

### S-38.115 Signaling Protocols, Exercise 2 (spring 2004)

**Deadline: 28th April, 2004, at 13.45. All late answers will be disregarded. Please, adhere to the deadline. Only E-version of the standard answer sheet will be accepted. The answer sheet (Exercise2.xls) can be downloaded from the course home page. See the instructions on the course home page before submitting your answer!**

| Number | Question   |
|--------|--|
| 1      | <p>_____ traffic is very sensitive to delay but has small bandwidth requirements.</p> <p>a) Voice<br/>b) Data<br/>c) Video</p>   |
| 2      | <p>At which of the following speeds does SS No.7 operate?</p> <p>(a) 16 kb/s<br/>(b) 64 kb/s<br/>(c) 32 kb/s<br/>(d) 20 kb/s</p>   |
| 3      | <p>ATM architecture is which of the following?</p> <p>a) Cell based<br/>b) Packet based<br/>c) Circuit based</p>   |
| 4      | <p>Both the ISUP and TUP labels consists of a routing label and a _____</p> <p>a) Message Type Code<br/>b) Optional part<br/>c) CIC<br/>d) Mandatory fixed part</p>  |
| 5      | <p>By using the _____ service available on ISDN the caller's number can be used for retrieving database information.</p> <p>a) Call Transfer<br/>b) Direct Dialling In<br/>c) Call Line Identification</p> |
| 6      | <p>During ISDN call procedures, when either party hangs up a _____ message is sent to the network.</p> <p>a) RELEASE<br/>b) DISCONNECT<br/>c) RELEASE COMPLETE</p>   |
| 7      | <p>Euro-ISDN specifies which of the following services?</p> <p>a) Bearer services only<br/>b) Supplementary services only<br/>c) No teleservices as yet specified<br/>d) All of the above</p>              |
| 8      | <p>For Basic Rate Access (BRA), what type of transmission is used at the U interface?</p> <p>a) 2 wire<br/>b) 4 wire<br/>c) 8 wire</p>   |
| 9      | <p>For which of the following is SS No.7 used in GSM?</p> <p>a) Inter-exchange signalling<br/>b) Subscriber signalling<br/>c) Inter-exchange and subscriber signalling</p>                                 |

|    |   |
|----|---|
| 10 | <p>For which of the following kinds of traffic was ATM specifically developed?</p> <p>a) Voice<br/>b) Data<br/>c) Video<br/>d) All of the above</p>   |
| 11 | <p>How many layers are there in the Open Systems Interconnection (OSI) model?</p> <p>a) 5<br/>b) 7<br/>c) 9</p>   |
| 12 | <p>If a layer 3 message is set-up message what field indicates this?</p> <p>a) Protocol Discriminator<br/>b) Call Reference<br/>c) Message Type<br/>d) Additional Information Elements</p>        |
| 13 | <p>If there is a private ISDN, ISPBX or an ISO Ethernet hub, then the ISDN connection point ends at the what reference point?</p> <p>a) R<br/>b) S<br/>c) T<br/>d) U<br/>e) V</p>                 |
| 14 | <p>In the case of ISDN Customer Premises Equipment (CPE) communicating with PSTN CPE, the 7kHz ISDN CPE will fallback to the PSTN rate of ____ kHz</p> <p>a) 2.5<br/>b) 3.1<br/>c) 3.6</p>        |
| 15 | <p>In the original four layer SS No.7 all the signalling functions required by a user were located in the _____</p> <p>(a) Application Parts<br/>(b) User Parts<br/>(c) Message Transfer part</p> |
| 16 | <p>In the PSTN the _____ is used to support normal telephony functions.</p> <p>(a) ISUP<br/>(b) TUP<br/>(c) INAP<br/>(d) MAP</p>  |
| 17 | <p>ISDN switches are _____ switches.</p> <p>a) Analogue<br/>b) Packet<br/>c) SPC<br/>d) TTS</p>   |
| 18 | <p>In point to point mode what is the maximum distance the terminal equipment can be from the NT?</p> <p>a) 500 metres<br/>b) 800 metres<br/>c) 1 km<br/>d) 1.5 km</p>                            |
| 19 | <p>National ISDN (N1-1) offers which of the following services?</p> <p>a) Basic Rate Interface (BRI) only<br/>b) Primary Rate Interface (PRI) only<br/>c) BRI and PRI</p>                         |
| 20 | <p>Packet switching is the information transfer mode of</p> <p>a) Frame Relay<br/>b) 64 kb/s speech<br/>c) X.25<br/>d) 64 Kb/s unrestricted</p>   |

