energy into acoustic energy. **(a)**
    a) True
    b) False

2. Cone type of loud speaker is a direct radiator. **(a)**
    a) True
    b) False

3. Horn-type loud speaker is an indirect radiator. **(a)**
    a) True
    b) False

4. High fidelity (hi-fi) speakersare used to reproduce the frequency range of 50 Hz to 12 KHz. **(a)**
    a) True
    b) False

5. Limited frequency use can be prevented through a multiple speaker system comprising separate speakers. **(a)**
    a) True
    b) False

6. Woofer reproduces low frequency notes. **(b)**
    a) True
    b) False

7. Tweeter reproduces high frequency notes. **(b)**
    a) True
    b) False

8. The minimum distance between column speakers in a row should be _____. **(c)**
   A. 2m
   B. 4m
   C. 8m
   D. 10m

CHAPTER-4:

1. An amplifier in a PA system is a device, which takes low level input signal and amplifies to a high level output signal to the desired output power. **(a)**
   a) True
   b) False

2. Bass is a low frequency control. **(a)**
   a) True
   b) False

3. Treble is a high frequency control. **(a)**
   a) True
   b) False

4. No battery current is consumed when the amplifier is working on AC mains. **(a)**
   a) True
   b) False

5. For the connection of loudspeakers in impedance matching method, three terminal strips are provided viz, com., 100V and 70V. **(b)**
   a) True
   b) False

6. For the connection of loudspeakers in impedance matching method, four terminal strips are provided viz., com., 4Ω, 8 Ω and 16Ω. **(a)**
   a) True
   b) False

7. Amplifiers are rated at some specified output in watts with a declared harmonic content, of about 5%. **(a)**
   a) True
   b) False

8. PAN control routes the channel to either left or right output. **(a)**
   a) True
   b) False

CHAPTER-5:

1. The mean level of sound pressure shall be 5 to 15dB above the noise level. **(a)**
   a) True
   b) False

2. The frequency response for the entire system should be within $\pm$ 3 dB from 100 Hz to 10 KHz. **(a)**
   a) True
   b) False

3. The total harmonic distortion of the entire system shall not exceed 5% at the rated power output of the amplifier. **(a)**
   a) True
   b) False

4. The signal to noise ratio under normal operating conditions of the amplifying systems shall not be worse than 50 dB. **(a)**
   a) True
   b) False

5. In the normal operating conditions sound pressure level is 70 to 80 dB. **(a)**
   a) True
   b) False

6. The sound reflection reaching a listener ear at least 1/15th of a second after the original sound is termed as echo. **(a)**
   a) True
   b) False

7. Reverberation is an accumulation of echoes. **(a)**
   a) True
   b) False

8. “Paging” is a one way communication in which one can call or summon the individuals or the general public. **(a)**

a) True
b) False

9. The system, which facilitates to talk back to the caller by the individual, is called, paging and talk back system. **(a)**
   a) True
   b) False

CHAPTER-6:

1. The effective impedance of the load should be matched with the output impedance of the amplifier. **(a)**
   a) True
   b) False

2. Line matching transformers (LMT) are being used in voltage matching method. **(a)**
   a) True
   b) False

3. The power transfer is maximum in impedance matching. **(a)**
   a) True
   b) False

Objective Question Bank

Chapter-1:

1. Touch screen systems are also called as _____ **(c)**
   a. interactive information systems.
   b. Non interactive information systems
   c. Passenger operated enquiry terminal (POET)
   d. None of the above

2. LED based electronic Display boards are _____ **(a)**
   a. non interactive information systems
   b. interactive information systems
   c. none of the above

3. Call centre is the system providing train related information to the passengers ____ **(b)**
   a. at Railway station
   b. at passenger end
   c. both at Railway station and passenger end

4. One of the System that provide information at Passenger end is _____ **(a)**
   a. Internet
   b. Alpha numeric display
   c. POET
   d. CCTVs

5. One of the systems that provide information at station is_____ **(d)**
   a. Call centre
   b. PSTN.
   c. IVRS
   d. CCTVs.

6. Passenger Amenities to be provided at stations are decided by _____ **(c)**
   a. GM of Zonal Railways
   b. DRM of Divisions.
   c. Railway Board.

Chapter-2:

1. Touch screens are used as _____ **(a)**
   a. input devices
   b. output devices
   c. both input & output devices
   d. none of the above

2. In the Surface acoustic touch screen system, the location of the touch is determined by _____ **(a)**
   a. Absorption of acoustic waves.
   b. voltage changes
   c. frequency changes

3. Digital video recorder can accommodate _____numbers of cameras. **(c)**
   a. 8
   b. 16
   c. 32
   d. 64

4. Network video recorders are used in _____ **(a)**
   a. IP based CCTV surveillance system
   b. Analog based CCTV surveillance system
   c. both Analog and IP based CCTV surveillance system

6. In the Resistive touch screen location of the touch is determined by _____ **(a)**
   a. Voltage change.
   b. Frequency change.
   c. Absorption of acoustic waves.

7. Redundant Array of independent disks used in IP based CCTV Surveillance system has the storage capacity in _____ **(d)**
   a. Kilo bits
   b. Mega bits
   c. Gega bits
   d. Tera bits

8. Digital video recorder (DVR) is used in _____ **(b)**
   a. IP based CCTV surveillance system.
   b. Analog based CCTV surveillance system.
   c. both in Analog based CCTV surveillance system & IP based CCTV surveillance system.
   d. None of the above.

Chapter-3:

1. The IVRS is integrated with _____ **(a)**
   a. PRS & NTES data base through servers
   b. BSNL/RLY exchange and PRS
   c. PRS & BSNL/RLY exchange

2. The Call centre fetches the dynamic data such as train arrival/departure information form_____ **(b)**
   a. PRS server
   b. NTES server;
   c. both from PRS & NTES server
3. PBX Switch in Call centre based IVRS is equipped with _____ **(d)**
   a. 8 E1 trunks
   b. 72 analog extensions
   c. 24 digital extensions
   d. All the above'

4. In Call center based IVRS, connectivity between BSNL exchange and Call center is through _____ **(b)**
   a. Analog circuits
   b. Digital circuits
   c. Both analog and digital circuits
   d. None of the above'

5. Features such as increased availability of services, E-mail access, Fax on demand, Automatic announcing unit, Call back facility on reservation confirmation, Accident related queries and Registration of complaints are available in **(b)**
   a. IVRS
   b. Call center based IVRS
   c. In both IVRS & Call center based IVRS
   d. None of the above

Chapter-4:

1. In IPIS switching is done by _____ **(c)**
   a. Control console unit.
   b. Eight port LAN switch.
   c. Main data communication hub.
   d. Platform data communication hub.

2. Platform display boards and Coach Guidance display boards in the platforms have the below said addresses. **(c)**
   a. Unique or Device address.
   b. Multicast address
   c. Both Multicast and Device address.
   d. IP address

3. MDCH routes the incoming signals from CCU to _____ **(c)**
   a. Close circuit Televisions.
   b. PA systems.
   c. LED based electronic display boards.
   d. to all the above said devices

4. The numbers of LED based display boards, can be connected to one O/P port of PDCH are _____ **(d)**
   a. Two boards
   b. Four boards
   c. Six boards
   d. Eight boards

5. The interface cable used for connecting PDCH output ports to display boards is _____ **(a)**
   a. RS485.
   b. Coaxial cable.
   c. RS232.
   d. OFC.

6. Data synchronization between two control consoles is through_____ **(c)**
   a. LAN switch
   b .by cross connecting the PCs
   c. by cross connecting the PCs or by using a LAN switch

7. The serial port connection to the Coach Guidance display boards along a line will be _____ **(c)**
   a. serially connected
   b. parallel connected
   c. daisy chained

8. The maximum length of the RS485 cable used in IPIS should be _____ **(b)**

a. 15m
b. 1200m
c. 1000m
d. 500m

9. In IPIS Data speed in RS232 cable should be _____ **(a)**
a. 57.6 kbps
b. 4.8 kbps
c. 100kbps

10. In version-4 of the IPIS, the following changes have been made **(d)**
a. IP addresses to be assigned to the devices.
b. SMD LEDs to be used in the display boards.
c. WI-FI connectivity between the system and the display boards.
d. All the above are correct

11. In IPIS, from version-3 onwards colour of the LEDs used in PDBs and CGDBs should be _____ **(c)**
a. blue.
b. yellow.
c. white.
d. None of the above

12. The maximum length of RS232 cable used in IPIS is_____ **(a)**
a. 15m.
b. 1200m.
c. 1000m.
d. None of the above

13. In IPIS the data speed in RS485 cable is _____ **(b)**
a. 57.6 kblps.
b. 4.8 kbps.
c. 35mbps

14. For one output port of MDCH, the numbers of display boards can be connected on point to multipoint basis are _____ **(b)**
a. 2 boards.
b. 4 boards.
c. 6 boards.
d. 8 boards.

Chapter-5:

1. Slave clocks which cannot function without the master clock are called _____ **(a)**
a. Impulse clocks.

b. Real time clocks.
c. Stand alone clocks.

2. The master-slave digital clocks obtain common reference time from the _____ **(a)**
   a. GPS orbiting the earth.
   b. Master clock only.
   c. Real time clock only.

3. The backup for GPS clock is from _____ **(b)**
   a. Common reference time from GPS.
   b. Real time clock.
   c. Slave clock.

4. The oscillator in digital clocks is crystal controlled because of _____ **(c)**
   a. The less space it occupies.
   b. High frequency stability of crystal oscillator.
   c. Less space and high frequency stability.

5. Communication between master and slave clocks can be_____ **(a & b)**
   a. Wired
   b. Wireless.
   c. None of the above

Chapter-6:

1. Rail Radar is an application introduced by CRIS that enable commuters to know _____ **(d)**
   a. Location of the train.
   b. Running status of the train.
   c. Train route & stoppages.
   d. All the above

2. The blue arrows in the Google map indicate the_____. **(d)**
   a. Super fast trains.
   b. Mail/Express trains.
   c. Passenger trains.
   d. On time train.

3. The red arrows in the Google map indicates the_____ **(d)**
   a. Super fast trains.
   b. Mail/Express trains.
   c. Passenger trains.
   d. Delayed trains.

Chapter-7:

1. Electronic Reservation Chart is displayed through _____ **(b)**
   a. LED monitors.
   b. LCD monitors.
   c. CRT monitors.

2. Electronic Reservation Chart in the platform displays_____ **(a, b & c)**
   a. Confirmation status.
   b. RAC status.
   c. Waitlisted status.
   d. None of the above.

3. Charting server receives Chart data from _____via railway network. **(a)**
   a. PRS server.
   b. NTES server.
   c. none of the above.

4. All the Electronic Reservation Chart displays are connected to the server via LAN with its _____ **(a)**
   a. Unique IP address.
   b. Multicast address.
   c. Hard ware address.
   d. None of the above. .

5. _____enables to extend the distance of the LAN without any loss of data in Electronic Reservation Chart system. **(a)**
   a. LAN Extender
   b. Modem.
   c. Router
   d. None of the above

   Ans: a

Chapter-1: Secondary Cells

1. Function of separators in Lead acid cell is to prevent _____. **(b)**
   a. over charging
   b. short-circuit
   c. deep discharge
   d. plate damage

2. Capacity of any Lead Acid cell is given in_____. **(a)**
   a. Ampere Hours
   b. Ampers
   c. Hours
   d. Voltage hours

3. While charging LA cell, the condition of gasing indicates that the cell is _____. **(d)**
   a. partially discharged
   b. fully discharged
   c. partially charged
   d.fully charged

4. Active material on positive plates of a fully charged Lead Acid cell is_____. **(a)**
   a. Lead peroxide
   b. Lead dioxide
   c. Lead sulphate
   d. Lead

5. _____is an instrument used to measure the Specific gravity of electrolyte. **(d)**
   a. Thermometer
   b. Sp. gravity meter
   c. Mass flow meter
   d. Hydrometer

6. The material used for grids in maintenance free Lead Acid battery is_____.**(a)**
   a. Lead Calcium alloy.
   b. Lead Peroxide alloy
   c. Lead Sulphate alloy
   d. Lead Zinc alloy

7. High rate of charging or discharging leads to problem of ____in LA acid cell. **(d)**
   a. Sulphation
   b. Loss of Capacity
   c. High density of electrolyte
   d. Buckiling

8. AGM, in VRLA batteries, means _____. **(c)**
   a. Absorbed Gas Mat
   b. Associated Glass Mat
   c. Absorbed Glass Mat
   d. Associated Gas Mat

9. The VRLA / SMF-LA batteries shall be charged with _____voltage. **(b)**
   a. Constant Voltage with voltage un-regulated
   b. Constant Voltage with voltage regulation
   c. Constant Voltage
   d. Regulated Voltage

10. To avoid lead corrosion on battery connectors and terminals _____ has to be applied. **(a)**
    a. Petroleum jelly
    b. Leaded greese
    c. Diesel
    d. SAE-2T oil

11. Internal short circuit in a cell is indicated by _____. **(c)**
    a. Gassing from cell
    b. High specific gravity of lectrolyte
    c. Warm when touched
    d. Sulphation

12. Lead Acid cell can be discharged up to voltage of _____. **(b)**
    a. 1.70
    b. 1.80
    c. 1.85
    d. 1.9

13. In VRLA cell/battery the compensation of distilled water is by_____. **(a)**
    a. Recombination principle.
    b. Adding distilled water
    c. Adding very low amount of acid
    d. Keep the cell in boost charge

14. Leaving the LA battery in a discharged condition causes_____. **(b)**
    a. Internal short circuit
    b. Sulfation
    c. Loss of electrolyte
    d. Shedding

15. Voltage of a fully charged rechargeable Alkaline cell is _____ **(d)**
    a. 2.1
    b. 1.5
    c. 1.0
    d. 1.2

16. The electrolyte used in case of Alkaline cell is _____. **(a)**
    a. KOH.
    b. H_2SO_4
    c. MnO_2
    d. Zn

17. The flot charging voltage of a VRLA cell is_____ **(c)**
    a. 2.10
    b. 2.15
    c. 2.25
    d. 2.30

18. The operating temparature of a battery increases then the capacity of battery _____. **(a)**
    a. Increases
    b. Decrases
    c. Remains same
    d. Both (a) & (b) are correct

19. K-factor in LA cells indicates_____. **(c)**
    a. Availabilty of cell capacity at different loads.
    b. Availabilty of cell capacity at different Temparatures
    c. Availability of cell capacity at different discharge rates and end cell voltages.
    d. Availability of cell capacity at different charge rates and fullu charged cell voltages.

20. Temparature correction in LA batteries is not reuired when the battery is in operation at _____°C. **(d)**
    a. 0
    b. 15
    c. 20
    d. 27

21. EPV of an Alkaline cell is_____. **(a)**
    a. 1.0
    b. 1.2
    c. 1.8
    d. 2.0

22. Recommended type of charging for Alkaline cells is _____. **(c)**
    a. Constant current & regulated voltage
    b. Regulated Voltage & Regulated Current
    c. Constant current & constant voltage
    d. Regulated current & constant voltage

23. Gravimetric Energy density is high in _____ rechargeable batteries. **(b)**
    a. Li-ion
    b. Li-poly
    c. Ni-MH
    d. VRLA

24. Maximum allowable depth of discharge of battery, as defined by manufacturer, is_____. **(d)**
    a. 50%
    b. 60%
    c. 70%
    d. 80%

Chapter-2: Battery Charging

1. Rate of Trickle charging is _____ **(a)**
    a. 1 mA/Ah.
    b. 10 mA/Ah
    c. 100 mA/Ah
    d. 1 A/Ah

2. The codal life of re-chargeable batteries used in S&T department is_____ **(c)**
    a. 24 months
    b. 36 months
    c. 48 months
    d. 60 months

3. The maximum temperature allowed during charging of LA battery shall not exceed _____ °C. **(d)**
    a. 27
    b.30
    c. 40
    d. 50

4. Converter unit is for conversion of _____ **(a)**
    a. AC to DC or DC to DC
    b. AC to DC only
    c. DC to AC only
    d. DC to AC and DC to DC

5. Boost Charging Voltage of conventional LA battery is_____. **(c)**
    a. 2.2
    b. 2.3
    c. 2.4
    d. 2.5

6. The approximate ratio of acid to distilled water for conventional LA battery is **(c)**
   a. 1:2
   b. 1;3
   c. 1:4
   d. 1:5

7. As defined by manufacturer, charging current is limited to ____% of nominal capacity of battery in constant potential with current limited charging, **(b)**
   a. 10
   b. 20
   c. 30
   d. 40

8. Charging voltage of VRLA or SMF battery is_____. **(c)**
   a. 2.1
   b. 2.2
   c. 2.3
   d. 2.5

9. During initial charging of convential LA cells, the voltage of cell shall be set to_____. **(d)**
   a. 2.3
   b. 2.4
   c. 2.6
   d. 2.7

10. While charging initially the LA batteries, _____ amount of the constant current may be supplied to the batteries, when manufacturer has not defined the charging current. **(c)**
    a. Ah capicity / 5
    b. Ah capacity / 10
    c. Ah capacity / 15
    d. Ah capacity / 20

11. Unit of Capacity of a cell_____ **(a)**
    a. Ah
    b. A
    c. h

d. Ha

12. In C /10 discharge rate, 10 indicates_____ **(c)**
    a. Volts
    b. Amps
    c. Hours
    d. Constant

Chapter-3: Battery Chargers

1. In Automatic Battery charger the output controlling device is_____. **(d)**
    a. BJT
    b. IGBT
    c. UJT
    d. SCR

2. In Automatic battery charger the gate pulses for SCR's is generated by ___ **(b)**
    a. Transformer
    b. control circuit
    c. SCR
    d. UJT

3. The efficiency of Linear type battery charger is _____ a SMPS battery charger **(c)**
    a. same as of
    b. higher than
    c. less than
    d. almost equal to

4. In SMPS battery charger, isolation from AC mains is_____ **(a)**
    a. very high
    b. very low
    c. equal
    d. partial

5. Out put side of a charger _____ is introduced to reduce the change in the charging current **(b)**
    a. Load
    b. Ballast
    c. Battery
    d. Capicitor

6. MOV is a _____ **(d)**
   a. Capicitor
   b. Reverse Voltage protection
   c. Fuse
   d. Surge suppressor

7. Specification of 48V DC auto/manual battery charger for S&T equipment is_____ **(c)**
   a. IRS.TC.72/97
   b. IRS.TC.86/2000
   c. IRS.S.86/2000
   d. RDSO/SPN/TL/23/99

8. In a 48V DC auto/manual battery charger, float voltage range is _____ V/Cell. **(a)**
   a. 2.0 to 2.3
   b. 1.8 to 2.3
   c. 2.0 to 2.5
   d. 1.8 to 2.5

9. In a 48V DC auto/manual battery charger, N+1 indicates_____. **(b)**
   a. Number of SMRs
   b. Number of cells
   c. Number of battery banks
   d. Number of Loads

