

3360330010 -13B

Paper Code-13

20308

BHARAT SANCHAR NIGAM LIMITED

Limited Departmental Competitive Examination for promotion to the grade of Sub-Divisional Engineer (Telecom) under 33% quota

Paper-II

Advanced Technical Paper Special (Objective Type)

(Only for the candidates who have opted for CDOT Digital Switching System(MAX))

Time : 3 Hours

Maximum Marks : 100

General Instructions for Candidates:

1. Candidate should read and strictly observe the instructions printed in the Question Booklet as well as the instruction printed on the OMR Answer Sheet.
2. Candidate should not write anything except as directed in the OMR Answer Sheet.
3. In case of any doubt, discrepancy and ambiguity in the Hindi version, the English version should be treated as final.
4. The Question Paper has 100 questions. Each question carries one mark. There are four choices for each question. The candidate is required to choose the most appropriate answer from the choices given and darken the relevant bubble against the question number in the OMR Answer Sheet accordingly.
5. Candidates are advised not to resort to arbitrary marking of answers as there is negative marking and for each wrong answer 25% marks of that question will be deducted.
6. Use of only simple /scientific calculator(non-programmable) is permitted.

प्रश्नपत्र कोड -13

भारत संचार निगम लिमिटेड

33% कोटा के अंतर्गत उपमंडल अभियंता (दूरसंचार) संवर्ग में प्रोन्नति हेतु सीमित विभागीय प्रतियोगिता परीक्षा

प्रश्न पत्र-II

प्रगत तकनीकी प्रश्न पत्र विशेष (वैकल्पिक प्रकार)

(जिन उम्मीदवारों ने सीडॉट डिजिटल स्विचिंग सिस्टम (एमएएक्स) का विकल्प दिया है)

समय: 3 घंटे

अधिकतम अंक : 100

परीक्षार्थियों के लिए सामान्य निर्देश:

1. परीक्षार्थी प्रश्न पुस्तिका एवं ओएमआर उत्तर पुस्तिका में मुद्रित निर्देशों को पढ़ लें एवं उनका सख्ती से अनुपालन करें।
2. परीक्षार्थी ओएमआर उत्तर पुस्तिका में दिए गए निर्देश के अतिरिक्त कुछ न लिखें।
3. हिंदी रूपांतरण में कोई संदेह, विषमता एवं विसंगति होने पर अंग्रेजी संस्करण को ही सही माना जाएगा।
4. प्रश्न पत्र में 100 प्रश्न हैं। प्रत्येक प्रश्न एक अंक का है। प्रत्येक प्रश्न के चार विकल्प हैं। परीक्षार्थी दिए गए विकल्पों में से उचित उत्तर चुनें और तदनुसार ओएमआर उत्तर पुस्तिका में प्रश्न संख्या के सामने सही गोले को भरें।
5. परीक्षार्थियों को यह सलाह दी जाती है कि वे उत्तरों की गलत मार्किंग न करें क्योंकि प्रत्येक गलत उत्तर के लिए 25% अंक काट लिए जाएंगे।
6. केवल सामान्य/वैज्ञानिक कैलकुलेटर(नोन-प्रोग्रामेबल) के प्रयोग की ही अनुमति है।

PAPER-II – Advanced Technical Paper (Special) (Objective type)
Section A(1-5) and A(7) – CDOT SWITHING

Max. Marks: 100

Time: 3 Hr.

Instructions for the candidate:

- i) Choose one right answer out of four multiple choice answers.
- ii) All questions carry equal marks.
- iii) For each wrong answer 25% of the marks of that question will be deducted under Negative Marking.

A-1

- 1) In all IN (Intelligent Network) services all calls must be first routed through PSTN to the nearest:
 - a) STP
 - b) SCP
 - c) SSP
 - d) IP
- 2) What is the SCP code for IN Platform located at Hyderabad:
 - a) 345
 - b) 424
 - c) 425
 - d) 233
- 3) Service charging for a service provider is determined by:
 - a) SCF
 - b) SRF
 - c) SMAF
 - d) CCF
- 4) IN Service access code for televoting (one unit) is:
 - a) 1601xxx
 - b) 1904424
 - c) 1903424
 - d) 1902424
- 5) IN Service access code for FPH service is:
 - a) 1600xxx
 - b) 1601xxx
 - c) 1602xxx
 - d) 1604xxx
- 6) Service code '0902xxx' is used for the following IN service:
 - a) Universal Numbers Local (UNL)
 - b) Universal Personal Number
 - c) ACC Service
 - d) None of the above
- 7) For a VCC Call the card used by the customer of BSNL is:
 - a) Data card
 - b) EVDO Card
 - c) India Telephone Card
 - d) NIC Card
- 8) In Premium Rate service, the calls made to Premium Rate number is:
 - a) Not charged to the calling party
 - b) Charged at higher rate than the normal call
 - c) Charged at normal rate but premium is taken in advance
 - d) None of the above