|    |   |
|----|---|
| 21 | <p>Signalling message generated by the ISUP are transported across the network by the ____.</p> <p>a) MTP<br/>b) SCCP<br/>c) ISUP<br/>d) TCAP</p>                                       |
| 22 | <p>The ____ is used for non-circuit related signalling such as the sending of information between the MSC and the VLR and HLR.</p> <p>(a) TUP<br/>(b) INAP<br/>(c) ISUP<br/>(d) MAP</p> |
| 23 | <p>The ____ generates Message Signal Units for ISDN functions</p> <p>(a) ISUP<br/>(b) TUP<br/>(c) MAP<br/>(d) INAP</p>  |
| 24 | <p>The ____ is the SS No.7 part which is used for communication between SSPs and SCPs</p> <p>(a) MAP<br/>(b) TUP<br/>(c) ISUP<br/>(d) INAP</p>  |
| 25 | <p>The ____ is used to send message between the MSC and the BSS.</p> <p>a) BSSMAP<br/>b) INAP<br/>c) TUP<br/>d) MAP</p>   |
| 26 | <p>The ____ layer is concerned with the transmission and reception of data bits.</p> <p>(a) Application<br/>(b) Session<br/>(c) Data link<br/>(d) Physical</p>                          |
| 27 | <p>The ____ is the set of rules governing the exchange of data between peers.</p> <p>(a) Protocol<br/>(b) Primitive<br/>(c) Model<br/>(d) Peer Command</p>                              |
| 28 | <p>The 1.400 services deals with the interface between the ____.</p> <p>a) Exchanges<br/>b) Users and the network<br/>c) Different networks</p>   |
| 29 | <p>The function of the ____ is to reliably transport the MSU to the distant end.</p> <p>a) SIF<br/>b) SCCP<br/>c) ISUP<br/>d) MTP</p>   |
| 30 | <p>The protocol used between the exchanges to support the ISDN network in SS No.7 is provided by ____.</p> <p>a) TUP<br/>b) TCAP<br/>c) ISUP<br/>d) MTP</p>                             |

|    |   |
|----|---|
| 31 | <p>The SETUP message sent to the B subscriber contains which of the following:</p> <ul style="list-style-type: none"> <li>a) The ISDN number</li> <li>b) The Subaddress</li> <li>c) The ISDN number and subaddress</li> </ul>   |
| 32 | <p>The T reference point is the interface between</p> <ul style="list-style-type: none"> <li>a) TE2 and TA</li> <li>b) TE1 and NT</li> <li>c) NT1 and NT2</li> <li>d) NT and LT</li> <li>e) LT and ET</li> </ul>  |
| 33 | <p>There are _____planes in the ISDN PRM.</p> <ul style="list-style-type: none"> <li>a) Two</li> <li>b) Three</li> <li>c) Five</li> </ul>   |
| 34 | <p>What are the service classes in B-ISDN?</p> <ul style="list-style-type: none"> <li>a) Interactive and distribution services</li> <li>b) Bearer and supplementary services</li> <li>c) Interactive and teleservices</li> <li>d) Distributed services only</li> </ul>  |
| 35 | <p>What field in a layer 3 message contains compatibility information?</p> <ul style="list-style-type: none"> <li>a) Protocol Discriminator</li> <li>b) Call Reference</li> <li>c) Message Type</li> <li>d) Additional Information Elements</li> </ul>  |
| 36 | <p>What is the maximum number of digits the ISDN number can have?</p> <ul style="list-style-type: none"> <li>a) 15</li> <li>b) 40</li> <li>c) 55</li> </ul>   |
| 37 | <p>What is the N1 reference configuration?</p> <ul style="list-style-type: none"> <li>a) ISDN-ISDN with no IWFs in the ISDN</li> <li>b) ISDN-ISDN with IWFs in the ISDN</li> <li>c) ISDN-non ISDN with no IWFs in the ISDN</li> <li>d) ISDN-non ISDN with IWFs in the ISDN</li> </ul>   |
| 38 | <p>When a PSTN subscriber dials a mobile subscriber the MSISDN is sent to the MSC in an _____to the GMSC.</p> <ul style="list-style-type: none"> <li>a) Initial Set-up Message</li> <li>b) Initial Dial-up Message</li> <li>c) Initial Assignment Message</li> <li>d) Initial Address Message</li> </ul>                        |
| 39 | <p>When is the ACM message sent from the called switch in the network?</p> <ul style="list-style-type: none"> <li>a) In response to an ALERT message</li> <li>b) In response to an SETUP message</li> <li>c) When the B subscriber hangs up</li> <li>d) When a REL message is received on the user-network interface</li> </ul> |
| 40 | <p>Which I-series is concerned with overall network aspects and functions?</p> <ul style="list-style-type: none"> <li>a) 1.200</li> <li>b) 1.300</li> <li>c) 1.400</li> </ul>   |
| 41 | <p>Which message is sent to indicate that all the B-party digits have been received?</p> <ul style="list-style-type: none"> <li>a) ANM</li> <li>b) ACM</li> <li>c) SAM</li> <li>d) INF</li> </ul>   |