10. In a automatic battery charger, automatic change over from float to boost mode and vice versa will be carriedout by sensing _____ **(d)**
    a. load voltage
    b. load current
    c. battery voltage
    d. battery current

11. Power plants which have the scope for modular expansion are_____ **(d)**
    a. Thyristor controlled
    b. Ferro-resonant
    c. Linear
    d. SMPS

Chapter-1:

1. The devices prone to transient surge voltage and currents are **(d)**
   a. IC's
   b. Microprocessors
   c. Microcontrollers
   d. All the above

2. Surges are caused by **(d)**
   a. Lightning discharges
   b. Switching on/off of inductive loads
   c. Ignition and interruption of electric arcs
   d. All the above

3. The percentage of loss (cost of damage) due to surges alone is **(b)**
   a. 30.3%
   b. 27.4%
   c. 15.6%
   d. 22.8%

4. During the Lightning the magnitude of current rises to **(d)**
   a. 10 Amps
   b. 100 Amps
   c. 1000 Amps
   d. 10 kA- 200kA

5. During the Lightning the heating of air up to **(d)**
   a. 100^0k
   b. 10000^0k
   c. 3000^0k
   d. 30000^0k

6. Surges involve voltages and currents which are much higher than the working voltages and currents. **(a)**
   a. TRUE
   b. FALSE

7. Ice crystals are negatively charged whereas water droplets are positively charged. **(b)**
   a. TRUE
   b. FALSE

8. In lightning the air gets heated up to 30,000 degrees Kelvin. **(a)**
   a. TRUE
   b. FALSE

9. The magnitudes of electric currents resulting due to lightning are between 10 to 200 K Amp **(a)**
   a. TRUE
   b. FALSE

10. Lightening results in building up of potentials of the order of 1 to 100 million Volts. **(b)**
    a. TRUE
    b. FALSE

11. Meaning of 200 KA 10/350 surge is Surge current with 10 micro sec peak value rise time/ 350 micro sec drop time to half peak value. **(a)**
    a. TRUE
    b. FALSE

12. Lightning protection zone LPZ-0_A means no direct strikes. **(b)**
    a. TRUE
    b. FALSE

13. Lightning protection zone LPZ1 means no direct strikes with partial lightning and damped magnetic field. **(a)**
    a. TRUE
    b. FALSE

14. LPZ -0_A protection zone comes under direct strike. **(a)**
    a. TRUE
    b. FALSE

15. Positive charge center lies in lower part of atmosphere and negative charge center lies in Upper part of atmosphere. **(b)**
    a. TRUE
    b. FALSE

Chapter 2: Fundamentals of Earthing

1. Even though the earth is a bad conductor, the reason for choosing earth as a protective means is that it provides ideal equipotential surface. **(a)**
    a. TRUE
    b. FALSE

2. Resistivity of dry soil is 10 ohms and of wet soil is 1 ohms. **(b)**
    a. TRUE
    b. FALSE

3. The parameter which depends on shape and size of an electrode is Electrode resistance. **(a)**
    a. TRUE
    b. FALSE

4. To keep the electrode to earth resistance value low, the length of electrode has to be Reduced. **(b)**
    a. TRUE
    b. FALSE

5. By using two electrodes the earth resistance becomes half only if the distance between the two electrodes is two times the length. **(a)**
   a. TRUE
   b. FALSE

6. When a strip or plate electrode is used the length parameter has major influence on earth Resistance. **(a)**
   a. TRUE
   b. FALSE

Chapter-3: Surge protection devices

1. Surge protection devices are divided into three classes. **(b)**
   a. TRUE
   b. FALSE

2. Response time of an SPD means its CLOSURE time. **(a)**
   a. TRUE
   b. FALSE

3. The class A protection is offered by transferring 50% of the lightening energy to ground. **(a)**
   a. TRUE
   b. FALSE

4. If an elliptical waveguide is used between antenna and communication equipment that is to be earthed at 10 meters intervals. **(a)**
   a. TRUE
   b. FALSE

5. Class B protection is the SECOND stage protection provided at mains (power) distribution panel. **(b)**
   a. TRUE
   b. FALSE

6. Class B SPDs operate on CHOPPING OF ARC principle. **(a)**
   a. TRUE
   b. FALSE

7. Class B SPDs are to be provided between **(d)**
   a. Neutral and earth.
   b.R,Y,B phases
   c. R,Y,B phase and Neutral
   d. Neutral & earth and R/Y/B phase & Neutral

8. Neutral to Earth protection should have lower ratings than Neutral to Phase protection. **(b)**
   a. TRUE

b. FALSE

9. Surge rating is taken care by class C protection at 50 KA,8/20 micro second pulses. **(a)**
   a. TRUE
   b. FALSE

10. The data and power supply lines to electronic equipment need to be provided with class C SPDs at both ends of the conductor. **(b)**
    a. TRUE
    b. FALSE

11. The total length of the conductors used on either side of class B or class C protection SPD should be less than 50 cm. **(a)**
    a. TRUE
    b. FALSE

12. Size of conductor connecting class B SPD shall be 6 sq.mm & for class C SPD shall be 16 sq.mm. **(b)**
    a. TRUE
    b. FALSE

Chapter 4: RDSO Specifications for Earthing System for Telecom Installations

1. The main purpose of earthing is to provide nearly zero or absolute earth potential. **(a)**
   a. TRUE
   b. FALSE

2. Surge arrestors and lightning dischargers offers protection against build up of unduly low voltages **(b)**
   a. TRUE
   b. FALSE

3. System earthing is associated with non-current carrying conductor and safety of human life, animals and property. **(b)**
   a. TRUE
   b. FALSE

4. Equipment earthing is associated with current carrying conductor and is essential to the security of the system. **(b)**
   a. TRUE
   b. FALSE

5. Step voltage means potential difference between two points on earth surface.separated by a distance of one meter. **(a)**
   a. TRUE
   b. FALSE

6. The potential difference between grounded metallic structure and a point on the earthing surface is known as TOUCH voltage. **(a)**
   a. TRUE
   b. FALSE

7. Factors affecting soil resistivity are **(d)**
   a. Chemical composition
   b. Salts dissolved
   c. Moisture content
   d. All of the above

8. Best soil used for locating an earth electrode is damp and wet sand peat and the last choice is wet marshy ground. **(b)**
   a. TRUE
   b. FALSE

9. Fall of potential method with 3rd terminals (P-2), gives a constant earth electrode resistance at 62% of distance between C-1 and C-2. **(a)**
   a. TRUE
   b. FALSE

Chapter 5: Code of Practise for Earthing and Bonding system for S & T Equipments

1. Characteristics of a good earthing system are **(d)**
   a. Excellent electrical conductivity
   b. High corrosion resistance
   c. Mechanically robust and reliable
   d. All of the above

2. Acceptable earth resistance value at busbar is **(d)**
   a. Greater than one ohm
   b. Less than 10 ohms
   c. between one and ten ohms
   d. Not more than one ohm.

3. Earth electrode shall be made of high tensible low carbon steel rods molecularly bonded with minimum copper bonding thickness of 250 microns on outer surface. **(a)**
   a. TRUE
   b. FALSE

4. Earth enhancement material should have the following properties **(d)**
   a. Highly conductive
   b. Non corrosive
   c. Humidity retention capability
   d. All of the above

5. The depth of an earth pit shall be about 2.8 meters. **(a)**
   a. TRUE b. FALSE

6. Loop earth with connection of multiple earthed pits is opted when the achived earth resistance is **(c)**
   a. Greater than 10 ohms
   b. Less than 5 ohms
   c. Equal to or less than 1 ohm is not attainable
   d. All of the above

Chapter 6: Surge protection devices for Telecom Equipments

1. Insertion of surge protection device in telecommunication installation should not affect the following parametric values **(d)**
   a. Insulation resistance and series resistance
   b. capacitance and near end cross talk
   c. Insertion loss ,Return loss and current response time
   d. All of the above

2. Surge protection devices are desired to be pluggable in the module as per IEC61643-21 standard. A. **(a)**
   a.TRUE
   b. FALSE

3. Band width parameter of a surge protection device should be minimum of 2.3 MHz for telephone applications . **(a)**
   a. TRUE
   b. FALSE

4. GD Tube is a voltage switching and limiting device. **(a)**
   a. TRUE
   b. FALSE

5. PTC is self restoring voltage limiting device. **(b)**
   a. TRUE
   b. FALSE

6. GD Tube is a voltage switching and limiting device where as PTC is self restoring current limiting device. **(a)**
   a. TRUE b. FALSE

7. Total nominal discharge current for (8/20 micro sec pulse) Surge Protection device is rated at 10 Kilo Amp., where as its nominal current is 120 mili Amp. **(a)**
   a. TRUE b. FALSE

8. Protection against lightning electromagnetic impulses are discussed in IEC 61312 STANDARDS under section (1 to 4). **(a)**
   a. TRUE b. FALSE

Objective Question Bank

Chapter-1:

1. In RE area Emergency Control HQ equipment is provided with _____. **(c)**
   a) Section Controller
   b) Deputy Chief Controller
   c) Traction Power Controller
   d) Traction Loco Controller

2. Remote control works on _____ principle. **(b)**
   a) WPA
   b) SACFA
   c) PTCC
   d) DTMF

3. Role of S&T in Control working is to _____. **(a)**
   a) To provide communication
   b) To provide efficient train control
   c) To provide cooperation between departments
   d) All the above

4. The function of proper utilization of rolling stock comes under _____control. **(b)**
   a) TPC
   b) TLC
   c) RC
   d) All the above

5. Efficient utilization of Engine power falls under _____ control. **(a)**
   a) TLC
   b) Dy. CTO
   c) TPC
   d) All the above

6. Power Controller in electrified sections is called as _____Controller. **(c)**
   a) Section
   b) TLC
   c) TPC
   d) All the above

7. Trains movements information of a particular day can be had from _____. **(b)**
   a) Test room
   b) Control Chart
   c) Reservation chart
   d) All the above

Chapter-2:

1. Railway control communication circuits are of _____ type circuits. **(c)**
   a) Point to point
   b) Party to line
   c) Omnibus
   d) All the above

2. Type of signaling system suitable for control circuits is _____. **(d)**
   a) E & M
   b) RD
   c) Loop
   d) DTMF

3. Emergency control sockets are provided on rail posts at _____km intervals. **(a)**
   a) 1
   b) 2
   c) 3
   d) 4

4. Name any one control circuit used only in RE sections. _____. **(c)**
   a) Section Control
   b) Emergency Control
   c) Traction Power Control
   d) Deputy Control

5. No. of tones used in DTMF system. _____. **(b)**
   a) 4
   b) 8
   c) 12
   d) 16

6. Maximum no. of way station codes available in DTMF system. **(c)**
   a) 97
   b) 98
   c) 99
   d) 100

Chapter-3:

1. Presently, there are _____ control communication systems working on UG cable media.
   a) Equalizer type
   b) Conventional type
   c) CCEO
   d) All the above **(a)**

2. _____of quad cable is eliminated in Equalizer amplifier system. **(c)**
   a) Loading
   b) Balancing
   c) Both A & B
   d) None of the above

3. _____is an additional facility in Equalizer amplifier system. **(d)**
   a) Remote Monitoring
   b) 8 way Intercom
   c) Automatic by-passing
   d) All the above

4. The dual power supply unit in Equalizer Amplifier system is used for _____. **(b)**
   a) Working of the equipment
   b) Charging the batteries
   c) Ringing of way station telephone
   d) None of the above

5. SOS code is sent by a _____ to test room equipment in case of fault. **(c)**
   a) Test room equipment
   b) Controller's equipment
   c) Way station equipment
   d) All the above

6. In addition to speech unit a DTMF _____ is also needed at control office. **(b)**
   a) Decoder
   b) Encoder
   c) Multiplexer
   d) All the above

7. In addition to Control telephone a DTMF _____ is also needed at way stations. **(a)**
   a) Decoder
   b) Encoder
   c) Multiplexer
   d) All the above

8. A speech conversion unit is used for _____. **(c)**
   a) Level matching
   b) Impedance matching
   c) 4 wire to 2 wire conversion
   d) All of the above

9. DTMF signal normal output level in Control office equipment is _____. **(d)**
   a) 0 dBm
   b) 0 to 20 dBm
   c) 20 to 0 dBm
   d) 0 to -7 dBm

Chapter-4:

1. Equipment used in Railtel's OFC control communication system are _____ In CCEO system. **(c)**
   a) STM 1
   b) PD Mux
   c) Both A & B
   d) None of the above

2. LTE can use _____ no. of 2-wire telephones. **(d)**
   a) 40
   b) 80
   c) 99
   d) 20

3. Maximum ____ no. of control telephones can be connected to one MTWE. **(b)**
   a) 2
   b) 4
   c) 6
   d) 8

4. Operating voltage required for CCEO system is _____. **(d)**
   a) 12V
   b) 24V
   c) 36V
   d) 48V

5. Dialling facility is not available in telephones connected to _____ equipment of CCEO. **(c)**
   a) CRE
   b) TRE
   c) LTE
   d) MTWE

6. Telephones having dialling facility are known as _____. **(d)**
   a) Control Telephones
   b) Magneto Telephones
   c) Auto Telephones
   d) TDCT

7. 2-wire telephone lines connected to LTE can be extended up to a distance of _____.**(a)**
   a) 1 Km
   b) 2 Km
   c) 4 Km
   d) 8 Km

8. 2-wire telephone lines connected to MTWE can be extended up to a distance of _____.**(b)**
   a) 1 Km
   b) 2 Km
   c) 4 Km
   d) 8 Km

9. TWA is used where _____. **(c)**
   a) More than 4 control telephones are to be provided
   b) RPE is provided
   c) Both A & B
   d) None of the above

10. Radio patching in CCEO system can be done remotely from _____. **(a)**
    a) TRE
    b) CRE
    c) LTE
    d) TWA

Chapter-5:

1. Input and output impedance of equalizer type VF repeater is _____. **(b)**
    a) 600 Ohm
    b) 470 Ohm
    c) 1120 Ohm
    d) 150 Ohm

2. Main advantages of Equalizer Amplifier system are _____. **(d)**
    a) Automatic bypassing.
    b) Reversal of amplifier direction while patching is not required.
    c) Loading and condenser joints in cable are eliminated.
    d) All of the above.

3. 4-way amplifier is available in _____ system. **(b)**
    a) Conventional repeaters
    b) Equalizer type repeaters
    c) CCEO
    d) Overhead line

4. Mention an extra facility available in Equalizer amplifier system. _____. **(d)**
    a) Remote monitoring
    b) In built Oscillator
    c) 8 way intercom
    d) All of the above

5. Maximum Tx and Rx amplifier gain that can be set in Equalizer amplifier is _____. **(d)**
    a) 12 dBm
    b) 24 dBm
    c) 5 dBm
    d) 20 dBm
6. Minimum gain selectable for Equalizer amplifier is _____. **(a)**
    a) 1 dBm
    b) 2 dB
    c) 4 dBm
    d) 8 dBm

Chapter-6:

1. Interconnection between section control and Dy. Control is called _____. **(b)**
    a) Transposition
    b) Patching
    c) Crossing
    d) None of the above

2. Separate equipment for radio patching is not needed in _____ system. **(b)**
    a) Impulse system
    b) DTMF
    c) Both A & B
    d) None of the above

3. The Radio patch connection is taken from Buffer ____ in Indisco equipment. **(a)**
    a) 2
    b) 1
    c) Both A & B
    d) None of the above

Chapter-7:

1. There is no _____ facility in a Control Telephones provided at way stations. **(c)**
   a) Patching
   b) Speech
   c) Dialling
   d) None of the above

2. A universal control telephone has a _____ in addition to control phone. **(b)**
   a) DTMF Encoder
   b) DTMF Decoder
   c) Both A & B
   d) None of the above

3. A portable EC telephone is used by _____. **(c)**
   a) Guard
   b) Loco Pilot
   c) Both A & B
   d) None of the above

4. A 2-wire 12-way telephone consists of one master and _____slave phones. **(b)**
   a) 5
   b) 10
   c) 12
   d) 15

5. Electronic LC gate phone has one master and _____ slave phones. **(c)**
   a) 2
   b) 4
   c) 6
   d) 8

6. Master phone of Electronic LC gate system operates on _____ DC supply. **(b)**
   a) 3 V
   b) 12V
   c) 24V
   d) 48V

7. IWCCE can replace all _____ used at a way station. **(a)**
   a) Control Telephones
   b) Auto telephones
   c) LC gate telephones
   d) All of the above

8. _____ number of control circuits can be connected to IWCCE. **(d)**
   a) 2
   b) 4
   c) 6
   d) 8

9. _____ number of control telephones can be connected to IWCCE. **(c)**
   a) 6
   b) 24
   c) 30
   d) 12

10. In Indian Railway, Voice data logger is provided in _____. **(b)**
    a) Control Office
    b) Testroom
    c) Way stations
    d) All the above

11. Minimum no. of speech channels recorded by one voice logger unit is _____. **(c)**
    a) 2
    b) 3
    c) 4
    d) 6

12. SCADA system is operating through _____ control circuit. **(d)**
    a) Section
    b) Traction Power

c) Traction Loco
d) Remote

13. Auto dialing system is used in emergencies for providing _____ facility at track side. **(d)**
a) Control
b) Auto Phone
c) BSNL phone
d) All of the above

Chapter-8:

1. _____ sound is the result of an earth fault on overhead circuits. **(c)**
a) Whistling
b) Hauling
c) Crackling
d) Noise

2. On UG cable circuit transmission loss test periodicity is _____. **(b)**
a) Weekly
b) Monthly
c) Bi Monthly
d) Half yearly

3. Value of psophometric noise level should be below _____. **(c)**
a) 5mV
b) 10mV
c) 2mV
d) 8mV

Chapter-9:

1. If there is no Trans from controller one of the likely cause can be _____. **(d)**
a) Amplifier failure
b) Power supply failure
c) Input from Mic not available
d) Any one of the above

2. If there no ringing at a way station one of the likely cause can be _____. **(d)**
a) Faulty DTMF decoder
b) Wrong code setting
c) Rx amplifier failure
d) Any one of the above

3. _____can result in both way communication loss with the controller. **(d)**
a) Equipment failure
b) DC power supply failure
c) Cable failure
d) Any one of the above

4. There is no communication beyond an intermediate VF repeater. The cause may be _____. **(d)**
a) Repeater amplifier failure
b) Repeater power supply failure
c) Cable failure
d) Any one of the above

Chapter-10:

1. Computer connectivity to the Voice logger is through Ethernet port. **(a)**

a) True b) False

2. The DC power supply required for the operation of Voice logger is _____. **(a)**
   a) 12V c) 36V
   b) 24V d) 48V

3. POH (Phone off hook) mode is used for recording voice over telephone and VOX mode is used for recording voice over control circuits. **(a)**
   a) True b) False

4. The Voice logger used in control communication has a built in hard disc of _____ capacity. **(c)**
   a) 2 GB c) 40 GB
   b) 16 GB d) 80 GB

5. Recordings are saved automatically in HDD of logger as well as in the HDD of PC simultaneously. **(a)**
   a) True b) False

6. RJ 11 connectors are used to connect control voice channels to the Voice logger. **(a)**
   a) True b) False

Chapter- 11:

1. The Train management system provides 'On Line' information of train movements to the various railway agencies. **(a)**
   a) True b) False

2. _____ have been installed in TMS control room for viewing of live train movements, track lay out, status of points, signal aspects and status of level crossing gates. **(a)**
   a) Display Boards c) Control Chart
   b) NMS d) None of the above

3. On line Video display unit enables the master in optimum planning of train movements in his jurisdiction. **(a)**
   a) True b) False

4. Train indication boards, Video display units and Audio announcement systems work on _____ basis to avoid wrong display and announcements. **(b)**
   a) Off line c) Real time
   b) On line d) None of the above

5. The Tx and Rx frequency used for Mobile train communication between trains and Control centre is _____. **(c)**

a) 2.4 GHz
b) 165.5 MHz
c) 338-355 MHz
d) 1 KHz

6. Mobile communication in TMS guides the driving crew as well as to inform the travelling public during traffic dislocations. **(a)**
a) True
b) False

Chapter-12:

1. Significant impedance mismatch degrades voice quality due to the connecting of way station equipments to the same point. **(c)**
a) True
b) False

2. Gateways shall be used for connecting TCCS with Railway Telephone exchanges, emergency communication circuit and Analog control telephones. **(a)**
a) True
b) False

3. In VOIP based TCCS, IP phones shall be provided to way side station masters and other users of control circuits. **(a)**
a) True
b) False

4. Remote configuration and real time performance monitoring of TCCS shall be done by centralized _____. **(b)**
a) Control
b) NMS
c) Server
d) None of the above

5. The communication server shall deny any intruder to access TCCS using _____. **(a)**
a) False Identity
b) Wrong password
c) Wrong User name
d) None of the above

6. Since VOIP is internationally accepted technology, future improvement in the system shall also benefit the TCCS. **(a)**
a) True
b) False

Objective Question Bank

Chapter-1:

1. In telephony,transmission of speech current on copper cable is termed as **(a)**
   a. line telephony
   b. wired telephony
   c. impedance matched telephony
   d. non of the above

2. To connect a telephone instrument a single pair of copper wires is required **(a)**
   a. True
   b. false

3. Copper wires are used in telephony due to **(b)**
   a. low cost
   b. less attenuation and distortion
   c. easily available
   d. good resale value

.