SDE

- 9) The voice VPN can be created in the system:
- a) Within the SDCA
 - b) Within the Circle
 - c) All India
 - d) All of above

- 10) Which of the following is not an IN service.
- a) Virtual Private Network
 - b) Account Calling Card
 - c) Number Portability
 - d) Calling line Identification.

A.2

- 11) In the case of Multi frequency Push Button dialling:
- a) two sets of eight voice frequency is used
 - b) two sets of eight ultrasonic frequency is used
 - c) two sets of four voice frequency is used
 - d) two sets of sixteen ultrasonic frequency is used.
- 12) In subscriber line signaling, Answer Back signal is:
- a) After the called subscriber lifts his handset a battery reversal is transmitted
 - b) After the called subscriber lifts his handset the line impedance goes high
 - c) After the called subscriber lifts his handset, the line impedance goes low
 - d) On completion of call, the line gets disconnected.
- 13) For inter exchange signaling the signal transmitted using the same frequency as of speech signal is called:
- a) Out-of-band signaling
 - b) Voice frequency signaling
 - c) In band signaling
 - d) None of the above
- 14) In E&M signaling between exchanges:
- a) signaling takes place on the voice channels
 - b) No signaling takes place between exchanges
 - c) The signaling is between calling subscriber and called exchange
 - d) An additional pair of circuit, reserved for signaling, is employed
- 15) CCITT standardized R2 signaling system uses:
- a) Combination using two out of six frequencies for forward and two out of other six frequencies for backward signaling
 - b) Combination two out of 9 frequencies for forward and backward both
 - c) frequency same as DTMF
 - d) Separate frequency set out of speech frequency range
- 16) In R2 signaling forward signal are used:
- a) for sending dialed digits only
 - b) for sending address information of called subs and category and address information of calling subscriber
 - c) for demanding callers category
 - d) None of the above
- 17) In channel associated signaling:
- a) Signaling information is sent in time slot '0' of each PCM frame
 - b) Signaling information is sent in time slot '31' of each PCM frame
 - c) Signaling information is sent in time slot '16' of each PCM frame
 - d) Signaling information is sent within each time slot.

- 18) In channel associated signaling, multi frame synchronization information is:
- a) carried in TS16 of Frame '0'.
 - b) carried in TS'0' of Frame '0'
 - c) carried in TS'0' of Frame '16'
 - d) carried in TS '16' of Frame '16'
- 19) Signaling link in CCS#7 signaling consists of:
- a) Time slot 0 and time slot 16 of a PCM link
 - b) Time slot 16 of Frame '0' of PCM link
 - c) Signaling data link and its transfer control function
 - d) STP and two exchanges
- 20) In CCS#7, user neutral means of transport for messages between user is represented by:
- a) MTP
 - b) ISDN-UP
 - c) TUP
 - d) SCCP
- A.3
- 21) In an OSI model, the main function of transport layer is:
- a) Node to node delivery
 - b) end to end message delivery
 - c) synchronization
 - d) updating and maintenance of routing tables.
- 22) In ISDN Basic Rate Access the channel available to the customer are:
- a) One basic channel of 64 kbps & and one data channel of 16 kbps
 - b) Two Basic channels of 64 kbps & two data channels of 16 kbps.
 - c) Two Basic channels of 64 Kbps and one data channel of 16 kbps
 - d) Thirty Basic channels of 64 kbps and one data channel of 64 kbps.
- 23) Terminal Adapter (TA) is used:
- a) To convert information received in non-ISDN format into ISDN format
 - b) To connect an ISDN equipment to ISDN line
 - c) In all ISDN connection at customer premises
 - d) To connect a digital Video conferencing equipment
- 24) Which of the following is not ISDN customer premises equipment:
- a) NT
 - b) TA
 - c) Digital Facsimile
 - d) IPTV
- 25) Maximum number of terminals that can be supported in ISDN BRI
- a) 1
 - b) 4
 - c) 8
 - d) Any number
- 26) The interface between ISDN exchange and NT is called
- a) R interface
 - b) S interface
 - c) T interface
 - d) U interface
- 27) The feature of ISDN when a terminal can be carried from place to place and connected to different sockets is known as:
- a) Portability
 - b) Adaptability
 - c) Multipoint
 - d) Multi service