|    |   |
|----|---|
| 42 | <p>Which method of signalling requires that a physical connection exists between the two end points?</p> <p>a) SCCP method<br/>b) End-to-end<br/>c) Pass-along<br/>d) User-to-user</p>  |
| 43 | <p>Which of the following allows some of the control functions to be performed at remote locations enabling central access to functions?</p> <p>a) Time switches<br/>b) Digital switches<br/>c) Analogue switches<br/>d) ATM switches</p> |
| 44 | <p>Which of the following best describe the characteristics of video traffic?</p> <p>a) Low bandwidth delay sensitive<br/>b) High bandwidth delay sensitive<br/>c) High bandwidth and tolerant to delays</p>                              |
| 45 | <p>Which of the following layers are catered by the TC?</p> <p>(a) Layer1-3<br/>(b) Layer7<br/>(c) Layer 4,5,6 and part of 7</p>  |
| 46 | <p>Which of the following layers are catered for by the Aps?</p> <p>(a) Layer 1-3<br/>(b) Layer 7<br/>(c) Layer 4,5,6 and part of 7</p>   |
| 47 | <p>Which of the following layers are catered for by the MTP?</p> <p>(a) Layer1-3<br/>(b) Layer7<br/>(c) Layer 4,5,6 and part of 7</p>   |
| 48 | <p>Which of the following messages is sent by an exchange to request information ?</p> <p>a) USR<br/>b) ACM<br/>c) INR</p>  |
| 49 | <p>Which of the following protocols is used for communication between the MSC and the VLR and HLR?</p> <p>a) DTAP<br/>b) BSSAP<br/>c) MAP<br/>d) LAPD</p>   |
| 50 | <p>Which of the following protocols is used for communication between the MSC and the VLR and HLR?</p> <p>a) DTAP<br/>b) BSSAP<br/>c) MAP<br/>d) LAPD</p>   |
| 51 | <p>Which of the following protocols was especially developed for the A-interface in GSM?</p> <p>a) INAP<br/>b) BSSAP<br/>c) ISUP<br/>d) OMAP</p>  |
| 52 | <p>Which of the telefax services are available on the PSTN, as well as ISDN?</p> <p>a) Group 2 only<br/>b) Group 2 and 3 only<br/>c) All groups</p>   |

|    |  |
|----|--|
| 53 | <p>Which one of the following best describes the objective of TC?</p> <p>a) To provide services to mobile networks only<br/> b) To provide generic services to several applications<br/> c) To generate message for several applications<br/> d) To provide services to the ISDN</p> |
| 54 | <p>Which one of the following IN components contains the Service Logic Programs?</p> <p>a) SSP<br/> b) SCP<br/> c) STP<br/> d) SDP</p>   |
| 55 | <p>Which one of the following IN components offer an alternative path for messages between SSP and SCP?</p> <p>a) SSP<br/> b) SCP<br/> c) STP<br/> d) SDP</p>  |
| 56 | <p>Which one of the following IN components provides users with access to the network?</p> <p>a) SSP<br/> b) SCP<br/> c) STP<br/> d) SDP</p>   |
| 57 | <p>Which one of the following indicates that the NSDU has been segmented?</p> <p>(a) NPCI<br/> (b) M-bit<br/> (c) DT2<br/> (d) PS</p>  |
| 58 | <p>Which one of the following is the 'parent' element called if the contents field contains one or more IEs?</p> <p>a) Primitive<br/> b) Constructor<br/> c) Transaction portion<br/> d) Application</p>   |
| 59 | <p>Which one of the following results in an MTP-Transfer Request primitive?</p> <p>(a) SSN<br/> (b) CR<br/> (c) GT<br/> (d) CC</p>   |
| 60 | <p>Which power source may be used for supplying power from the Terminal equipment (TE) to another TE?</p> <p>a) Power source 1<br/> b) Power source 2<br/> c) Power source 3<br/> d) Power source 4</p>  |
| 61 | <p>Which terminal is sent the SETUP message in the called party's premises?</p> <p>a) Only compatible terminals<br/> b) All terminals<br/> c) The first terminal to answer</p>   |
| 62 | <p>Which two of the following networks uses SS NO.7 TC?</p> <p>(a) ISDN<br/> (b) PLMN<br/> (c) LAN<br/> (d) IN<br/> (e) PSTN</p>   |