4. A good transmission line has **(a)**
   a. low insulation resistance
   b. small conductor diameter
   c. less amount of current carrying capacity
   d. none of the above

5. Main distribution frame is **(d)**
   a. connecting exchange output to field cable
   b. a testing place for physical line parameters
   c. used for providing protective devices
   d. all the above

6. Card frame is meant for **(a)**
   a. housing the cards
   b. connecting only control cards
   c. protection devices
   d. none of the above

7. Power supply panel is responsible for **(d)**
   a. power supply to peripheral cards
   b. power supply to control cards
   c. ringing power supply to subscribers
   d. both a and b

8. Two subscriber connected in the same exchange is called as **(b)**
   a. trunk switching
   b. local switching
   c. group switching
   d. none of the above

9. SPC stands for **(a)**
   a. stored program control
   b. storage program control
   c. strong program control
   d. simple program control

10. Loop signalling is extended from **(b)**
    a. subscriber to subscriber
    b. subscriber to exchange
    c. exchange to subscriber
    d. exchange to exchange

Chapter-2:

1. Push button telephone means **(a)**
   a. dial pad for dialling digits.
   b. a button provided to start the phone
   c. a push button to disconnect the line
   d. a phone with special previlages

2. A phone type connected between boss an secretary is a **(a)**
   a. main and extension type
   b. ordinary pair of two phones
   c. only one phone shared between them
   d. none of the above

3. CLIP stands for **(b)**
   a. caller line identity permission
   b. caller line identity presentation
   c. call incoming line permitted
   d. caller inbound line promise

4. Cordless phone works on **(a)**
   a. radio trnsmission
   b. wired transmission
   c. both a and b
   d. none of the above

5. In on hook condition, **(a)**
   a. line is connected to ringer circuit
   b. line is connected to dialler circuit
   c. line is totally disconnected from exchange
   d. none of the above

6. In off hook condition, **(a)**
   a. line is connected to the dialler circuit
   b. line is connected to the ringer circuit
   c. line is connected to the amplifier circuit
   d. none of the above

7. DTMF stands for **(b)**
   a. Double tone multiplexed frequency
   b. dual tone multy frequency
   c. dual tone multiple frequencies
   d. dual tone mixed frequencies

8. Dial lock means **(b)**
   a. no dialling allowed
   b. digits can not be dialled
   c. only incoming call allowed
   d. no incoming and outgoing from the phone

9. IP phones are connected on **(a)**
   a. internet LAN switch
   b. directly to the exchange subscriber interface
   c. copper pair to the exchange
   d. none of the above

10. IP phones are often called as **(a)**
    a. SIP phones
    b. plus feature phone
    c. digital phone
    d. caller id phone

Objective Question Bank

Chapter-1:

1. In ISDN what does the word 'N' stands for **(a)**
   a. Network
   b. near
   c. networking
   d. net

2. ISDN means -integrated service digital network **(a)**
   a. TRUE
   b. FALSE

3. What type of Signalling is used in ISDN Exchanges **(b)**
   a. CAS
   b. CCS- 7
   c. MFC
   d. R2-MFC

4. What is the D-channel data rate in ISDN Bri Interface **(b)**
   a. 64 Kbps
   b. 16 Kbps
   c. 48 Kbps
   d. 16KBps

5. What is the D-channel data rate in ISDN PRI Interface **(c)**
   a. 64 KBps
   b. 72 Kbps
   c. 64 Kbps
   d. 16 Kbps

6. In ISDN ,BRI Transmission rate are **(d)**
   a. 128 Kbps
   b. 144 Kbps
   c. 2048 Kbps
   d. 192 Kbps

7. In ISDN PRI Transmission rate are **(a)**
   a. 2048 Kbps
   b. 2000 Kbps
   c. 2.048 Kbps
   d. 2048 Mbps

8. How many channels at present in European PRI interface rate **(b)**
   a. 32 Channels
   b. 30 Channels
   c. 23 Channels
   d. 64 channels

9. How many Time slots at present in European PRI interface rate **(a)**
   a. 32 Time slots
   b. 30 Time slots
   c. 23 Time slots
   d. 64 Time slots

10. What is the H0-channel date in ISDN **(d)**
    a. 512 Kbps
    b. 1024 Kbps
    c. 192 Kbps
    d. 384 Kbps

11. What is the reference point between ISDN local exchange to Network termination 1 at Customer premises **(d)**
    a. R- Interface
    b. T- Interface
    c. S/T- Interface
    d. U- Interface

12. What is the reference point between Terminal Adapter and terminal equipment 2 at Customer premises **(c)**
    a. U- Interface
    b. T- Interface
    c. R- Interface
    d. S/T- Interface

13. What type of encoding is used in customer premises to ISDN Switch – **(d)**
    a. 2B/2Q
    b. 1B/1Q
    c. 1B/2Q
    d. 2B/1Q

14. HLDC means High-level Data link control. **(a)**
    a. TRUE
    b. FALSE

Chapter-2:

1. CLIP**-** Calling line identification presentation **(a)**
    a. TRUE
    b. FALSE

2. COLP- Connected line identification presentation **(a)**
    a. TRUE
    b. FALSE

3. CUG –Closed user group **(a)**
    a. TRUE
    b. FALSE

4. CTI- Computer telephony integration **(a)**
    a. TRUE
    b. FALSE

5. ACD-automatic call distribution **(a)**
    a. TRUE
    b. FALSE

6. DECT-Digital enhanced cordless telephone **(a)**
    a. TRUE
    b. FALSE

7. CAP- Computerized Attendant Position **(a)**
    a. TRUE
    b. FALSE

8. Main processor MEX card of coral flexicom 5000 contains _____ processor – **(a)**
    a. 80386
    b. 80286
    c. 8086
    d. 80186

Chapter-3:

1. Which is the control card in coral flexicom 6000 ? **(d)**
    a. UGW
    b. iDSP
    c. DTR
    d. MCP

2. Which is the switching card in coral flexicom 6000 ? **(d)**
    a. DTR
    b. IDSP
    c. MCP
    d. GC

3. Which is the peripheral card in coral flexicom 6000 ? **(d)**
   a. MCP
   b. CNF
   c. DTR
   d. SFT

4. Which is the service card in coral flexicom 6000 ? **(d)**
   a. TEM
   b. SFT
   c. SA
   d. DTR

5. Which is the analog subscriber card in coral flexicom 6000 ? **(d)**
   a. TBR
   b. TWL
   c. SFT
   d. SA

6. Which is the digital subscriber card in coral flexicom 6000 ? **(d)**
   a. TBR
   b. TEM
   c. SA
   d. SFT

7. Which is the analog trunk card in coral flexicom 6000 ? **(d)**
   a. SFT
   b. PRI
   c. TBR
   d. TEM

8. Which is the digital trunk card in coral flexicom 6000 ? **(d)**
   a. TC
   b. TWL
   c. TEM
   d. PRI

9. Which is the BRI card in coral flexicom 6000 ? **(d)**
   a. TWL
   b. TC
   c. TEM
   d. TBR

10. Which is the VoIP card in coral flexicom 6000 ? **(d)**
    a. MCP
    b. SFT
    c. IDSP
    d. UGW

11. Which is the DTMF tone dialing support card in coral flexicom 6000 ? **(d)**
    a. GC
    b. MCP
    c. IDSP
    d. DTR

12. Which is the caller ID card in coral flexicom 6000 ? **(d)**
    a. GC
    b. MCP
    c. DTR
    d. IDSP

13. Which is the multifunction resource card in coral flexicom 6000 ? **(d)**
    a. DTR
    b. IDSP
    c. MCP
    d. DRCF

14. Which card contains serial ports in coral flexicom 6000 ? **(d)**
    a. MCP
    b. UGW
    c. IDSP
    d. DRCF

15. Which card contains internal modem in coral flexicom 6000 ? **(d)**
    a. UGW
    b. GC
    c. MCP
    d. DRCF

16. What is the ringing voltage for analog phones in ISDN exchanges ? **(d)**
    a. 75V@40 Hz
    b. 75V@35 Hz
    c. 75V@30 Hz
    d. 75V@25 Hz

17. Which card contains COM2 port in coral flexicom 6000 ? **(d)**
    a. UGW
    b. GC
    c. MCP
    d. DRCF

18. Which card contains SAU in coral flexicom 6000? **(d)**
    a. IDSP
    b. UGW
    c. MCP
    d. GC

19. How many peripheral shelves are supported in coral flexicom 6000? **(c)**
    a. 12
    b. 14
    c. 16
    d. 18

20. How many slots are there in a peripheral shelf in coral flexicom 6000? **(c)**
    a. 14
    b. 16
    c. 18
    d. 20

21. In which slot PB-ATS card is available in coral flexicom 6000? **(c)**
    a. 1
    b. 2
    c. 1 and 2
    d. 3

22. At Maximum how many shelves are controlled by one PB card in coral flexicom 6000? **(b)**
    a. 1
    b. 2
    c. 3
    d. 4

23. How many time slots are allotted for one peripheral shelf in coral flexicom 6000 ? **(b)**
    a. 128
    b. 256
    c. 512
    d. 1024

24. How many time slots are allotted for each PB card in coral flexicom 6000 ? **(c)**
    a. 128
    b. 256
    c. 512
    d. 1024

25. What is the time slot switching capacity of 32GC card in coral flexicom 6000 ? **(c)**
    a. 1024
    b. 2048
    c. 4096
    d. 8192

26. How many connectors in MPG-ATS for each 32GC card in coral flexicom 6000 ? **(c)**
    a. 4
    b. 6
    c. 8
    d. 10

27. How many IP ports are supported by a UGW card in coral flexicom 6000 ? **(d)**
    a. 254 c. 250
    b. 252 d. 248

28. How many pairs are required to connect a digital telephone in coral flexicom 6000 ? **(d)**
    a. 4 c. 2
    b. 3 d. 1

29. What is the nominal working voltage for isdn exchanges ? **(d)**
    a. 54v dc c. 50v dc
    b. -52v dc d. - 48v dc

30. How many pairs are required to connect PRI trunk ? **(b)**
    a. 1 c. 3
    b. 2 d. 4

31. Up to what length a digital telephone works on 0.5mm dia copper pair ? **(a)**
    a. 1 km c. 3 km
    b. 2 km d. 4 km

32. FXS means Foreign Exchange Subscriber **(a)**
    a. TRUE b. FALSE

33. Hyper terminal default bit rate for accessing coral flexicom 6000 is **(b)**
    a. 9600 Kbps c. 9.6 bits
    b. 9600 bits d. 9600 Bytes

34. Clocking and synchronization of exchange was done by which card- **(a)**
    a. 32 GC c. DRCF
    b. MCP-ATS d. DTR

35. Which card is Digital tone generators in coral flexicom 6000 - 32GC **(a)**
    a. 32 GC c. DRCF
    b. MCP-ATS d. DTR

36. Which card is used for computer-telephony integration in Coral flexicom-6000 **(c)**
    a. 32 GC c. CLA-ATS
    b. MCP-ATS d. DTR

37. In a particular copy the diagnostic indicator present in 32 GC card "S- Green "– light is constant then that copy is in which mode in Coral flexicom-6000 **(a)**
    a. Standby mode c. Active mode
    b. maintenance mode d. Faulty Mode

38. What is child card present at the back side of Mother board of PB-ATS card- in even peripheral shelf in Coral flexicom-6000 **(a)**
    a. PBD-ATS
    b. MGP-ATS
    c. CLA-ATS
    d. PBD-24S

39. What type of cable is used to connect between MPG-ATS to PBD-ATS of coral flexicom 6000 **(a)**
    a. FC-19
    b. FC-18
    c. H.43
    d. H.41

40. What is the number of peripheral shelf unit, if it is connected to Port P5 of right copy or port P13 of left copy of MPG-ATS in control self through FC-19 cable in Coral flexicom-6000 **(a)**
    a. Unit 4
    b. Unit 5
    c. Unit 8
    d. Unit 9

41. What is numbering of even and odd shelf of Peripheral shelf unit 6 **(d)**
    a. shelf-13, shelf 14
    b. shelf-2, shelf 3
    c. shelf-11, shelf 12
    d. shelf-12, shelf 13

42. What additional facility does SA card compared to SLS card in coral flexicom 6000 **(c)**
    a. Inbuilt ringer circuit
    b. High loop resistance
    c. both a and b
    d. None of the none

Chapter-4:

1. How many slots are there in siemens hipath 3800 exchange ? **(c)**
    a. 14
    b. 8
    c. 10
    d. 12

2. Which slot contains main control card in siemens hipath 3800 exchange ? **(b)**
    a. 5
    b. 6
    c. 7
    d. 8

3. How many pairs are wired for each slot to MDF in siemens hipath 3800 exchange ? **(b)**
    a. 22
    b. 24
    c. 26
    d. 28

4. How many DECT cards are supported in siemens hipath 3800 exchange ? **(d)**
    a. 1
    b. 2
    c. 3
    d. 4

5. How many ports are there in a DECT card in siemens hipath 3800 exchange ? **(b)**
    a. 14
    b. 16
    c. 18
    d. 20

6. How many radio base stations are supported in siemens hipath 3800 exchange ? **(b)**
    a. 32
    b. 64
    c. 256
    d. 128

7. How many pairs are required to connect a base station in hipath 3800 exchange? **(a)**
   a. 1
   b. 2
   c. 3
   d. 4

8. How many simultaneous calls are supported by one base station in hipath 3800? **(c)**
   a. 5
   b. 10
   c. 16
   d. 20

9. How many DECT handsets are supported in siemens hipath 3800 exchange? **(b)**
   a. 250
   b. 256
   c. 254
   d. 252

10. What is the radius of operation of a base station in siemens hipath 3800 exchange? **(c)**
    a. 100 mts
    b. 200 mts
    c. 300 mts
    d. 400 mts

11. How many power supply unit does siemens hipath 3800 can accommodate **(c)**
    a. 1
    b. 2
    c. 3
    d. 4

12. Battery power supply connected to which pin on mother board of Siemens Hi-path 3800 **(a)**
    a. X210
    b. X211
    c. X110
    d. X 100

13. What is the name of Digital BRI card in Siemens Hi-path Exchange? **(a)**
    a. SMTD
    b. SLMO
    c. SMTO
    d. SLCN

14. Which card of Siemens Hipath 3800 Supports Cordless Telephone? **(a)**

a. SLCN
b. SMTD
c. DUIN
d. DUIT

Objective Question Bank

Chapter-1:

1. Telephone singals are needed to **(a)**
   a. establish and release the call
   b. listen the others call
   c. select language of display board
   d. setting date and time

2. Signalling in telephony is **(a & b)**
   a. set of rules to establish a call
   b. matter of choice to choose some set of rules
   c. both a and b
   d. dont know

3. Call request signal means **(a)**
   a. loop signal from subscriber to exchange
   b. loop signal from exchangeto subscriber
   c. on hook signal to exchange
   d. none of the above

4. Call release signal means **(d)**
   a. time bound call release
   b. forced release the call
   c. normal release of call
   d. all the above

5. Selection information means **(a)**
   a. information of the called subscriber
   b. information about calling subscriber
   c. both a and b
   d. information about originating exchange

6. Address information can be send to exchange in the form of **(a)**
   a. pulse or tone dialling
   b. tapping the phone
   c. voice recognition at exchange
   d. a and c

7. In off hook signal, **(a)**
   a. dial tone is fed to the subscriber
   b. confirmation tone is sent to the subscriber
   c. acceptance tone is sent to the subscriber
   d. non of the above

8. In magneto telephone, only **(b)**
   a. dial tone is sent to the subscriber

b. ringing current is sent on line to the called subscriber
c. ring back tone is sent to called subscriber
d. none of the above

9. In any SPC exchange, **(d)**
a. more complex signals can be exchnaged
b. only few signals can be sent
c. choice of signalling can be selected
d. a and c

10. -48 volt is fed to the subscriber line when **(d)**
a. it is off hook mode
b. it is onhook mode
c.it is i talk mode
d. in all the three above mode

11. Pulse dialling is achieved by **(a)**
a. makes and breaks in subscriber loop line
b. generating a tone for a corresponding interrupt
c. number of breaks in subscriber loop line
d.only number of makes in subscriber loop line

12. Inter digit pause is required to differentiate between consecutive digits **(a)**
a. True
b. False

13. DTMF dialling uses two sets of voice frequencies **(a)**
a. True
b. False

14. Pulse dialling is faster than DTMF dialing **(b)**
a. True
b. False

15. Answer back signal is **(a)**
a. off hook signal from called subscriber
b. when speech starts between two subscriber
c. when call is about to release
d. none of the above

16. Permanent line signal means **(a)**
a. busy tone signal
b. signal received after call gets disconnected
c. signal ahead of off hook signal
d. none of the above