- 28) Signaling information is not carried by the following channel:
- D channel
 - 'B' & 'H' channel
 - B&D channel
 - D&H channel
- 29) PRI in BSNL carries:
- 30 B channel + one 16 Kbps D channel
 - 23 B channel + one 16 kbps D channel
 - 23 B channel + one 64 kbps D channel
 - 30 B channel + one 64 kbps D channel
- 30) If a digital PABX is to be connected then:
- ISDN BRI is required
 - ISDN PRI is required
 - Both ISDN PRI & BRI are required
 - ISDN can not serve the purpose.
- A4
- 31) As per national numbering plan, in Basic telephone network:
- All India based 10 digit numbering scheme is followed
 - Long distance charging area (LDCA) based 10 digit numbering has been followed
 - Short distance charging area (SDCA) based 10 digit numbering scheme has been followed
 - Non of the above
- 32) As per numbering plan subscriber number for basic service (PSTN) will be of :
- 6 or 7 digits
 - 7 or 8 digits
 - 6, 7, or 8 digits
 - 10 digits
- 33) For cellular telephony, the length of PLMN access code, MSC code and subscriber number shall be:
- 2, 3, & 5 respectively
 - 2, 4, & 4 respectively
 - 1, 3, & 6 respectively
 - Non of the above
- 34) A STD barred PSTN phone without using IN service can make calls to:
- PSTN numbers within LDCA and PLMN numbers within circle.
 - PSTN number within SDCA and PLMN number within LSA
 - PSTN numbers within the circle and PLMN number within SDCA
 - All numbers within the Circle
- 35) Routing of call from a PSTN number to another PSTN number outside the Circle is :
- Lev 2 TAX - Lev 1 TAX - Lev 2 TAX - Local exch.
 - BTS - BSC - MSC1 - MSC-2 - BSC - BTS
 - Local exchange - Lev 1 TAX - Lev 2 TAX - Lev 1 TAX - Local exchange
 - Local exchange - Lev 2 TAX - Lev 1 TAX - Lev 1 TAX - Lev 2 TAX - Local exchange
- 36) Charging for a long distance call in PSTN decided by:
- Leading local exchange
 - Leading level-2 TAX
 - Leading Level-1 TAX
 - Terminating level -1 TAX

- 37) Synchronization of exchange is most important:
- To improve voice quality
 - So that traffic in an exchange is regulated
 - For data call
 - Else exchange will not work
- 38) The earthing of power plants is required:
- for working logic of the power plant
 - to provide direct connection with earth to protect apparatus and to provide protection to persons
 - to stabilize the power plant physically
 - None of the above
- 39) As per National Switching Plan all the Lev-1 TAXs are connected generally
- in Mesh topology
 - in Tandem
 - In a Ring
 - None of the above
- 40) Charging between two cities in India is decided by:
- Road/Rail distance between them
 - X-Y coordinates
 - Department Of Telecom as per population of cities
 - None of the above
- A.5
- 41) In a SMPS based Power Plants used in telecom system the size of power plant is reduced due to:
- Use of SCR/Thyrister control
 - Use of high frequency switching
 - Use of power plant modules
 - None of the above
- 42) While planning a SMPS based power plant following factors are taken into consideration:
- Present and ultimate load of the system
 - Battery back up
 - Redundant capacity requirement
 - All of above
- 43) While choosing DG set for a station, AC requirement for the power plant and UPS system is taken:
- Same as ultimate Power Plant load
 - 1.5 times the ultimate Power Plant load
 - 1.25 times the ultimate Power Plant load
 - None of the above.
- 44) If the present equipment daily load is 192 AH and ultimate daily load is 227 AH, what shall be the best suited battery capacity if depth of discharge is permitted to 0.8
- 2x150AH
 - 2x200AH
 - 2x300AH
 - 1x400AH
- 45) For a power plant of ultimate capacity of 800 Amp at 54V float voltage, power plant efficiency of 85% and Power plant Power factor of 0.9 the DG set capacity required shall be about:
- 71 kw
 - 56 kw
 - 85 kw
 - 50 kw