17. Register recall signal is a **(a)**
a. optional signal
b. compulsory signal before speech start
c. compulsory signal after speech start

d. both b and c

18. Register recall signal can be used **(c)**
    a. before the speech start
    b. during the speech
    c. both a and b
    d. none of the above
19. Trunk signalling is **(a)**
    a. inter-exchange signalling
    b. signalling between subscribers pair
    c. signalling between subscriber and exchange
    d. both b and c
20. Trunk signalling can be **(c)**
    a. in-band signalling
    b. out-of-band signalling
    c. both a and b
    d. none of the above
21. Compelled signalling is reliable and enables transmission of complex signals **(a)**
    a. True
    b. False
22. Metallic loop signalling is use both in subscriber lines and trunk lines **(a)**
    a. True
    b. False
23. Metallic loop signalling cannot support long distance trunk line. **(a)**
    a. True
    b. False
24. For long distance support, the metallic loop signalling is converted into single frequency tone. **(a)**
    a. True
    b. False
25. In E &M signaling **(a)**
    a. M lead is forwar signal
    b. M lead is backward signal
    c. E lead is forward lead
    d. none of the above
26. CSMF stands for **(b)**
    a. complete sequence multi-frequency
    b. compelled sequence multi-frequency
    c. compelled sequence multiplexed frequecy
    d. none of the above
27. R2 signalling uses six forward and six backward group frequencies. **(a)**
    a. True
    b. False
28. R2 signalling uses total 10 combinations of frequencies **(a)**
    a. True
    b. False
29. R2 signalling often referred as self checking system **(a)**
    a. True
    b. false

30. Digital signalling systems are **(b)**
    a. channel associate signalling system
    b. common channel signalling system
    c. integrated channel signalling system
    d. none of the above

31. When signalling information is sent along with the speech channel it is know as channel associated signalling system. **(a)**
    a. True
    b. False

32. Uniform numbering plans are suitable to route the call in local area networks **(a)**
    a. True
    b. False

33. Non-uniform numbering plans on international network will function properly only if guiding digits are assigned properly. **(a)**
    a. True
    b. False

34. Q sig is an ISDN protocol **(a)**
    a. True
    b. False

35. All PBX's connected on Qsig can use features and services from a centralised location **(a)**
    a. True
    b. False

36. Supplementary services between PBX's are provided by **(b)**
    a. H323 protocol
    b. Qsig protocol
    c. H251 protocol
    d.none of the above

37. If the dialled number is found busy, we can opt for **(b)**
    a. call transfer
    b. call back or camp on
    c. call reminder
    d. call forward

38. If the dialled number is free but not responding, we can opt for **(a)**
    a. camp on no response
    b. try another number
    c. call park
    d. call divert

39. If three person connected in one call, it is a **(c)**
    a. group call
    b. hunt group call
    c. 3-way conf
    d. none of the above

40. One of the following is not a service provided by intelligent networks **(c)**
    a. tele voting
    b. toll free numbers
    c. call transfer on busy condition
    d. number portability

Chapter -2: Signalling system -7 (SS7)

1. SS7 signalling systems are also refered as **(a)**
    a. Common channel signalling
    b. Control channel signalling
    c. Channel associated signalling
    d. None of the above

2. Almost all type of communication system around the globe use SS7 system **(a)**
   a. True b. False

3. Tele-marketing numbers are toll free and can be dialled from any phone in the network **(a)**
   a. True b. False

4. Cetrallised Directory is one of the service in **(a)**
   a. Common channel signalling system c. Special service channels
   b. Associtaed channel signalling d. All the above

5. Services for the users are defined in **(c)**
   a. Subscriber data base c. Class of service in data base
   b. Exchange data base d. None of the above

6. Number portability means using the same number any were in the network. **(a)**
   a. True b. False

7. Signalling information is pocessed fast in **(c)**
   a. Channel associated signalling c. Common channel signalling
   b. Special signalling channels d. A and c

8. Common channel signalling system carries the messages in the form of **(a)**
   a. Signalling packets c. Physical signals
   b. Jacket of packets d. Tone signals

9. “Overlaid network” means packet switched network overlaid on Circuit switched network.
   a. True b. False **(a)**

10. SS7 signalling supports sending text messages from analog phone to GSM phones. **(a)**
    a. True b. False

Chapter-3: SS7 Architecture

1. SS7 control messages are handled by **(a)**
   a. Signal switching points c. Signal control points
   b. Signal reciever points d. None of the above

2. Routing the signalling packets to other STP and SSP is done by **(a)**
   a. Signal transfer point c. Signal reciever point
   b. Signal control point d. None of the above

3. Signal control points are responsible for **(a)**
   a. Providing information messages from data base
   b. Providing information messages from other STP
   c. Providing information messages from other SCP
   d. None of the above

4. Access Links provide connection between all SCP to the main STP backbone **(a)**
   a. True b. False

5. Cross links or C links are connecting mated pair of STP's **(a)**
   a. True b. False

6. Cross links and bridge links are almost same in behavior **(a)**
   a. True b. False

7. Diagonal links or D links are connecting **(b)**
   a. Mated pair of STP's in the same network
   b. Mated pair of STP's in different network
   c. Mated pair of SCP's in the same network
   d. None of the above

8. Extended links or E links are responsible for connecting different mated pair of STP's with
   a. SCP and SSP c. SP and SSP **(a)**
   b. STP and SCP d. None of the above

9. Fully associated links or F links are connecting all SSP and SCP directly without using STP
   a. True b. False **(a)**

10. SSP is the end point of control messages **(a)**
    a. True b. False

Chapter-4: SS7 protocol suite

1. Exchanging signalling information between network elements is done by **(a)**
   a. Message transfer point c. Network layer
   b. Data link layer d. None of the above

2. Which one of the following is not the layer in MTP **(d)**
   a. Physical layer c. Network layer
   b. Data link control layer d. Transport layer

3. Physical layer in MTP provides full duplex data connection in SS7 traffic **(a)**
   a. True b. False

4. Data rate which can be transmitted on physical layer **(b & d)**
   a. 64kbps only
   b. 64 kbps and 2048 kbps
   c. Only 2048 kbps
   d. Low data below 64kbps also can be sent

5. Data link layer in MTP is responsible for Transmitting signalling messages **(a)**
   a. True b. False

6. If you observe a link loss indication on PRI card it means the message is from **(b)**
   a. Physical layer
   b. Data layer
   c. Network layer
   d. All the three
7. Handling signalling messages is one of the function of network layer **(a)**
   a. True
   b. False
8. Link management and route management functions are done by **(c)**
   a. Physical layer
   b. Data layer
   c. Network layer
   d. None of the above
9. Functionality provided by layer 2 of MTP are taken care by **(a)**
   a. Network layer
   b. Physical layer
   c. Control layer
   d. Layer 2 itself
10. With the help of MTP, we ale able to achieve **(d)**
    a. Alternate routing function
    b. Unified dial plan
    c. Faster communication
    d. All the above

Chapter-5: Functions of higher layers of SS7

1. SCCP stands for siganlling connection control part **(a)**
   a. True
   b. False
2. SCCP performs the majority of functions which are limited in **(a)**
   a. MTP layers
   b. SCP and STP
   c. SSP's
   d. None of the above
3. GTT or global title translation function is performed by higher layer called **(b)**
   a. MTP
   b. SCCP
   c. SSP's
   d. None of the above
4. Transaction capabilities application part is used for providing value added services **(a)**
   a. True
   b. False
5. Operation Maintenance and Administration Part assist in **(d)**
   a. Administring the network
   b. Validating routing tables in the network
   c. Diagnosing the link faults
   d. All the above
6. MSC (mobile switching center) is the element of GSM network **(a)**
   a. True
   b. False
7. Mobile switching centers are responsible for call control **(a)**
   a. True
   b. False
8. In GSM network,location update is done by **(b)**

a. Mobile phone
b. Visitors locator register
c. Home locator register
d. Any other element

9. BSSAP stands for base station subsystem application part **(a)**
   a. True
   b. False

10. BSSAP layer is used when **(a & b)**
    a. MSC communicate with BSC
    b. BSC communicates with MSC
    c. Mobile set communicate with BSC
    d. Both a and b

11. Mobile application part is used for communication between network subsystems. **(a)**
    a. True
    b. False

Objective Question Bank

Chapter-1:

41. Telephone singals are needed to **(a)**
a. establish and release the call
b. listen the others call
c. select language of display board
d. setting date and time
ANS: a

42. Signalling in telephony is **(a)**
a. set of rules to establish a call
b. matter of choice to choose some set of rules
c. both a and b
d. dont know
ANS: a and b

43. Call request signal means **(a)**
a. loop signal from subscriber to exchange
b. loop signal from exchangeto subscriber
c. on hook signal to exchange
d. none of the above
ANS: a

44. Call release signal means **(a)**
a. time bound call release
b. forced release the call
c. normal release of call
d. all the above
ANS: d

45. Selection information means **(a)**
a. information of the called subscriber
b. information about calling subscriber
c. both a and b
d. information about originating exchange
ANS: a

46. address information can be send to exchnage in the form of **(a)**
a. pulse or tone dialling
b. tapping the phone
c. voice recognition at exchange
d. a and c
ANS: a

47. in off hook signal, **(a)**
a. dial tone is fed to the subscriber
b. confirmation tone is sent to the subscriber
c. acceptance tone is sent to the subscriber
d. non of the above
ANS: a

48. in magneto telephone, only **(a)**
a. dial tone is sent to the subscriber
b. ringing current is sent on line to the called subscriber
c. ring back tone is sent to called subscriber
d. none of the above
ANS: b

49. in any SPC exchange, **(a)**
a. more complex signals can be exchnaged
b. only few signals can be sent
c. choice of signalling can be selected
d. a and c
ANS: d

50. -48 volt is fed to the subscriber line when **(a)**
a. it is off hook mode
b. it is onhook mode
c.it is i talk mode
d. in all the three above mode
ANS: d

51. pulse dialling is achieved by **(a)**
a. makes and breaks in subscriber loop line
b. generating a tone for a corresponding interrupt
c. number of breaks in subscriber loop line
d.only number of makes in subscriber loop line
ANS: a

52. inter digit pause is required to differentiate between consecutive digits **(a)**
a. True
b. False
ANS: a

53. DTMF dialling uses two sets of voice frequencies **(a)**
a. True
b. False
ANS: a

54. pulse dialling is faster than DTMF dialing **(a)**
a. True
b. False
ANS: b

55. answer back signal is **(a)**

a. off hook signal from called subscriber
b. when speech starts between two subscriber
c. when call is about to release
d. none of the above
ANS: a

56. permanent line signal means **(a)**
a. busy tone signal
b. signal recieved after call gets disconnected
c. signal ahead of off hook signal
d. none of the above
ANS: a

57. register recall signal is a **(a)**
a. optional signal
b. compulsary signal before speech start
c. compulsary signal after speech start
d. both b and c
ANS: a

58. register recall signal can be used **(a)**
a. before the speech start
b. during the speech
c. both a and b
d. none of the above
ANS: c

59. trunk signalling is **(a)**
a. inter-exchange signalling
b. signalling between subscribers pair
c. signalling between subscriber and exchange
d. both b and c
ANS: a

60. trunk signalling can be **(a)**
a. in-band signalling
b. out-of-band signalling
c. both a and b
d. none of the above
ANS: c

61. compelled signalling is reliable and enables transmission of complex signals **(a)**
a. True
b. False
ANS: a

62. metallic loop signalling is use both in subscriber lines and trunk lines **(a)**
a. True
b. False
ANS: a

63. metallic loop signalling can not support long distance trunk line. **(a)**
a. True
b. False
ANS: a

64. for long distance support, the metallic loop signalling is converted into single frequency tone. **(a)**
a. True
b. False
ANS: a

65. in E &M signaling **(a)**
a. M lead is forwar signal
b. M lead is backward signal
c. E lead is forward lead
d. none of the above
ANS: a

66. CSMF stands for **(a)**
a. complete sequence multi-frequency
b. compelled sequence multi-frequency
c. compelled sequence multiplexed frequecy
d. none of the above
ANS: b

67. R2 signalling uses six forward and six backward group frequencies. **(a)**
a. True
b. False
ANS: a

68. R2 signalling uses total 10 combinations of frequencies **(a)**
a. True
b. False
ANS: a

69. R2 signalling often refered as self checking system **(a)**
a. True
b. false

70. digital signalling systems are **(a)**
a. channel associate signalling system
b. common channel signalling system
c. integrated channel signalling system
d. none of the above
ANS: b

71. when signalling information is sent along with the speech channel it is know as channel associated signalling system. **(a)**
a. True
b. False
ANS: a

72. uniform numbering plans are suitable to route the call in local area networks **(a)**
a. True
b. False
ANS: a

73. non-uniform numbering plans on international network will function properly only if guiding digits are assigned properly. **(a)**
a. True
b. False

ANS: a

74. Qsig is an ISDN protocol **(a)**
a. True
b. False
ANS: a

75. all PBX's connected on Qsig can use features and services from a centralised location **(a)**
a. True
b. False
ANS: a

76. supplementry services between PBX's are provided by **(a)**
a. H323 protocol
b. Qsig protocol
c. H251 protocol
d.none of the above
ANS: b

77. if the dialled number is found busy, we can opt for **(a)**
a. call transfer
b.call back or camp on
c. call reminder
d. call forward
ANS: b

78. if the dialled number is free but not responding, we can opt for **(a)**
a. camp on no response
b. try another number
c. call park
d. call divert
ANS: a

79. if three person connected in one call, it is a **(a)**
a. group call
b. hunt group call
c. 3-way conf
d. none of the above
ANS: c

80. one of the following is not a service provided by intelligent networks **(a)**
a. tele voting
b. toll free numbers
c. call transfer on busy condition
d. number portability
ANS: c

Chapter -2 Signalling system -7 (SS7)

11. SS7 signalling systems are also refered as
e. Common channel signalling
f. Control channel signalling
g. Channel associated signalling
h. None of the above
ANS: a

12. Almost all type of communication system around the globe use SS7 system

c. True
d. False
ANS: T

13. Tele-marketing numbers are toll free and can be dialled from any phone in the network
c. True
d. False
ANS: a

14. Cetrallised Directory is one of the service in
e. Common channel signalling system
f. Associtaed channel signalling
g. Special service channels
h. All the above
ANS: a

15. Services for the users are defined in
e. Subscriber data base
f. Exchange data base
g. Class of service in data base
h. None of the above
ANS: c

16. Number portability means using the same number any were in the network.
c. True
d. False
ANS: a

17. Signalling information is pocessed fast in
e. Channel associated signalling
f. Special signalling channels
g. Common channel signalling
h. A and c
ANS: c

18. Common channel signalling system carries the messages in the form of
e. Signalling packets
f. Jacket of packets
g. Physical signals
h. Tone signals
ANS: A

19. “overlaid network” means packet switched network overlaid on Circuit switched network.
c. True
d. False
ANS: a

20. SS7 signalling supports sending text messages from analog phone to GSM phones.
c. True
d. False
ANS: a

Chapter -3 SS7 Architecture

11. SS7 control messages are handled by
e. Signal switching points
f. Signal reciever points
g. Signal control points
h. None of the above
ANS: a

12. Routing the signalling packets to other STP and SSP is done by
e. Signal transfer point
f. Signal control point
g. Signal reciever point
h. None of the above
ANS: a

13. Signal control points are responsible for
e. Providing information messages from data base
f. Providing information messages from other STP
g. Providing information messages from other SCP
h. None of the above
ANS: a

14. Access Links provide connection between all SCP to the main STP backbone
c. True
d. False
ANS: a

15. Cross links or C links are connecting mated pair of STP’s
c. True
d. False
ANS: a

16. Cross links and bridge links are almost same in behaviour
c. True
d. False
ANS: a

17. Diagonal links or D links are connecting
e. Mated pair of STP’s in the same network

f. Mated pair of STP's in different network
g. Mated pair of SCP's in the same network
h. None of the above
ANS: b

18. Extended links or E links are responsible for connecting different mated pair of STP's with
e. SCP and SSP
f. STP and SCP
g. SP and SSP
h. None of the above
ANS: a

19. Fully associated links or F links are connecting all SSP and SCP directly without using STP
c. True
d. False
ANS: a

20. SSP is the end point of control messages
c. True
d. False
ANS: a

Chapter -4 SS7 protocol suite

11. Exchanging signalling information between network elements is done by
e. Massege transfer point
f. Data link layer
g. Network layer
h. None of the above
ANS: a

12. Which one of the following is not the layer in MTP
e. Physical layer
f. Data link control layer
g. Network layer
h. Transport layer
Ans: d

13. Physical layer in MTP provides full duplex data connection in SS7 traffic
c. True
d. False
ANS: a

14. Data rate which can be transmitted on physical layer
e. 64kbps only
f. 64 kbps and 2048 kbps
g. Only 2048 kbps
h. Low data below 64kbps also can be sent
ANS: b and d

15. Data link layer in MTP is responsible for Transmitting signalling messages
c. True
d. False
ANS: a

16. If you observe a link loss indication on PRI card it means the message is from
e. Physical layer
f. Data layer
g. Network layer
h. All the three
ANS: b

17. Handling signalling messages is one of the function of network layer
c. True
d. False
ANS: a

18. Link management and route management functions are done by
e. Physical layer
f. Data layer
g. Network layer
h. None of the above
ANS: c

19. Functionality provided by layer 2 of MTP are taken care by
e. Network layer
f. Physical layer
g. Control layer
h. Layer 2 itself
ANS: a

20. With the help of MTP, we ale able to achieve
e. Alternate routing function
f. Unified dial plan
g. Faster communication
h. All the above
ANS: d

Chapter -5 Functions of higher layers of SS7

12. SCCP stands for siganlling connection control part
c. True
d. False

ANS: a

13. SCCP performs the majority of functions which are limited in
e. MTP layers
f. SCP and STP
g. SSP's
h. None of the above
ANS: a

14. GTT or global title translation function is performed by higher layer called
e. MTP
f. SCCP
g. SSP's
h. None of the above
ANS: b

15. Transaction capabilities application part is used for providing value added services
c. True
d. False
ANS: a

16. Operation Maintenance and Administration Part assist in
e. Administering the network
f. Validating routing tables in the network
g. Diagnosing the link faults
h. All the above
ANS : d

17. MSC (mobile switching center) is the element of GSM network
c. True
d. False
ANS: A

18. Mobile switching centers are responsible for call control
c. True
d. False
ANS: a

19. In GSM network, location update is done by
e. Mobile phone
f. Visitors locator register
g. Home locator register
h. Any other element
ANS: b

20. BSSAP stands for base station subsystem application part
c. True
d. False
e.
f.
ANS: a

21. BSSAP layer is used when
e. MSC communicate with BSC
f. BSC communicates with MSC
g. Mobile set communicate with BSC
h. Both a and b
ANS: a and b

22. Mobile aaplication part is used for communication between network subsystems.
c. True
d. False
ANS: a

Objective Question Bank

1. Which of the following is NOT considered a VoIP protocol? **(b)**
   a. SIP
   b. SS7
   c. H.323
   d. MGCP

2. What is the bandwidth minimum that most experts recommend for good VoIP call signal quality? **(c)**
   a. 16 kbps
   b. 56 kbps
   c. 90 kbps
   d. 256 kbps

3. What kind of circuitry is used in VoIP to convert analog voice to digital signals for transmission, and digital signals to analog voice for playback? **(b)**
   a. Audio codec
   b. Digital signal processor (DSP)
   c. Digital-to Analog Converter (DAC)
   d. Analog-to-Digital Converter(ADC)

4. H.323 uses G.711 or G.723.1 for Voice **(a)**
   a. Compression
   b. Communication
   c. Controlling
   d. Conference

5. Session Initiation Protocol(SIP),is very **(b)**
   a. Independent
   b. Flexible
   c. Important
   d. Layered

6. Establishing a session in Session Initiation Protocol (SIP), requires a three-way **(d)**
   a. Protocol
   b. System
   c. Ports
   d. Handshake

7. Session Initiation Protocol (SIP), has a mechanism that finds the **(c)**
   a. Domain
   b. Way
   c. IP Address
   d. Terminal

8. In Voice Over IP, Term SIP stands for **(a)**
   a. Session initiation Protocol
   b. Session initiation port
   c. Session initiatin path
   d. Session initiation packet

9. What Internet Transport protocol is most commonly used with SIP IP-PBX systems and IP phones? **(a)**
   a. UDP
   b. H.245
   c. TLS
   d. SIP

10. Which Codec's are compatible with SIP Encrypt? **(a)**
    a. G729 a/b Only
    b. G711 u Law and G711 a Law only
    c. G722 Only
    d. All of the above

11. In H.323 protocol standard what protocol is used for Gatekeeper authentication? **(b)**
    a. H.245
    b. H.225 (RAS)
    c. H.248
    d. H.320

12. SDP in SIP Protocol means **(b)**
    a. Session development point
    b. Session description protocol
    c. Session description port
    d. Session description packet

13. In SIP for transport what protocol is used **(a)**
    a. RTP
    b. RTCP
    c. RMP
    d. cRTP

14. RTP stands for **(a)**
    a. Real transmission Protocol
    b. Real time protocol
    c. Real Time Process
    d. None of the above

15. An RTP packet is encapsulated in a(n) _____. **(c)**
    a. IP Datagram
    b. RTCp Packet
    c. UDP User Datagram
    d. TCP segment

16. _____ is a control protocol that adds functionalities to the streaming process **(b)**
    a. TCP/IP
    b. RTSP
    c. HTTP
    d. SIP

17. _____ is a SIP Message type **(d)**
    a. INVITE
    b. CANCEL
    c. OPTIONS
    d. All of the above

18. What is the size of the RTP header after RTP header compression is applied. **(a)**
    a. 2 Bytes to 4 Bytes
    b. 40 Bytes
    c. 12 Bytes
    d. 2 Bytes

19. SIP response messages 180 indicates **(d)**
    a. Engage
    b. Timeout
    c. Busy
    d. Ringing

20. In Linux debian –os all application are installed in which directory **(c)**
    a. apt
    b. bin
    c. etc
    d. dev

21. In Linux what is meant by GRUB **(b)**
    a. Grand united Boot Loader
    b. Grand unified Boot Loader
    c. Grand universal Boot Loader
    d. General unified Basic Loader

22. What is meant by GPL **(a)**
    a. General Public License
    b. General Private License
    c. Global Public License
    d. Global Private License

23. What command in linux is used to change from one directory to another. **(a)**
    a. cd
    b. cdir
    c. cdr
    d. dir

24. what command is used to edit a file in linux **(b)**
    a. nono
    b. nano
    c. edit
    d. ed

25. In asterisk the dial plan are assigned in which file **(c)**
    a. Dialplan.conf
    b. Sip.conf
    c. extensions.conf
    d. extension.conf

26. In the statement exten =>,1001, 1, dial (SIP/phoneB,10,t) the timeout is defined is which time unit. **(a)**
    a. Seconds
    b. Hours
    c. Minutes
    d. Nano seconds

27. Connector provided on a IP phone to connect with the switch is **(b)**
    a. RJ11
    b. RJ45
    c. RJ12
    d. RS232

28. A sip account is created in one of the following file. **(a)**
    a. sip.conf file
    b. Meet me conf
    c. Asterisk.conf
    d. None of the above.

29. Connection between a IP phone and server is done by a **(a)**
    a. LAN cable
    b. 2 wire copper pair
    c. 4 wire copper pair
    d. Both a and b

30. To get updates for Linux following command is used **(a)**
    a. apt-get update
    b. update-get linux
    c. update-linux
    d. get linux_update

31. User id of a IP phone is its **(a)**
    a. dial number
    b. name
    c. caller id
    d. login id

32. User account of a IP phone can be **(d)**
    a. dial number
    b. name
    c. MAC address
    d. all

33. In sip.conf file type=firend, line signifies the subscriber can **(c)**
    a. receive calls
    b. initiate calls
    c. initiate as well as receive a call
    d. none of the above

34. in sip.conf file qualify=yes, signifies that the IP asterisk server is checking the phones **(a)**
    a. periodically
    b. occasionally
    c. never to check
    d. check when call is initiated

35. In this line " exten =>1001, 1, dial(SIP/phoneB)" of extensions.conf file, digit 1 signifies the following **(a)**
    a. priority
    b. sequence number
    c. dial number
    d. line number

36. What is the command to see the sip accounts in CLI mode? **(c)**
    a. Sip show pears
    b. Sip show accounts
    c. Sip show peers
    d. Sip show extensions

37. In Debian Linux, which directory holds the configuration for asterisk **(c)**
    a. /etc/apt/asterisk
    b. /usr/bin/asterisk
    c. /etc/asterisk
    d. /dev/asterisk

38. In asterisk, which command is used to check the sip accounts in CLI mode? **(c)**
    a. sip show phones
    b. sip show accounts
    c. sip show peers
    d. sip show extensions

39. If EXTEN=123456, what will be the value of ${EXTEN:4} ? **(d)**
    a. 1234
    b. 3456
    c. 12
    d. 56

40. In the dialplan snippet, exten=> 100, 1,Dial(SIP/phoneA,10,t)
    exten =>100, 2,Dial(SIP/phoneB,10,t) phoneB will ring when **(b)**
    a. phoneA is disconnected after answering
    b. phoneA is not answered for a fixed duration
    c. Both phoneA and phoneB rings together
    d. None of the above

41. In the sip.conf configuration file of asterisk software, the telephones (SIP based) as well as the SIP trunks are defined. **(a)**
a. True b. False

42. For making communication happen between two asterisk servers, we need a PRI gateway.
a. True b. False **(b)**

43. To make ordinary analog PBT phones work with asterisk, FXO gateways are required. **(b)**
a. True b. False

44. Connectivity with existing TDM exchange cannot be done with Asterisk. **(b)**
a. True b. False

45. When two asterisk servers are connected to each other using SIP trunks, only one call can be made simultaneously on that trunk. **(b)**
a. True b. False

46. In a LAN, segregating the voice and data traffic in separate VLANs will lead to crackling of sound. **(b)**
a. True b. False

47. In an FXS gateway, each FXS port has a corresponding asterisk SIP account. **(a)**
a. True b. False

48. For using a PRI gateway to connect a TDM exchange with Asterisk, a PRI trunk is made between the PRI gateway and asterisk. **(b)**
a. True b. False

49. The configuration of exchanges for Centralized trunking is simpler as compared to the full mesh trunking arrangement. **(b)**
a. True b. False

50. It is easy to add an exchange with a new STD code in the full mesh trunking configuration as compared to a centralized trunking configuration. **(b)**
a. True b. False

NGN ARCHITECTURE

1. In NGN service-related functions are _____from underlying transport-related technologies. **(b)**
a. Dependent c. Mutual shared
b. Independent d. Important

2. Which layer in NGN uses gateways to communicate with other layers **(b)**
a. Core/Transport layer c. Control layer
b. Access layer d. Application layer

3. Soft witch is present in which layer **(c)**
a. Core/Transport layer c. Control layer
b. Access layer d. Application layer

4. Intelligent Network Service Creation Environment is present in which layer **(d)**
a. Core/Transport layer b. Access layer

c. Control layer
d. Application layer

5. For converting TDM signalling to Voip Signalling what type of gateways are used **(b)**
   a. Media gateways
   b. Signalling gateways
   c. Sawtooh gateways
   d. Reciprocal gateways

6. Which layer is to provide routing and transport of IP packets **(a)**
   a. Core/Transport layer
   b. Access layer
c. Control layer
d. Application layer

Objective Question Bank

Chapter-1:

1. In digital Radio transmission system circuit quality is _____ of link path. **(b)**
   a) Independent
   b) dependent
   c) not defined
   d) None

2. C/N required for a BER objective of 10-6 is about _____ in QPSK system. **(c)**
   a) 28 dB
   b) 08 dB
   c) 18 dB
   d) 38 dB

3. Small C/N ratio requirement in digital transmission systems results in saving in _____ power. **(b)**
   a) Receiver
   b) Transmitter
   c) Both (a) and (b)
   d) None

4. The quality of digital signals is measured by _____ instead of S/N ratio as in analog microwave systems. **(b)**
   a) C/N ratio
   b) BER
   c) both C/N ratio and BER
   d) none

5. The performance of digital radio link remains almost constant up to a particular receive level called Digital threshold. **(a)**
   a) True
   b) False

6. The complexity of the digital radio systems lies in its modulation scheme. **(a)**
   a) True
   b) False

Chapter-2:

1. In FSK modulation technique _____ frequency components are transmitted to represent the binary signals. **(b)**
   a) One
   b) Two
   c) Three
   d) Four

2. Synchronous detection is prevalent in case of _____ systems. **(c)**
   a) ASK
   b) FSK
   c) PSK
   d) Both ASK and FSK

3. The receiver complexity of digital radio transmission systems increases when _____ modulation techniques are employed. **(a)**
   a) PSK
   b) ASK
   c) FSK
   d) None

4. Non-synchronous detection is used in conjunction with _____ systems. **(a)**
   a) ASK and FSK
   b) FSK and PSK
   c) ASK and PSK
   d) None
5. In PSK modulation technique the carrier phase is shifted between two values to represent binary 0 and 1. **(a)**
   a) True
   b) False

6. Carrier recovery in the demodulator is usually implemented using a non-linear process such as frequency multiplication followed by a PLL. **(a)**
   a) True
   b) False

Chapter-3:

1. NEC Digital Radio equipment is designed to work in the frequency band _____ **(a)**
   a) 7125 MHz to 7725 MHz
   b) 7125 KHz to 7725 KHz
   c) 7125 GHz to 7725 GHz
   d) 7125 Hz to 7725 Hz

2. The AUX unit of NEC digital radio equipment comprises of _____ Modules **(a)**
   a) SWO and SWO CONT
   b) TX DPU and RX DPU
   c) WS SWO and WS INTF
   d) PH DEM and BIT COMB

4. The data selector switch in the RX section of the SWO module of NEC digital radio equipment selects one the two _____ signals coming from the REG and PROT equipments on receiving the control signal. **(b)**
   a) 2 Mbps
   b) 34 Mbps
   c) DSC
   d) ASC

5. The _____ module of NEC digital radio equipment consists of alarm & control circuits. **(a)**
   a) SWO CONT
   b) SWO
   c) WS SWO
   d) WS INTF

6. The SWO module of NEC digital radio equipment consists of a transmitting section and receiving section. **(a)**
   a) True
   b) False

7. The ASC signal to the REG and PROT equipments of NEC digital radio equipment is supplied by SWO CONT module. **(b)**
   a) True
   b) False

8. A 432 bit Random pattern generator produces scramble patterns and sub-frame pulses. **(a)**
   a) True
   b) False

9. A frame pattern signal, called ID Code, is selected by a switch on the front module of TX DPU unit of NEC digital radio equipment. **(a)**
   a) True
   b) False

10. The TX alarm indicator on the front face of the TX module of NEC digital radio equipment lights red when the alarm output is about – 8 V. **(a)**
    a) True b) False
11. The Analog Service Channels frequency modulates the RF signal in the TX RF module of NEC digital radio equipment. **(a)**
    a) True b) False

12. The isolators employed at the input and output of the Pre-RF amplifier circuit of NEC digital radio equipment improves the VSWR. **(a)**
    a) True b) False

13. The amplitude equalizer employed in IF amplifier section of NEC digital radio equipment equalizes amplitude to frequency response, **(a)**
    a) True b) False

14. The delay equalizer employed in NEC digital radio equipment is used for equalization of reflected delay developed in the branching circuit of the Transmitter-Receiver. **(a)**
    a) True b) False

15. Transversal equalizer module in NEC digital radio equipment compensates both amplitude and delay distortion which are caused by selective fading. **(a)**
    a) True b) False

16. BIT COMB module of NEC digital radio equipment monitors the circuit quality and channel identification by the frame synchronization. **(a)**
    a) True b) False

17. The RF signal coming from the antenna is applied to the REG and PROT equipments of NEC digital radio equipment through an RF hybrid in the branching circuit. **(a)**
    a) True b) False

18. The number of Analog service channels provided in of NEC digital radio equipment is three.
    a) True b) False **(a)**

19. The number of Digital service channels optionally provided in of NEC digital radio equipment is four. **(a)**
    a) True b) False

20. The input power supply variation to NEC digital radio equipment can be form – 36 to –75 V DC. **(a)**
    a) True b) False

21. Power consumption for a 1+1 hot standby system of NEC digital radio equipment is 144 Watts. **(a)**
    a) True b) False

22. The TX frequency stability of NEC digital radio equipment is ± 20 ppm. **(a)**
a) True b) False

23. Analog service channel having frequency band 4.3 to 7.4 KHz is used for remote supervisory circuit in NEC digital radio equipment. **(a)**
a) True b) False

24. The line bit rate of DSC channel in NEC digital radio equipment is 89.5 Kbps. **(a)**
a) True b) False

25. Selective and voice calling facility on EOW is available in NEC digital radio equipment. **(a)**
a) True b) False

26. A master station display unit of NEC digital radio equipment is capable of monitoring and controlling 32 stations in the link including the master station. **(a)**
a) True b) False

27. A sub-master station display unit of NEC digital radio equipment is capable of monitoring and controlling 8 stations in the link including the sub-master station. **(a)**
a) True b) False

28. An RS display unit of NEC digital radio equipment is capable of monitoring the station itself only. **(a)**
a) True b) False

Chapter-4:

1. In 18 GHz digital radio system MUX equipments used at all stations are all Drop/Insert type.
a) True b) False **(a)**

2. The path length in 18 GHz digital radio system is about 10 Km. **(a)**
a) True b) False

3. Since the radio repeaters are of re-generative type in 18 GHz digital radio systems there is no accumulation of noise from hop to hop. **(a)**
a) True b) False

4. Even if the digital receiver in 18 GHz system operates at an input level marginally above the threshold level, a satisfactory BER is obtained. **(a)**
a) True b) False

5. The main drawback in 18 GHz digital radio systems is the attenuation caused by rain. **(a)**
a) True b) False

6. The frequency range of 18 GHz Harris make is 18.58 to 19.16 GHz. **(b)**
a) True b) False

7. Channel transmission capacity of Harris 18 GHz digital radio equipment is _____ **(b)**

a) 120 c) 24
b) 30 d) 480

8. RF channel bandwidth of Harris 18 GHz digital radio equipment is _____ **(a)**
a) 100 MHz c) 1 MHz
b) 200 MHz d) 10 MHz

9. RF output power at antenna port of Harris 18 GHZ digital radio equipment is _____ for Non-protected assemblies. **(a)**
a) + 23 dBm c) + 33 dBm
b) + 18 dBm d) + 43 dBm

10. RF output power at antenna port of Harris 18 GHZ digital radio equipment is _____ for MHS assemblies. **(b)**
a) + 23 dBm c) + 33 dBm
b) + 18 dBm d) + 43 dBm

11. The type of modulation used in HARRIS 18 GHz digital radio equipment is _____ **(b)**
a) 4-FSK c) 8-FSK
b) 4-PSK d) 8-PSK

12. The frequency stability of transmitter of Harris 18 GHz digital radio equipment is **(a)**
a) ±30 ppm c) ±10 ppm
b) ±20 ppm d) ±40 ppm

Objective Question Bank

Chapter-1:

1. TDM uses _____ sharing of the transmission media. **(a)**
a. Time c. Phase
b. Frequency d. Amplitude

2. Filtering is used to limit the speech signal to the frequency band_____ **(a)**
a. 300 to 3.4 KHz c. 300-400 KHz
b.0-300 KHz d. 0-400 KHz

3. Sampling is the process of _____ the analog signals at regular interval **(a)**
a. sample c. Filter
b. Quantize d. Encode

4. Sampling Theorem states that sampling rate should be greater than _____ the highest signal frequency. **(b)**
   a. Thrice c. Once
   b. Twice d. Quadruple

5. For a band limited signal of 4 KHz the sampling frequency is _____ KHz **(d)**
   a. 10 c. 4
   b. 20 d. 8

6. The Time Period of Sampling in PCM is _____ micro seconds **(b)**
   a. 250 c. 500
   b. 125 d. 350

7. Time duration available per channel in a frame is _____ micro seconds **(b)**
   a. 3.9 c. 5.9
   b. 4.9 d. 2.9

8. The interval between two consecutive samples is _____ µ sec **(c)**
   a. 3.9 c. 125
   b. 4.9 d. 2.9

9. PAM signals are converted into digital form by the process called _____ **(a)**
   a. Quantization c. Sampling
   b. Filtering d. Encoding

10. Quantization levels are given Binary values in a process called _____ **(a)**
    a. quantizing intervals c. Sampling intervals
    b. Binary intervals d. Encoding intervals

11. To reduce the quantization error_____ is adopted **(a)**
    a. Non linear Quantization c. Differential Quantization
    b. linear Quantization d. Phase Quantization

12. The process of converting the analog sample into discrete form is called **(c)**
    a. Modulation c. Quantization
    b. Multiplexing d. Sampling

13. Encoding is the conversion of quantized analog samples to ___ signal **(a)**
    a. Binary c. Hexagonal
    b. Decimal d. Fractional

14. The signaling information is transmitted in timeslot _____ **(a)**
    a. 16 c. 31
    b. 0 d. 32

15. The duration of multi frame is _____ second **(a)**
    a. 2 milli c. 125 micro
    b. 125 milli d. 3.9 micro

16. PCM system uses _____ as line coding technique **(a)**
    a. HDB3 c. NRZ-M
    b. NRZ d. CMI

Chapter-2:

1. PCM mux equipments confirms to ITU(T) recommendation **(a)**
    a) G703, b) G711,
    c) G712 d) G713

2. Skip mux incorporate _____ E1 channels in Input side **(a)**
    a) 16 c) 12
    b) 18 d) 34

Chapter-3:

1. The channel capacity of E2 is_____ **(a)**
    a) 120 c) 140
    b) 130 d) 160

2. The channel capacity of E3 is_____ **(d)**
    a) 120 c) 140
    b) 130 d) 480

3. The channel capacity of E4 is_____ **(c)**
    a) 120 c) 1920
    b) 480 d) 7680

4. A digital multiplexer can be considered as _____ converter **(a)**
    a) parallel to serial c) Serial to serial
    b) Serial to parallel d) parallel to parallel

Chapter-4:

1. Jitter is defined as the _____ term variations of the significant instant of a digital signal from their ideal position in time **(b)**
    a) long c) medium
    b) short d) very long

2. Wander is defined as the _____ term variations of the significant instant of a digital signal from their ideal position in time **(a)**

a) long
b) short
c) medium
d) very long

3. The unit of Jitter is _____ **(a)**
a) UI
b) Bit
c) Byte
d) Baud

Chapter-1: V MUX

1. V mux – 30A is equipped with the interfaces for **(c)**
a. Voice only
b. Data only
c. Both voice & Data
d. None of the above

2. In V mux – 30A Slot 13 is allotted to _____ **(d)**
a. Auxiliary (AUX) card
b. PCM interface (PCM I/F) card
c. Signalling Multiplexing (SMX) card
d. General maintenance alarm processor (GMAP) card

.