- 46) Which one of the following is not a correct type of Fire extinguishers in a telecom building?
- Fire hydrant
 - CO₂ type
 - Foam type
 - CO type
- 47) A 7.5 TR air-conditioner in BSNL will be of:
- Split type A/C
 - Package type A/C
 - Window type A/C
 - Can be any of the above type
- 48) In float mode, voltage in a 300 A SMPS Power Plant is:
- 50V ± 0.5 volt
 - 54V ± 0.5V
 - 48V
 - +52.4V ± 0.2 V
- 49) A Power plant should not be loaded beyond how much of its rated (ultimate) capacity:
- 100%
 - 75%
 - 85%
 - 90%
- 50) The following type of fire extinguishers is not used:
- Soda type
 - Foam type
 - CO₂ type
 - None of the above.

Section A(7)

51. In a CDOT exchange the processor architecture is characterized by:
- Centralized control, token ring based communication
 - Centralized control, message based communication
 - Distributed control, message based communication
 - Distributed control, token ring based communication/
52. For inter processor communication:
- HDLC link is used
 - E1 link is used
 - T1 link is used
 - None of the above
53. Due to its redundant architecture, failure of any one security block will effect:
- Upto 32 subscribers
 - Upto 16 subscribers
 - Upto 8 subscribers
 - No subscribers
54. Module control unit is built around a
- 8 bit Microprocessor
 - 16 bit Microprocessor
 - 32 bit Microprocessor
 - 128 bit Microprocessor
55. All processor complexes in a CDOT DSSMAX switch employs
- 'Load sharing' techniques
 - 'Hot standby' technique
 - 'Cold standby' technique
 - All of the above

56. The function using resources whose requirement is directly linked with number of lines and trunks is:
- Terminal interfacing
 - Circuit switching
 - Call processing
 - All of the above
57. Resource allocation in a CDOT exchange is done by:
- Administrative module
 - Central Module
 - Base module
 - None of the above
58. Trunk and circuits are interfaced in:
- Admin module
 - Central module
 - Base Module
 - None of the above
59. In a line circuit card, to form a digital stream:
- 8 bit digital output of 4 LCC are multiplexed
 - 16 bit digital output of 2 LCC are multiplexed
 - 8 bit digital output of 2 LCC are multiplexed
 - 16 bit digital output of 2 LCC are multiplexed
60. The output of a terminal interface controller card is:
- Duplicated 2 mbps links
 - 16 mbps links
 - 128 mbps link
 - Duplicated 8 Mbps links
61. The function of origination detection, digit reception & transmission etc is performed by:
- line circuit card
 - Signalling Processor Card
 - Terminal interface controller card
 - Special circuit card
62. CNF card provides upto:
- Eight three party conferencing
 - Eight four party conferencing'
 - Sixteen four party conferencing
 - Four eight party conferencing
63. Base message switch is implemented as:
- a duplicated unit consisting of 16 bit microprocessor and memory and supports two MSD cards
 - a duplicated unit consisting of 8 bit microprocessor and memory & supports 4 MSD cards
 - a non duplicated unit consisting of 8 bit microprocessor and memory & supports 2 MSD cards
 - a non duplicated unit consisting of 16 bit Microprocessor & memory & supports 4 MSD cards.
64. Each MSD card provide:
- 4 HDLC channels for communication with other unit
 - 8 HDLC channels for communication with other units
 - 16 HDLC channels for communication with other units
 - 32 HDLC channels for communication with other units