3. In V mux – 30A Slot 12 is allotted to _____ **(a)**
a. PCM interface (PCM I/F) card
b. Signalling Multiplexing (SMX) card
c. Conference card
d. Power Supply card

4. In V mux – 30A Slot 9 is allotted to _____ **(c)**
a. PCM interface (PCM I/F) card
b. Signalling Multiplexing (SMX) card
c. Conference card
d. Auxiliary (AUX) card

5. V mux – 30A has _____ numbers of routing tables **(c)**
a. Two
b. Three
c. Four
d. Six

6. In V mux – 30A, a conference card can provide up to _____ simultaneous four party conferences **(b)**
a.12
b.15
c.8
d.10

7. In V mux – 30A, each interface card provides _____ number of channels **(d)**
a. One
b. Two
c. Three
d. Four

8. In V mux – 30A Frame sync loss is a Trunk alarm **(a)**
a. TRUE
b. FALSE

9. In V mux – 30A remote alarm is a System alarm **(b)**
a. TRUE
b. FALSE

10. V mux – 30A is a Multiprocessor system **(a)**
    a. TRUE b. FALSE

Chapter-2 Webfil's FlexiMUX

1. The sub-rack of WEBFIL Mux has altogether _____ slots for housing the various modules. **(c)**
    a.10 c.13
    b.12 d. 14

2. In WEBFIL mux, Slot-12 and slot-13 have equal and parallel access to time slots ___. **(c)**
    a. 1 & 16 c. 30 & 31
    b. 15 & 16 d. None of the above

3. In WEBFIL mux, the no of cross connect tables to be down loaded to take care of various conditions of the network are **(d)**
    a. 4 c. 5
    b. 2 d. 6

4. In WEBFIL mux , Slot 3 is allotted to _____ **(b)**
    a. Power Supply card c. Tributary card
    b. Network Interface Module d. Voice module

5. In WEBFIL mux , Slot 10 is allotted to _____ **(d)**
    a. Power supply card c. High Speed Data Module
    b. Voice Module d. Both b & c

6. In WEBFIL mux, the NMS can access the equipment through **(b)**
    a. 9pin D- shell connector only
    b. Both RJ11 connector & 9pin D- shell connector
    c. RJ 11 connector only
    d. RJ 45 connector only

7. WEBFIL Mux uses _____ cross-connect table when tributary A is having a major alarm. **(a)**
    a. Faulty A c. Digital bypass
    b. Modified Remote A d. None of the above

8. In WEBFIL mux, the station ID is set in/on **(c)**
    a. Tributary module c. NIM card
    b. Mother board d. None of the above

9. In WEBFIL mux, internal/extracted clock setting is done in/on **(a)**
    a. Tributary module c. NIM card
    b. Mother board d. None of the above

10. In WEBFIL mux, the master /slave setting is done in/on **(a)**
    a. NIM card b. Tributary module

c. Voice module
d. Data module

11. In WEBFIL Mux, setting of D/I or End Terminal mode is done in/on **(a)**
    a. Tributary module
    b. NIM card
    c. Mother board
    d. None of the above

12. In WEBFIL mux, the output voltages of power supply card are **(c)**
    a. +5V, +/- 12V, +/- 80V
    b. +/-5V, +/-10V, + 80V
    c. +5V, +/-10V, + 80V
    d. None of the above

13. In WEBFIL Mux, AIS (Alarm indication signal) is a system related alarm **(b)**
    a. TRUE
    b. FALSE

14. In WEBFIL Mux, during the normal operation of the network the NMS is kept under scan mode **(a)**
    a. TRUE
    b. FALSE

15. In WEBFIL mux, configuration error is a system related alarm **(a)**
    a. TRUE
    b. FALSE

Chapter-3: NOKIA MUX

1. Nokia system is available for _____ data rates **(b)**
    a. 2Mb & 8Mb
    b. 2Mb, 8Mb & 34Mb
    c.2 Mb, 8Mb, 34Mb & 140Mb
    d. 2Mb only

2. The Nokia system Rack consists of **(c)**
    a. Multiplexer
    b. Optical Line Terminal Equipment
    c. Both Multiplexer & Optical Line Terminal Equipment
    d. None of the above

3. In Nokia system Drop/Insert Mux is configured as **(b)**
    a. DM2
    b. DB2
    c. DF2
    d. None of the above

4. In Nokia system 2 Mb branching can be realized using _____ card. **(b)**
    a. DM2
    b. DB 2B
    c. DF2
    d. None of the above

5. In Nokia system, the following can be configured in DM2 with Service Terminal **(d)**
    a. Branching of channels
    b. Time slot selections
    c. Impedance settings
    d. All of the above

6. In Nokia system, the data interface card supports_____ channels **(d)**
    a. 4
    b. 6
    c. 8
    d.10

7. In Nokia system, the E&M/VF card supports _____ channels **(c)**
   a. 4 c. 8
   b. 6 d. 10

8. In common channel signalling, messages are sent in time slot no. ZERO (TS0) instead of channel-associated signalling. **(b)**
   a. TRUE b. FALSE

9. The Multiplexing system of NOKIA is configured into two types of configurations DM2 and DB2. **(a)**
   a. TRUE b. FALSE

10. In Nokia system there are two types of loop backs in DM2. **(a)**
    a. TRUE b. FALSE

11. In Nokia system DM-2 configuration is used at intermediate stations. **(b)**
    a. TRUE b. FALSE

Chapter-4: 2/34 MB SKIP MUX

1. 2/34 Mb/s Digital MUX equipment is also known as _____ equipment. **(c)**
   a. Trans Mux c. Skip Mux
   b. Primary Mux d. Drop/insert Mux

2. 2/34 Mb Mux multiplexes _____ numbers of Plesiochronous 2 Mb/s bit stream into one 34 Mb/s bit stream **(d)**
   a.4 c.12
   b.8 d.16

3. In 2/34 MUX , the multiplexing principle used is **(a)**
   a. cyclic bit interleaving c. both a & b
   b. Byte interleaving d. None of the above

4. In 2/34 MUX, _____ justification is employed **(c)**
   a. Negative c. Positive
   b. Zero d. None of the above

5. In 2/34 MUX, TRF Alarm pertains to Absence of _____ **(c)**
   a. 2Mbps tributary receive clock c. 2 Mbps input
   b. 34 Mbps input d. 34Mbps tributary receive clock

6. In 2/34 MUX, HTF Alarm pertains to Absence of _____ **(d)**
   a. 2Mbps tributary receive clock c. 2 Mbps input
   b. 34 Mbps input d. 34Mbps tributary receive clock

7. In 2/34 MUX, the output voltages of power supply card are **(d)**
   a. +5V,-5V c. +5V, -5V and +15 V
   b. +15V, +5V d. +5V,-5V, +15V and -15 V

Chapter-5: PUNCOM VMX – 0100

1. VMUX-0100 provides _____ Voice/Data ports in the 19" sub-rack. **(b)**
   a. 30 c. 50
   b. 40 d. 60

2. In VMUX-0100 a maximum of _____ conferences can be configured as 4-party. **(d)**
   a) 18 c) 12
   b) 30 d) 08
3. VMX -0100 shelf has _____ slots **(b)**
   a) 13 c) 12
   b) 14 d) 15

4. TME card of VMMX-0100 can be located in the slot no. _____ **(c)**
   a) 1 c) 3
   b) 2 d) Any slot

5. User Interface cards of VMUX-100 can be installed in _____ **(c)**
   a) Slot 1 to Slot4 c) Slot 5 to Slot 14
   b) Slot 5 to Slot 10 d) Any slot

6. Redundant power supply card can be installed in slot no._____ of VMUX-0100. **(c)**
   a) 1 c) 2
   b) 1 and 2 d) 3

7. In case of any major failure in the network of VMUX-100, _____ card is used to protect the P1 and P2 streams carrying the traffic **(d)**
   a. TME c. FXS
   b. DAC d. LPC

8. To set the ID of VMUX-0100, an eight position DIP switch has been provided on **(d)**
   a) TME card c) FXO card
   b) DAC card d) Motherboard

9. The ID of the equipment is required for the _____ operation and forms the address of the basic frame of VMUX-0100. **(a)**
   a) NMS c) E1
   b) NMT d) Both a & b

10. NMS Ethernet and RS-232 connectors are located on _____ **(c)**
    a) LPC c) TME
    b) Mother board d) DAC

11. In VMUX-0100, P1 LCL (ON) alarm indicates **(c)**

a. PCM-1 receives all 1s (AIS)
b. PCM-1 frame loss
c. PCM-1 loss of signal
d. PCM-1 multi frame loss

12. In VMUX-0100, P1 RMT (ON) alarm indicates **(a)**
a. PCM-1 receives all 1s (AIS)
b. PCM-1 frame sync loss
c. PCM-1 loss of signal
d. PCM-1 multi frame sync loss

13. In VMUX-0100, P1 LCL (Fast blinking) alarm indicates **(b)**
a. PCM-1 receives all 1s (AIS)
b. PCM-1 frame sync loss
c. PCM-1 loss of signal
d. PCM-1 error rate >E 10^{-3}

14. In VMUX-0100, the output voltages of power supply card are **(c)**
a. +5V,-5V
b. +12V, +5V
c. +5V, +12V and -12 V
d. +5V,-5V, +12V and -12V

15. In VMUX-0100, FXO card is_____interface **(a)**
a. Exchange
b. Subscriber
c. Hotline
d. Data

16. In VMUX-0100 the data acquisition card (DAC) is required for 64Kbps Co-directional data interface **(b)**
a. TRUE
b. FALSE

17. In VMUX-0100 FXS card is required for Subscriber, Loop out going and Hot line interfaces
a. TRUE
b. FALSE **(a)**

Chapter-6: Control Circuit Protection Scheme in PD-MUX

1. In PD- Mux, a control circuit is configured in **(c)**
a. Semi conference mode
b. Point to point mode
c. Conference mode
d. None of them

2. In Railways the PD-Muxes are in **(d)**
a. Mesh topology
b. Ring topology
c. Star topology
d. Linear topology

3. Use of LPC card and 2 E1s at every station for all time slot protection scheme is used in **(c)**
a. Webfil Mux
b .Nokia Mux
c. Puncom V-0100 mux
d. Puncom V-Mux 30-A

4. Ring protection (using spare time slots in working E1) scheme is implemented in **(d)**
a. Puncom VMUX-0100
b. Webfil Mux
c. Nokia Mux
d. Both b & c

Objective Question Bank

Chapter-1: Need for OFC & Light wave propagation Mechanism

1. Optical fibers accept _____ signals only. **(b)**
   a) Bipolar
   b) unipolar
   c) any polarity
   d) None of a, b, & c

2. The main drawback of optical fiber as a communication medium is that _____ . **(a)**
   a) tapping is difficult
   b) low attenuation
   c) high cost
   d) High EMI/EMC

3. Transmission loss of optical fiber at a wavelength of 1550 nm is about ____ dB/Km. **(b)**
   a) 2.5
   b) 0.25
   c) 0.025
   d) 25

4. Transmission loss of optical fiber at a wavelength of 1310 nm is about ____ dB/Km. **(d)**
   a) 0.35
   b) 3.5
   c) 2.5
   d) 0.25

5. In step index fiber _____ . **(d)**
   a) refractive index remains constant throughout the core
   b) decreases to some value at the core cladding interface
   c) remains constant throughout the cladding
   d) all of the above (a,b, & c)

6. In graded index fiber the refractive index of the core varies following the parabolic rule upto the core cladding interface and then remains constant throughout the cladding. **(a)**
   a) The statement is True
   b) The statement is False
   c) Insufficient data to conclude True or False

7. The number of modes that can propagate in fiber is a function of numerical aperture, core diameter and wavelength of light. **(a)**
   a) The statement is True
   b) The statement is False
   c) Insufficient data to conclude True or False

8. Mode-Field Diameter (MFD) defines _____ **(b)**
   a) the diameter of the core
   b) the size of the power distribution
   c) the diameter of the cladding
   d) the size of the buffer thickness

Chapter-2: Propagation Modes & OFC Classifications

1. Mode is an available distribution of electromagnetic field in _____ to the direction of light propagation. **(a)**
   a) a plane transverse
   b) a plane longitudinal
   c) Both transverse and longitudinal planes
   d) none of a, b, & c

2. A mode for which the field components in the direction of propagation are small compared to components perpendicular to that direction is called _____ . **(b)**
   a) Circularly polarized mode
   b) linearly polarized mode
   c) TEM mode
   d) TM mode

3. Multimode fiber is best designed for _____ transmission distances. **(b)**
   a) Longer
   b) shorter
   c) medium
   d) very Long

4. The disparity between the arrival times of different light rays at the output of a fiber while traveling through the fiber is known as _____ . **(a)**
   a) Dispersion
   b) Attenuation
   c) Scattering
   d) Mixing

5. In graded index fiber dispersion is reduced due to variation of refractive index in the _____ of the fiber. **(b)**
   a) Cladding
   b) Core
   c) Buffer
   d) Tube

6. Cut-off wavelength of a SM fiber is greater than _____ nm. **(b)**
   a) 1310
   b) 1260
   c) 1450
   d) 1550

7. Mode field diameter of SM fibre is _____ micrometers. **(b)**
   a) 9.3
   b) 12
   c) 125
   d) 6

8. The Numerical aperture is _____ . **(a)**
   a) Light gathering capacity
   b) Light emitting capacity
   c) Light rejecting capacity
   d) Light amplification capacity

9. The numerical aperture of a SM fiber is about **(a)**
   a) 0.10 to 0.17.
   b) 1.1 to 2.1
   c) 2.0 to 3.1
   d) 0.95 to 1.2

Chapter-3: Attenuation in OFC

1. Scattering and absorption of light signal cause _____. **(b)**
   a) Total internal reflection
   b) attenuation
   c) gain to the signal
   d) Dispersion

2. Impurities and irregularities in the physical construction of optical fiber causes _____. **(a)**
   a) Scattering
   b) absorption
   c) total internal reflection
   d) Four wave mixing

3. Rayleigh's scattering is due to _____ present in the silica matrix. **(b)**
   a) Water vapors
   b) metal ions
   c) OH^- ions
   d) H+ ions

4. Scattering limits the use of wavelengths below _____ nm in optical fiber. **(c)**
   a) 1310
   b) 1550
   c) 800
   d) 650

5. The hydroxyl ions and impurities present in the silica are the reasons for _____ of light signals. **(c)**
   a) Bending
   b) scattering
   c) absorption
   d) Dispersion

6. An attenuation of 3dB corresponds to ____ % reduction in original power. **(c)**
   a) 10
   b) 30
   c) 50
   d) 3

7. Inter modal dispersion present in **(b)**
   a) only in SM fibers
   b) only in MM fibers
   c) Both SM & MM fibers
   d) cannot be said

8. Polarization mode dispersion (PMD) is significant **(a)**
   a) data rates above 1Gbps
   b) data rates below 1Gbps
   c) data rates above 2Mbps but less than 1Gbps
   d) data rates below30Mbps

CHAPTER-4: Fiber Standards & Constructional Features

1. ITU-T recommendation G.652 describes the properties of _____ **(b)**
   a) dispersion-shifted fiber
   b) Non dispersion-shifted fiber
   c) Non-zero dispersion-shifted fiber
   d) None of the above a,b & c

2. ITU-T recommendation G.653 describes the properties of _____ **(a)**
   a) dispersion-shifted fiber
   b) Non dispersion-shifted fiber
   c) Non-zero dispersion-shifted fiber
   d)) None of the above a,b & c

3. ITU-T recommendation G.655 describes the properties of _____ **(c)**
   a) dispersion-shifted fiber
   b) Non dispersion-shifted fiber
   c) Non-zero dispersion-shifted fiber
   d)) None of the above a,b & c

4. _____ fibers have high dispersion at 1550 nm. **(a)**
   a) G.652
   b) G.653
   c) G.655
   d) None

5. _____ fiber the zero-dispersion point is shifted to the wavelength region 1550nm. **(b)**
   a) G.652
   b) G.653
   c) G.655
   d) None

6. The _____ fiber is very much suitable for single wavelength 1550 nm but is unsuitable for DWDM systems. **(a)**
   a) DSF Dispersion-shifted fiber G.653
   b) Non dispersion-shifted fiber (NDSF) G.652
   c) Non zero-dispersion-shifted fibers (NZ-DSF) G.655
   d) All of the above a, b & c

7. LSZH cables are preferred for indoor applications because **(c)**
   a) Less toxic and slower to ignite
   b) They are halozen free
   c) Both a & b
   d) None of a & b

8. The Tensile strength is of the order of _____ **(b)**
   a) 4400 to 6000 kg per sq.cm
   b)44000 to 60000 kg per sq.cm.
   c) 440000 to 600000 kg per sq.cm
   d) 440000 to 600000 kg per sq.mm

Chapter-5: OFC Cable Laying Practices

1. The normal optic fiber cable drum length is _____. **(b)**
   a) 2 Km
   b) 3 Km
   c) 1 Km
   d) 4 Km

2. 12-fiber armoured optic fiber cable can be used for _____ laying. **(b)**
   a) Underground as well as for aerial
   b) Only Underground
   c) Only aerial

3. The 24-fiber armoured optic fiber cable contains _____. **(d)**
   a) 2 loose tubes
   b) 3 loose tubes
   c) 24 single loose tubes
   d) 6 loose tubes

4. Cable markers are normally provided at every ____ meters on the cable route. **(d)**
   a) 5 c) 150
   b) 10 d) 50

5. After laying the optic fiber cable at least _____ mm from the surface of the cable should be covered with riddle earth. **(c)**
   a) 1200 c) 120
   b) 12000 d) 1120

6. Pulling tension/force on the cable during OFC laying should not exceed **(c)**
   a) 2670 N c) 267Kg
   b) 267 N d) 2670Kg

7. During OFC cable laying maximum speed of cable laying must be **(b)**
   a) 100mtrs/minute c) 20mtrs/minute
   b) 10mtrs/minute d) 200 mtrs/minute

8. In order prevent theft of OFC steel troughs with optic fiber cable should be filled up by _____ **(c)**
   a) Petrolium Jelly c) bitumen compound
   b) cadmium compond d) graphite grease

9. The bitumen compound should be filled up to a height of approximate _____ mm. **(c)**
   a) 20 c) 60
   b) 30 d)10

10. Brick protection to be provided in OFC trench at **(c)**
    a) Culverts c) Station/yards
    b) Track crossings d) Bridges

Chapter-6: Jointing and Termination of OFC

1. The loss offered by a mechanical splicing of optic fibers is less than _____ dB. **(c)**
   a) 0.005 c) 0.5
   b) 0.05 d) 1.5

2. The loss offered by a fusion splice of optic fibers shall not exceed_____ **(c)**
   a) 0.005 c) 0.2
   b) 0.05 d) 1.5

3. During installation a minimum of _____ meter of optic fiber cable on each end is coiled in the jointing pit. **(a)**
   a) 10 c) 5
   b) 15 d) 20

4. Ferules of optic fiber connectors are made of _____ materials. **(a)**
   a) metal or ceramic or plastic c) only ceramic
   b) only metal d) only plastic

5. Biconic connectors are generally used in _____ applications in optic fiber communication. **(a)**
   a) LAN c) SAN
   b)WAN d) MAN

6. Cleaving of the fibre is performed to obtain _____ on end face of the fiber **(a)**
   a) 90^o c) 40^o
   b) 60^o d) 30^o

Chapter-7: Measurements and System Testing

1. Generally Light sources are provided to emit light at _____ wave lengths **(b)**
   a)850, 1200, 1460nm
   b) 850, 1310, 1550nm
   c) 850, 1410, 1350nm
   d) 800, 1200, 1460nm

2. Generally Light sources are provided to emit light at _____ power levels **(c)**
   a) 0dBM or -3dBm
   b) 0dBM or -6dBm
   c) 0dBM or -7dBm
   d) 3dBM or -7dBm

3. LSPM(Light source Power meter) method is superior to OTDR for Measuring **(b)**
   a) Power and distance
   b) Power only
   c) Distance only
   d) Optical return Loss only

4. The Dead zone in OTDR is caused by_____ **(a)**
   a) Fresnel reflection and the amplifier recovery time
   b) Fresnel reflection only
   c) Amplifier recovery time
   d) RBS

5. On OTDR trace horizontal axis represents_____ **(b)**
   a) Launch Power
   b) Distance
   c) Return Power
   d) Time

6. On OTDR trace Vertical axis represents_____ **(c)**
   a) Launch Power
   b) Distance
   c) Return Power
   d) Time

7. Excessive pulse width in OTDR causes_____ **(b)**
   a) Decrease in Dead zone length
   b) Increase in Dead zone length
   c) Dead zone length is un effected
   d) Ghost refection occurs

8. Reduction in acquisition time in OTDR causes _____ **(b)**
   a) Smooth trace is obtained
   b) Noisy trace is obtained
   c) Dead zone length is extended
   d) Ghost refection occurs

9. For best results of measurements with OTDR_____ **(d)**
   a) Knowledge of Cable plant is required
   b) LSA averaging method to be used
   c) Auto- mode of settings should not be used
   d) All of the above a, b & c

10. OTDR trace to be obtained and analysed in OFC installation. Identify the correct statement
    a) Before laying at 1310nm, and after laying at 1550nm
    b) Before laying at 1550nm, and after laying at 1310nm
    c) At both wave lengths before as well as after laying
    d) At both wave lengths Before laying only **(c)**

Chapter-8: Optical Sources and Detectors

1. Light emission can occur through **(c)**
   a) Spontaneous emission
   b) Stimulated emission
   c) Both of a & b
   d) None of a & b

2. The main Requirements of Optical sources include **(d)**

a) Spectral width & Directivity
b) Output Power & Output wave length
c) Linearity and Reliability
d) All of the above a, b, & c

3. The quantum efficiency of an optical source is defined as **(a)**
   a) It is the ratio of number of photons generated & no of carriers crossing the junction
   b) It is the ratio of number of carriers crossing the junction & number of photons generated
   c) It is the ratio of number of carriers generated & number of photons crossing the junction
   d) It is the product of number of photons generated & no of carriers crossing the junction

4. Identify the correct statement **(a)**
   a) The external quantum efficiency is always less than the internal quantum efficiency
   b) The internal quantum efficiency always less than the external quantum efficiency
   c) Cannot be concluded & depends on other factors
   d) None of the above a,b &

5. Optical sources include **(d)**
   a) LEDs only
   b) LASER only
   c) LASERs, LEDs and APDs
   d) Both of a & b

7. Principle involved in optical detector operation **(b)**
   a) Seabeck effect
   b) Photo electric effect
   c) Faraday effect
   d) Scotky effect

8. Quantum efficiency (□ □) w.r.t Optical detectors is defined as **(d)**
   a) It can be defined as fraction of electrons which contribute to the external photocurrent
   b) It can be defined as fraction of photons which contribute to the external photocurrent
   c) It is the ratio of electron generation rate and photon incidence rate
   d) Both of b & c

9. Dark current (Id) of an optical detector is defined as_____ **(a)**
   a) Dark current is the current generated in a photo detector in the absence of any optical signal.
   b) It is the ratio of electron generation rate and photon incidence rate
   c) It is the ratio of photon generation rate and electron incidence rate
   d) Both of b & c

10. Photo detectors include **(a)**
    a) PIN diode and APDs
    b) APDss and MSMs
    c) APDs, PIN diodes, & MSMs
    d) None of the above a,b & c

11. Responsivity of a Photo detector defined as **(c)**
    a) A measure of how much output light is obtained for each watt of input light,
    b) A measure of how much output current is obtained for each Amp of input current,
    c) A measure of how much output current is obtained for each watt of input light,
    d) A measure of how much output light is obtained for each amp of input current,

Chapter-9: Basic Optical Network Components and Interfaces

1. The bandwidth is limited in optical transmitter with internal modulator due to relaxation frequency of laser diode. **(a)**
   a) True
   b) False

2. The feedback loop using photo diode in optical transmitter using external modulator provides a very stable level of power radiated by the laser diode. **(a)**
   a) True
   b) False

3. The optical amplifiers employed in optic fiber communication have made it possible to amplify all the wavelengths at once without optical-electrical-optical conversion. **(a)**
   a) True b) False

4. The regenerators employed in optical fiber links are specific to bit rate and modulation format. **(b)**
   a) True b) False

5. The optical amplifiers employed in optic fiber communication are independent of bit rate and modulation format. **(a)**
   a) True b) False

6. The system up gradation in optical fiber links does not require change in amplifiers. **(a)**
   a) True b) False

7. The system up gradation requires replacement of regenerators in optical fiber links. **(a)**
   a) True b) False

8. EDFAs are typically capable of providing a gain of about 30 dB to the input optical signals.
   a) True b) False **(a)**

Chapter-10: Optical Link Engineering

1. Link power budget analysis is to be performed to ensure_____ **(d)**
   a) Sufficient system operation margin
   b) Link operational feasibility
   c) Minimum power available at the receiver
   d) All of the above a,b & c

2. The reasons for keeping system margin is/are_____ **(d)**
   a) Future cable cuts and subsequent losses
   b) Aging effects
   c) Environmental degradations
   d) All of the above a,b & c

3. Basic scenarios to be considered in PBA(Power budget analysis) **(d)**
   a) The receiver and Optic fiber system is decided, then what transmitter Minimum power would be needed?
   b) Maximum receiver power under minimum loss conditions.
   c) In existing system, how much we could lengthen the fiber without changing the transmitter, receiver and still meet the minimum power requirement of receiver
   d. All of the above a,b & c

4. An optical Tx is emitting power at 0dBm which is equivalent to_____ **(a)**
   a) 1mW c) 1W
   b) 1 micro watt d) 0watt

5. A Loss of 10 dB implies_____ **(b)**
   a) 10% of power has been lost c) 10 watts power lost
   b) 90% of power has been lost d) None of the above a, b &c

6. A Loss of 3 dB implies_____ **(a)**
   a) 50% of power has been lost c) 10% watts power lost
   b) 90% of power has been lost d) 3% of power has been lost

7. Total rise time of the system is defined as _____ **(a)**

a) $(tr)_{SYSTEM} = [\{tr(Tx)\}^2 + \{tr(fiber)\}^2 + \{tr(Rx)\}^2]^{0.5}$
b) $(tr)_{SYSTEM} = [\{tr(Tx)\}^{0.5} + \{tr(fiber)\}^{0.5} + \{tr(Rx)\}^{0.5}]^2$
c) $(tr)_{SYSTEM} = [\{tr(Tx)\}^{1.2} + \{tr(fiber)\}^{1.2} + \{tr(Rx)\}^{1.2}]^{0.5}$
d) $(tr)_{SYSTEM} = [\{tr(Tx)\}^2 + \{tr(fiber)\}^2 + \{tr(Rx)\}^2]^2$

8. In Rise time budget analysis factors to be considered are **(d)**
   a) Rise time of the fiber only
   b) Rise time of the source only
   c) Rise time of the receiver only
   d) All of the above a, b, & c

9. In Rise time budget analysis Rise time of Source and detector can be found using **(b)**
   a) Suitable measurement technique
   b) DATA Sheet of OEM
   c) Can be assumed reasonably
   d) All of the above a, b, & c

10. In Rise time budget analysis Rise time of fiber can be found using_____ **(d)**
    a) Suitable measurement technique
    b) DATA Sheet of OEM
    c) Can be assumed reasonably
    d) From Dispersion coefficient and Bandwidth

Chapter-1:

1. In SDH system the multiplexing is done by _____ process **(b)**
    a) Bit interleaving b) Byte interleaving

2. A single synchronous multiplexer can performs the function to _____ **(b)**
    a) Add All PDH data rates b) Drop all PDH data rates
    c) Add/Drop all PDH data rates

3. Synchronous digital transmission equipments can be inter operable from different venders
    a) True b) False **(a)**

Chapter-2:

1. The container and path overhead of SDH frame together formed as _____ **(a)**
    a) virtual container(VC-n) c) Tributary unit (TU)
    b) Pointer d) Administrator Unit (AU)

2. The standardized E1 rate of ITUT is mapped into _____ **(a)**
    a) C12 c) C3
    b) C11 d) C4

3. J1 byte of POH in STM1 is used for _____ **(a)**
    a) Path trace c) Management
    b) BER d) EOW

4. In one TUG-3 how many No. of TU-12 will exists? **(c)**
    a) 7 c) 21
    b) 3 d) 63

5. The data rate of STM-4 is _____ **(a)**
    a. 622.080 Mbits/s c. 155.52 bits/s
    b. 2.488 Mbits/s d. 2.048 Mbps

6. The Administrative unit is the combination of _____ **(d)**
    a) Pointer+ POH c) POH+C-4
    b) VC-4 + POH d) VC-4+POINTER

Chapter-3:

1. In an STM-1 frame, the size of payload area will be of _____ bytes **(b)**
   a) 2430 c) 2043
   b) 2340 d) 2240

2. An STM -1 frame is arranged as _____ rows and columns **(c)**
   a. 9 X 260 c. 9 X 270
   b. 9 X 261 d. 9 X 269

3. Performance analysis and error monitoring will be done by _____ bytes **(a)**
   a. B1, B2, B3 c. C1, C2, C3
   b. A1, A2, A3 d. D1,D2,D3

4. When VC-4 is slower than STM-1 payload, the process required is _____ **(a)**
   a. Positive justification c. Offset
   b. Negative justification

5. _____ bytes are used as Data communication channel for maintenance purpose between multiplexers. **(c)**
   a. K1,K2 c. D4-D12
   b. F1,F2 d. A1-A3

6. _____ bytes are used for Automatic Protective Switching (APS) command & remote alarm command **(a)**
   a. K1,K2 c. D4-D12
   b. F1,F2 d. A1-A3

7. Section Over Head is the combination of _____ **(a)**
   a. RSOH+MSOH c. MSOH+AU-4
   b. RSOH+AU-4

8. _____ defines the locations of the TU3s with in the VC4 **(a)**
   a. TUG-3 c. TU12
   b. TUG-2 d. TU-11

Chapter-4:

1. A row of VC4 in an STM –1 frame generates-_____ **(a)**
   a) 87 addresses b) 86 addresses

2. The number of bytes to generate an address in VC4 frames _____ **(a)**
   a) 3 bytes b) 4bytes

3. To generate a pointer address for negative justification are _____ **(a)**
   a) H1 and H2 bytes. b) H3 &H4

4. In positive justification, the AU4 pointer value is _____ **(a)**
   a) Incremented b) Decremented

5. The V3 byte of TU12 of 500μs is used for _____ **(a)**
   a) Negative justification b) Positive justification

Chapter-5:

1. The end nodes of bus topology are called _____ **(a)**
   a) Terminal nodes b) Add /drop nodes

2. A ring network consists of _____ **(a)**
   a) ADM nodes b) Terminal nodes
3. In star network if the HUB fails _____ **(a)**
   a) No traffic can flow in the links b) Traffic can flows through the alternative link

4. The nodes of meshed network contain _____ **(a)**
   a) Cross-connected equipments b) No need of cross-connected equipment

Chapter-6:

1. If one of the inter node links of a APS network fails _____ **(b)**
   a) The traffic is interrupted b) The traffic is not interrupted

2. The multiplexing section of a SDH network is protected by _____ **(a)**
   a) 16 bits of MSOH b) 8bits of MSOH

3. In case of 1+1 configuration of a SDH network _____ **(b)**
   a) The stand by route is idle when main is working condition.
   b) The stand by route and main route are in working condition.

4. Bi-directional SDH ring supports **(b)**
   a) Only section protection b) Both the path and section

Chapter-7:

1. F – interface on ADM of SDH is a _____ **(a)**
   a) Serial inter face b) Parallel inter face

2. QECB port of SDH element controls_____ **(a)**
   a) Power supply module b) ADM module of SDH

3. The Ethernet port of a network element of SDH is _____ **(a)**
   a) QB3 b) Qb2
   c) QECC

Chapter-8:

1. Frequent adjustment of pointer produces_____ **(a)**
   a) Low frequency jitter b) High frequency jitter.

2. The SSU should be provided _____ **(a)**
   a) After 20 or less than 20 consecutive network elements.
   b) More than 20 consecutive network elements.

3. As per the ITU-T's standard G 803 the number of SSUs _____ **(a)**
   a) Should not be more than 10 in a trail to PRC.
   b) Should be more than 10 in a trail to PRC.

4. To a PRC in a trail- _____ **(a)**
   a) Maximum 60 NEs can be connected b) More than 60 NEs can be connected

5. In hold over mode the system synchronization of SDH ring can work for_____ **(a)**
   a) 24 hours. b) Less than 24 hours

5. The T0 clock is kept locked to the selected reference _____ **(a)**
   a) In Locked mode b) In Holdover mode

6. T1 clock is a reference clock of _____ **(a)**
   a) STM-N. b) Any 2Mbps

7. For traffic performance, the maximum slip rate allowed_____ **(a)**
   a) Are 5 slips per day in 24 hours for greater than 98.9%.
   b) Are 4 slips per day in 24 hours for greater than 98.9%.

Chapter-9:

1. ITUT's recommendation for SDH mux is _____ **(a)**
   a) G709 b) G708

2. ITUT's recommendation for SDH optical interfaces is _____
   a) G.957 b) G.958.

Chapter-10:

1. Jitter is the _____ **(a)**
   a) Short-term variation b) Long-term variation

2. For testing of transport capability tests- _____ **(a)**
   a) The BER and mapping /de-mapping tests are conducted.
   b) The timing offset and tributary output jitter tests are conducted.

3. Clock synchronization test is conducted by _____ **(c)**
   a) Verifying the line frequency b) Pointer activity
   b) Sync status byte.

Objective Question Bank

Chapter-1:

1. Adaptation of FIBCOM STM system to varying traffic needs is possible due to _____ management. **(a)**
   a) Dynamic network capacity
   b) Static network capacity
   c) Limited network capacity
   d) None of the above

2. _____numbers of AUGs can be multiplexed into an STM-4 **(a)**
   a) four
   b) Two
   c) eight
   d) six

3. In an STM network the NE can be controlled and monitored via its ___ interfaces. **(d)**
   a) PC
   b) ECC
   c) Q
   d) PC, ECC and Q

4. _____ information is added within each layer when a 2 Mbps signal is multiplexed into an STM-N signal. **(a)**
   a) Parity
   b) error control
   c) Jitter
   d) All three

5. The FIBCOM FOCUS AC1 is a product family where _____ Add/Drop Multiplexer and Terminal Multiplexer are implemented. **(a)**
   a) STM-1 and STM-4
   b) STM-1
   c) STM-4
   d) STM-4 and STM-16

6. The possible protection schemes in the STM network of FIBCOM AC1 family with SNCP **(d)**
   a) VC-4 only
   b) VC-3 only
   c) VC-12 only
   d) VC-4, VC-3 and VC-12

7. Management of FIBCOM FOCUS AC1 family can be performed from **(d)**
   a) Local craft terminal only
   b) Network element manager only
   c) Network management system only
   d) All the three

8. The STM –1 (HO) module in FIBCOM AC-1 family carries a ___ which is not terminated.**(a)**
   a) VC-4 b) VC-3
   c) VC-2 d) VC-12

9. In FIBCOM AC-1 family an STM-1 (LO) module carries _____ or a combination thereof. **(b)**
   a) 3 X VC-3 or 3 X 21 X VC-12
   b) 1 X VC-4 or 3 X 21 X VC-12
   c) 3 X VC-3 and 6 X 21 X VC-12
   d) 3 X VC-3 and 3 X 21 X VC-12

Chapter-2:

1. The type of optical connector used in ADM/TM modules in FIBCOM AC-1 family is _____ **(c)**
   a) LC/PC
   b) ST/PC
   c) FC/PC
   d) BNC

2. The type of source used for S-1.1 and L-1.1 is _____ in FIBCOM AC-1 family. **(b)**
   a) SLM
   b) MLM
   c) Both SLM and MLM
   d) None

3. Maximum mean launched power for S-1.1 application is ___ in FIBCOM AC-1 family. **(d)**
   a) –18 dBm c) –38 dBm
   b) –28 dBm d) – 8 dBm

4. Minimum mean launched power for S-1.1 is _____ in FIBCOM AC-1 family. **(a)**
   a) –15 dBm b) –25 dBm
   c) –35 dBm d) –5 dBm

5. Maximum mean launched power for L-1.1 application is ---------in FIBCOM AC-1 family.**(b)**
   a) –1 dBm
   b) –2 dBm
   c) –3 dBm
   d) 0 dBm

6. Minimum mean launched power for L-1.1 is _____ in FIBCOM AC-1 family. **(c)**
   a) –1 dBm
   b) –2 dBm
   c) –5 dBm
   d) 0 dBm