75. Which subsystem generates an exhaustive Call Event Record (CER) on every call:
- a) Call Processing
 - b) Peripheral Processor
 - c) Administration
 - d) Data Base
76. The subsystem responsible for system integrity human interface and initialization is:
- a) Maintenance subsystem
 - b) Peripheral processor subsystem
 - c) C DOS
 - d) Administration subsystem
77. What is used by input Output processor sub system as basic operating system
- a) MS WINDOWS
 - b) MS DOS
 - c) UNIX
 - d) C DOS
78. The feature that is not available in CDOT exchange is
- a) Direct dialing in (DDI) to a PBX extension
 - b) Service quality observation for incoming and outgoing calls both
 - c) Multi party conferencing service
 - d) None of the above
79. With respect to common channel signaling (CCS#7) in CDOT DSS MAX exchange, which statement is true:
- a) The exchange can function as Signaling End point & not signaling transfer point
 - b) The exchange can function both as signaling end point and a signaling transfer point
 - c) The exchange can function as signaling transfer point & not as signaling end point
 - d) The exchange can neither function as signaling end point nor as signaling transfer point.
80. The maximum number of digits that an exchange can receive from a subscriber line is:
- a) 16
 - b) 32
 - c) 40
 - d) 48
81. When a subscriber (A) books an alarm call and has activated call diversion to another number (B) then alarm call will :
- a) go to subscriber (A) only
 - b) go to subscriber (B) only
 - c) go to subscriber (A) & (B) both
 - d) fail
82. Charge meter are dumped to disk at fixed intervals. At any point of time the number of such dumps available on disk for each BM
- a) 1
 - b) 2
 - c) 3
 - d) 4
83. The charging calendar has provision for:
- a) 365 days
 - b) 366 days
 - c) 367 days
 - d) 368 days

84. In case of fault in the individual circuit of a Terminal equipment number:
- a) TEN can be changed with same directory number
 - b) A new directory number is to be given to new TEN
 - c) TEN cannot be changed
 - d) None of the above
85. In trunk group data management the same set of MML commands can modify:
- a) Prefix digits, minimum digits for seize forwards, rank of digit and type of signaling
 - b) Prefix digit, minimum digit for seize forward, type of signaling type of destination exchange
 - c) Prefix digit, minimum digit for seize forward, rank of digit, group priority
 - d) Prefix digit, group priority status (incoming, outgoing both way) rank of digit.
86. When a subscriber lifts hand set the card that forms the origination message is :
- a) TIC
 - b) TSC
 - c) SCIC
 - d) BP
87. Digit analysis is done by the card:
- a) TIC
 - b) TSC
 - c) LCC
 - d) BP
88. Meter count updation of calling subscribers is done by:
- a) source AP
 - b) Source BP
 - c) destination AP
 - d) destination BP
89. Originating traffic measurement is NOT made for:
- a) Incomplete dialing
 - b) Transit call attempt
 - c) Unavailability of system resources
 - d) No dialing
90. For each newly generated alarm a unique alarm sequence number is assigned. Maximum number of ASN system can allot are:
- a) 1024
 - b) 2048
 - c) 4096
 - d) 8192
91. In case of severe fault condition where many subscribers are affected, the alarm generated is:
- a) Urgent alarm
 - b) Severe alarm
 - c) Critical alarm
 - d) Emergency alarm
92. The possibility of diagnosing a fault to a single PCB level is:
- a) 50%
 - b) 65%
 - c) 85%
 - d) 95%
93. The memory check does not involve:
- a) Compare with duplicate memory
 - b) Disk to memory compare
 - c) Active and standby disk compare
 - d) None of the above

94. Minimum distance between two suites of CDOT exchange should be:
- 600 mm
 - 900 mm
 - 1200 mm
 - 1500 mm
95. Datum line is a line:
- Drawn through points located at 600 mm from wall of switch room
 - From which first rack is installed
 - From which suites starts
 - 1500 mm away from the last suite of the switch
96. Call handling capacity of each Base Module is:
- 2000 BHCA
 - 4000 BHCA
 - 8000 BHCA
 - 16000 BHCA
97. Number of Power supply unit (PSU II) in a duplicated base processor unit are:
- 2
 - 3
 - 4
 - 6
98. The following is not a Time Switch Unit card:
- TSS
 - MSC
 - SCIC
 - TUC
99. The MFC Card in a switch is configured as :
- Duplicated
 - Single
 - N+1 redundancy
 - None of the above
100. For a total of 'A' subscribers, BHCA per BM of 'B' and BHCA per line of 'C' and the value of B/C is less than 750, number of base modules shall be:
- $\frac{A}{B/C}$
 - $\frac{A}{480}$
 - $\frac{A}{750}$
 - Single BM