7. The _____ Modules of the network element hold the embedded application software for the whole network element in a permanent storage medium in FIBCOM AC1 family **(d)**
   a) TEX-1
   b) RI-1
   c) LI-1
   d) ADM/TM

8. Operating wavelength for S-1.1 and L-1.1 application is _____nm in FIBCOM AC-1 family. **(b)**
   a) 1280 – 1335
   b) 1300 – 1310
   c) 1500 – 1550
   d) None

9. Receiver maximum overload for L-1.1 is _____ in FIBCOM AC-1 family. **(b)**
   a) –20 dBb
   b) –8 dBm
   c) –1 dBm
   d) None

10. Receiver minimum sensitivity at BER 10^{-10} for L-1.2 is _____ in FIBCOM AC-1 family. **(a)**
    a) –37 dBm
    b) –27 dBm
    c) –17 dBm
    d) –7 dBm

Chapter-3:

1. Fibcom 6325 Node is containing _____ number of slots for its modules. **(c)**
   a) 18 c) 9
   b) 15 d) 8

2. In Fibcom 6325 Node the number of slots made available for traffic modules is _____**(a)**
   a) Four
   b) Five
   c) Three
   d) Nine

3. PIM1 Module of Fibcom 6325 Node contains _____number of STM1/4 Optical ports.**(d)**
   a) Two
   b) Four
   c) Two
   d) Nil

4. In Fibcom 6325 node the optical connectors used are of the type _____ **(c)**
   a) FC
   b) SC
   c) LC
   d) ALL the three

5. In Fibcom 6325 node CMCC module is responsible for _____ **(a)**
   a) Management of the system
   b) Interfacing the STM ports
   c) Transporting the Fast Ethernet data of the user
   d) All the above

6. SIMX-4 Module of Fibcom 6325 node provides _____number of optical ports. **(a)**
   a) Four STM1/4
   b) Four STM-1only
   c) Four STM-4 only
   d) Four STM-16

7. PIM1module can be installed in slot No. _____ of Fibcom 6325 node. **(d)**
   a) 6
   b) 9
   c) 8
   d) 4

8. CMCC module can be installed in slot No. _____ of Fibcom 6325 node. **(a)**
   a) 7
   b) 9
   c) 8
   d) 2

9. When the power/Alarm LED on CMCC module of Fibcom 6325 node is red and slow flashing, it indicates **(a)**
   a) Module self-test failed
   b) Module synchronizing
   c) Initializing application software
   d) None

10. When the Active/standby LED on CMCC module of Fibcom 6325 node is green and slow flashing, it indicates **(d)**
    a) Module is active
    b) Module is in standby mode
    c) Module not powered
    d) Initializing application software

11. The power consumption of of 6325 is _____ Watt. **(d)**
    a) 65
    b) 75
    c) 150
    d) 120

12. In SPIMX module of Fibcom 6325 a combination of STM-1 and STM-4 capacity can be used. **(a)**
    a) True
    b) False

Part – II Chapter-1:

1. The power dissipation of fully loaded configuration of TJ100MC-1 system is around 120 watts. **(a)**
    a) True b) False

2. The TJ100MC-1 has redundant power supplies. **(a)**
    a) True b) False

3. The input power supply tolerance for TJ100MC-1 system is – 40 V to – 60 V DC **(a)**
    a) True
    b) False

Chapter-2:

1. The active LED on the PS module of TJ100MC-1 turns green when the outputs of the supply are working and within range. **(a)**
    a) True b) False

2. An EEPROM is used in PS module of TJ100MC-1 system to store the part number, serial number and the manufacturing/testing data. **(a)**
    a) True b) False

3. The output circuits of the PS module in TJ100MC-1 system have blocking diodes for protection when two PS modules are connected in parallel via the back plane. **(a)**
    a) True b) False

4. True current sharing is not possible in the PS modules of TJ100MC-1 system. **(b)**
    a) True
    b) False

Chapter-3:

1. Lite Tributary Card (LTC) is the heart of the TJ100MC-1 system. **(a)**
    a) True b) False

2. LTC card of TJ100MC-1 system plugs into the slot No. 3 **(a)**
    a) True b) False

3. LTC card of the TJ100MC-1 system provides the aggregate interfaces, clocks, processing and monitoring capability to the system. **(a)**
   a) True b) False

4. LTC card of TJ100MC-1 provides the interface RS232C port for local craft terminal.
   a) True b) False

5. Two STM-1 optical interface in LTC card of TJ100MC-1 system have SC type connectors.
   a) True b) False **(a)**

6. The power consumption of TJ100MC-1 system is nearly 120 W **(a)**
   a) True b) False

7. Minimum typical output power of LTC card of TJ100MC-1 for S1.1 type is –15 dBm. **(a)**
   a) True b) False

8. Minimum typical output power of LTC card of TJ100MC-1 for L1.1 type is –5 dBm. **(a)**
   a) True b) False

9. Maximum typical output power of LTC card of TJ100MC-1 for L1.2 type is 0 dBm. **(a)**
   a) True b) False

10. Receiver sensitivity of LTC card of TJ100MC-1 system is –28 dBm for S1.1 type application. **(a)**
    a) True b) False

11. LTC card of TJ100MC-1 is made available for two STM-1 optical interfaces. **(a)**
    a) True b) False

12. The NMS interface is available as an RJ45 connector on the LTC card of the TJ100MC-1 system. **(a)**
    a) True b) False

13. The Ethernet address of the network element is available in the non-volatile memory on the LTC card of the TJ100MC-1 system. **(a)**
    a) True b) False

14. The default baud rate setting for the craft interface on the LTC card of TJ100MC-1 is 9600 bauds. **(a)**
    a) True b) False

15. When the telephone of the order-wire circuit is on the hook, Green OW LED is ON in the LTC card of the TJ100MC-1 system. **(a)**
    a) True b) False

16. Green OW LED blinks when ringing takes place on the order-wire circuit of LTC card of TJ100MC-1 system. **(a)**
    a) True b) False

Chapter-4:

1. TE31 card is a generic tributary card that can be used across all the Tejas STM-1/4 products. **(a)**
   a) True b) False

2. TE31 is a _____ port card which provides line interface to an E3/DS3 rates in both add and drop directions of all Tejas STM-1/4 systems. **(a)**
   a) One port b) Two port
   c) Three port d) Four port

3. TE31 card can be plugged into any of the slots from ____ of the TJ100MC-1 chassis.**(b)**
   a) 1 to 4 c) 10 to 14
   b) 4 to 6 d) 1 to 14

4. The status of the Active LED of TE31 card of TJ100MC-1 system will be _____ if the card is in use. **(d)**
   a) Amber
   b) Blue
   c) White
   d) Green

5. The status of the Active LED of TE31 card of TJ100MC-1 system will be red if the card isdefective. **(b)**
   a) Amber
   b) Red
   c) Green
   d) No indication

Chapter-5:

1. E1 tributary interface cards of Tejas STM-1/4 system are classified as TET16, TET21 and TET28. **(a)**
   a) True b) False

2. E1 tributary interface cards can be plugged into any of the slots from 10 to 14 of the TJ100MC-1 chassis. **(b)**
   a) True b) False
3. The power consumed by an E1 tributary card of TJ100MC-1 system is 8 W. **(a)**
   a) True b) False

4. TET 28 card of TJ100MC-1 system provides line interface to 28 E1 channels in both add and drop directions. **(a)**
   a) True b) False

5. The impedance of the E1 interface on TET 28 of TJ100MC-1 system is 120 Ohms. **(a)**
   a) True b) False

Chapter-6:

1. The STM-1 aggregate card A011 of TJ100MC-1 system is designated to function as _____ port STM-1 tributary card. **(b)**
   a) Three port
   b) Two port
   c) One port
   d) Four port

2. The maximum power consumed by an STM-1 tributary card A011 of TJ100MC-1 is _____ **(d)**
   a) 2 W
   b) 12 W
   c) 22 W
   d) 32 W

3. The STM-1 aggregate card A012 of TJ100MC-1 system is designated to function as 2 ports STM-1 tributary card. **(a)**
   a) True
   b) False

4. When the LASER is ON the green TX indicator of A011 of TJ100MC-1 system will glow.**(a)**
   a) True
   b) False

5. When the LASER is off, the red TX indicator of A011 of TJ100MC-1 system will glow. **(a)**
   a) True
   b) False

Chapter-7:

1. The A1E4 card is designed to support STM-1e/E4 interfaces and can be used across all the Tejas STM-1/4 systems. **(a)**
   a) True
   b) False

2. The A1E4 card can be plugged into any of the slots from 10 to 14 of the TJ100MC-1 chassis. **(a)**
   a) True
   b) False

Chapter-8:

1. The TP01 tributary interface card of TJ100MC-1 system provides line interfaces to _____ 10/100 Mbps signals. **(c)**
   a) Four
   c) Eight
   b) Six
   d) Ten

2. The TP01 card of TJ100MC-1 system maps the Ethernet data into the virtual containers of different granularity of the SDH frame. **(d)**
   a) VC-12 only
   c) VC-4 only
   b) VC-3 only
   d) All the above granularity

3. The RJ 45 green LED indicator on TP01 card of TJ100MC-1 system is ON if link (10 or 100 Mbps) pulses are detected. **(a)**
   a) True
   b) False

4. The RJ 45 green LED indicator on TP01 card of TJ100MC-1 system is blinking if there is an activity on the link. **(a)**
   a) True b) False

Chapter-9:

1. The TP01FT tributary interface cards of TJ100MC-1 provide four 10-BaseT/100-Base T Ethernet ports and four 100-Base-FX Ethernet ports. **(a)**
   a) True b) False

2. The maximum power consumed by a TP01FT card of TJ100MC-1 system is 10 W. **(a)**
   a) True b) False

3. If the RJ45 Amber LED on the TP01FT card of TJ100MC-1 system is off, it indicates 10 Mbps mode is enabled. **(a)**
   a) True b) False

4. If the RJ45 Amber LED on the TP01FT card of TJ100MC-1 system is ON, it indicates 100 Mbps mode is enabled. **(a)**
   a) True b) False

Part – III Chapter-1:

1. TJ 100 MC-16X system comes with two different processor cards options as XCC128L and XCC64L. **(a)**
   a) True b) False

2. In TJ 100MC-16X system the tributary cards can be inserted in Slot 1 to 6 and Slot 9 to 14 only. **(a)**
   a) True b) False

3. The Cross-connect card of TJ 100MC-16X systems can be inserted in slots 7 and 8 only
   a) True b) False **(a)**

4. The Multifunction card of TJ 100MC-16X systems can be inserted in Slot 15 only. **(b)**
   a) True b) False

Chapter-2:

1. The TJ 100MC-16X system has redundant power supply filter units to supply power.
   a) True b) False **(a)**

2. The Power supply filter units of TJ 100MC-16X system are provided with a mechanical circuit breaker to cut off supply in the event the card draws more current than the stated limit. **(a)**
   a) True b) False

3. Reverse polarity protection is provided in the Power filter unit of TJ 100MC-16X system to protect the system from damage in the event the input is given with reversed polarity. **(a)**
   a) True b) False

Chapter-3:

1. The Multifunction Interface Card (MFC1) in TJ100MC-16X system is used to implement miscellaneous interfaces. **(a)**
   a) True b) False

2. 10/100 Mbps NMS interface is provided in the MCC1 card of TJ 100MC-16X system. **(a)**
   a) True b) False

3. Order-wire interface of TJ100MC-16X system is provided in MFC1 card. **(a)**
   a) True b) False

4. Two serial interfaces for craft interface of TJ 100MC-16X system are provided in the MFC1 card. **(a)**
   a) True b) False

5. The power consumption of MFC1 of TJ 100MC-16X system is 8 W. **(a)**
   a) True b) False

Chapter-4:

1. The XCC128L card of TJ 100MC-16X system is a cross-connect controller card designed to implement 20G VC-12 granularity cross-connect for TJ 100MC-16X system. **(a)**
   a) True b) False

2. The XCC128L card of TJ 100MC-16X system has 40G space switching capabilities and thus provides 20G strict sense non-blocking switch capacity. **(a)**
   a) True b) False

3. The XCC128L card of TJ 100MC-16X system supplies system timings/system frame signals to all Line cards in the system. **(a)**
   a) True b) False

4. When the Active LED of XCC128 L of TJ 100MC-16X system turns to green it indicates that the card is active. **(a)**
   a) True b) False

5. When the Status LED of XCC128L of TJ 100MC-16X system turns to amber it indicates that the card is in booting process. **(a)**
   a) True b) False

6. When the Status LED of XCC128L of TJ 100MC-16X system turns to green it indicates that booting process is completed. **(a)**
   a) True b) False

Chapter-5:

1. The XCC64L card of TJ 100MC-16X system is a cross-connect controller card designed to implement 10G VC-12 granularity cross-connect for TJ 100MC-16X system. **(a)**
   a) True b) False

2. The XCC64L card of TJ 100MC-16X system has 20G space switching capabilities and thus provides 10G strict sense non-blocking switch capacity. **(a)**
   a) True b) False

3. The XCC64L card of TJ 100MC-16X system supplies system timings/system frame signals to all Line cards in the system. **(a)**
   a) True b) False

4. A management processor subsystem in XCC64L card of TJ 100MC-16X system will be handling APS and node management functions. **(a)**
   a) True b) False

5. The power consumption of XCC64L card of TJ 100MC-16X system is 48 W. **(a)**
   a) True b) False

Chapter-6:

1. Adaptor card ADP1 provides an interface for using MC-4L line cards into the TJ100MC-16X systems. **(a)**
   a) True b) False

2. The ADP1 card occupies 2 slots in the TJ100MC-16X chassis. **(a)**
   a) True b) False

3. The ADP1 card can be plugged into any of the slots from 1 to 8 and 10 to 14 of TJ100MC-16X system. **(a)**
   a) True b) False

4. The ADP1 card of TJ100MC-16X system consumes a maximum power of 40 W. **(a)**
   a) True b) False

5. The ADP1 card of TJ100MC-16X system has a small back plane into which any TJ100MC-4L card can be jacked in. **(a)**
   a) True b) False

6. No traffic interfaces are provided on ADP1 card of TJ100MC-16X system. **(a)**
   a) True b) False

Chapter-7:

1. TE33 card (3 port E3) is a generic tributary card that can be used across all the Teja's STM-1/4/16 systems. **(a)**
   a) True b) False

2. The TE33 card of TJ100MC-16X system maps E3 tributaries into a VC-3/AU-4 of STM-1 frame. **(a)**
   a) True b) False

3. The TE33 card of TJ100MC-16X system consumes a maximum power of 8 W **(a)**
   a) True b) False

Chapters- 8 to 10:

1. The LQ02 card maps the incoming Ethernet packets into VC3 with LAPS/GFP framing. **(a)**
   a) True b) False

2. The LQ02 card can be inserted into any of the line slots of the TJ100MC-16X system. **(a)**
   a) True b) False

3. The LQ02 card of TJ100MC-16X system consumes a maximum power of 30 W. **(a)**
   a) True b) False

4. There are two 1000Base LX optical ports on the front panel of LQ02 card of TJ100MC-16X system. **(a)**
   a) True b) False

5. The optical interfaces of LQ02 card of TJ100MC-16X system are provided with LC type connectors. **(a)**
   a) True b) False

6. The framing protocol used in LQ02 card of TJ100MC-16X system is LAPS or GFP, which is configurable. **(a)**
   a) True b) False

CHAPTER 11

1. The 84 Port E1 interface (LB84) CARD OF TJ100MC-16X system provides 84 E1 channels, which are mapped into SDH frame. **(a)**
   a) True b) False

2. The LB84 card of TJ100MC-16X system can be inserted into line Slots 1 to 5 and 10 to 14.
   a) True b) False **(a)**

3. The LB84 card of TJ100MC-16X system consumes a maximum power of 30 W. **(a)**
   a) True b) False

4. A local power supply unit is incorporated in the LB84 card of TJ100MC-16X system to generate 3.3 V. **(a)**
   a) True b) False

5. The LB84 card of TJ100MC-16X system can communicate to the controller card through inter card communication channel. **(a)**
   a) True b) False

Chapter-12:

1. 8-Port E4/STM-1E interface card (PC1L8SA) provides E4/STM-1e interface to the TJ100MC-16X system. **(a)**
   a) True b) False

2. PC1L8SA card of TJ100MC-16X system is port configurable for E4 and STM-1e operation. **(a)**
   a) True b) False

3. The PC1L8SA card of TJ100MC-X system consumes a maximum power of 35 W. **(a)**
   a) True b) False

4. The PC1L8SA card of TJ100MC-16X system provides eight E4/STM-1e electrical ports on the front panel. **(a)**
   a) True b) False

5. The PC1L8SA card of TJ100MC-16X system is provided with SMB type connectors for E4/STM-1e electrical port connections. **(a)**
   a) True b) False

Chapter-13:

1. The LC1L12 card provides E4/STM-1e and STM-1o interface to the TJ100MC-16X system.
   a) True b) False **(a)**

2. There are four E4/STM-1e electrical ports in LC1L12 card of TJ100MC-16X system.
   a) True b) False **(a)**

3. There are eight STM-1 optical ports in LC1L12 card of TJ100MC-16X system. **(a)**
   a) True b) False

4. The type of connector used for optical ports on LC1L12 card of TJ100MC-16X system is LC connector. **(a)**
   a) True b) False

Chapter-14:

1. The LC1L16FP card provides STM-1o interface to the TJ100MC-16X system. **(a)**
   a) True b) False

2. Sixteen optical interfaces can be mounted on LC1L16FP card of TJ100MC-16X system. **(a)**
   a) True b) False

3. The LC1L16FP card can be inserted in any of the line slots of TJ100MC-16X system. **(a)**
   a) True b) False

4. The LC1L16FP card of TJ100MC-16X system consumes a maximum power of 45 W. **(a)**
   a) True b) False

5. The LC1L16FP card of TJ100MC-16X system can be configured to offer lesser number of optical ports depending on the requirement. **(a)**
   a) True b) False

Chapter-15:

1. The LC4L4FF card provides the STM-4 optical interface to the TJ100MC-16X system. **(a)**
   a) True b) False

2. The LC4L4FF card of TJ100MC-16X system consumes a maximum power of 40W. **(a)**
   a) True b) False

3. The LC4L4FF card of TJ100MC-16X system has four STM-4 optical ports. **(a)**
   a) True b) False

Chapter-16:

1. The LC16L1Ncard provides the STM-16 optical interface to the TJ100MC-16X system. **(a)**
   a) True b) False

2. The LC16L1N card of TJ100MC-16X system consumes a maximum power of 40 W. **(a)**
   a) True b) False

3. Only one single STM-16 optical port is provided on the LC16L1N card of TJ100MC-16X system. **(a)**
   a) True
b) False

Chapter-17:

1. The LC16L1FF module consumes a maximum power of _____

(d)

a) 40 mW

b) 40 µW

c) 40 nW

d) 40W

2. The number of STM-16 optical ports available on the front panel of LC16L1FF module is _____

(d)

a) four

b) three

c) two

d) one