|    |   |
|----|---|
| 63 | <p>Why are there no Echo(E) bits in the TE to NT frame?</p> <p>a) There is no room in the TE to NT frame for E-bits.<br/> b) One NT means there is no problem of access contention.<br/> c) A different method is used to resolve access contention.<br/> d) Other bits carry out the echo bits functions in the NT to TE frame.</p>                            |
| 64 | <p>With short passive bus configuration the maximum number of terminals that can be connected is ____.</p> <p>a) 1<br/> b) 4<br/> c) 8</p>  |
| 65 | <p>Which two of the following are characteristics of no-circuit related signalling?</p> <p>(a) No switched connection is set up<br/> (b) It is signalling associated with setting up a circuit<br/> (c) Signalling messages do not contain a circuit identity<br/> (d) Each message contains a circuit identification code</p>                                  |
| 66 | <p>Place the following steps for the setting up a Freephone call in the correct order</p> <p>[1] IAM is sent to the SSP<br/> [2] SSP connects caller to C-number<br/> [3] C-number is returned to the SSP<br/> [4] Initial DP requests Freephone service<br/> [5] Subscriber dials Freephone number<br/> [6] C-number altered</p>                               |
| 67 | <p>The steps required for the planning process are shown below. Place the steps in the correct sequence.</p> <p>a) Generating a network plan<br/> b) Forecasting demand<br/> c) Interpreting the strategic plan<br/> d) Evaluating network equipment</p>  |
| 68 | <p>Which of the following are the main criteria for evaluating network equipment?</p> <p>a) Size<br/> b) Performance<br/> c) Availability<br/> d) Cost<br/> e) Scalability<br/> f) Manufacturer</p>   |
| 69 | <p>Which three of the following are characteristics of SS No.7?</p> <p>(a) It is a common channel signalling system<br/> (b) It is a channel associated signalling system<br/> (c) It uses labelled messages<br/> (d) It is mostly used for signalling within the exchange<br/> (e) It is mostly used for inter-exchange signalling</p>                         |
| 70 | <p>Which three of the following are characteristics of the connectionless service?</p> <p>(a) Data is sent in sequence<br/> (b) Received data is not acknowledged<br/> (c) Suitable for transfer of real time critical data<br/> (d) Routing information is included with data<br/> (e) A connection is established</p>   |
| 71 | <p>Which three of the following are characteristics of the connection-oriented service?</p> <p>(a) Data is sent in sequence<br/> (b) No connection is established<br/> (c) Received data is acknowledged<br/> (d) Routing information and data are transmitted<br/> (e) Two way exchange of information<br/> (f) Each piece of data is routed independently</p> |

|    |  |
|----|--|
| 72 | Which three of the following are supplementary services?<br>a) Database indexing<br>b) CLIP/CLIR<br>c) Call Transfer<br>d) Video Surveillance<br>e) Direct Dialling In (DDI)<br>f) Video conferencing  |
| 73 | Which three of the following happen when a Release Complete (RLC) message is received at the end initialling the release?<br>(a) SCCP user is informed<br>(b) Release timer is stopped<br>(c) Connection is released<br>(d) A RLSD message is transferred to the destination node<br>(e) Local reference number is frozen<br>(f) A RLC message is sent to the node initiating the release                          |
| 74 | Which three of the following are advantages of developing SS No.7 according to OSI?<br>a) It is application dependent.<br>b) Changes in one layer will effect changes in others<br>c) It is an open system<br>d) Interface between layers are standardised<br>e) Functions are well defined  |
| 75 | Which three of the following networks can be supported by SS No. 7?<br>a) PLMN b) LAN c) PSPDN d) ISDN e) IN   |
| 76 | Which of the following services are interactive?<br>a) Conversational services<br>b) TV programme distribution<br>c) Messaging service<br>d) Retrieval Service<br>e) Electronic newspaper  |
| 77 | Which three of the following options best describes end-to-end signalling?<br>a) Directly between ISDN subscribers<br>b) Which is relevant only to the end exchanges of a call<br>c) Which is transmitted across the ISDN within a signalling message<br>d) Which is not interpreted at the intermediate exchange<br>e) Directly between end exchanges of a call<br>f) Which is relevant only to those subscribers |
| 78 | Which two of the following are elements of the contents field of a TCAP message?<br>a) Transaction ID tag<br>b) Transaction Portion IE<br>c) Length<br>d) Invoke ID IE<br>e) Component Portion IE  |
| 79 | The ISUP users the SCCP to set up _____ signalling connections.  |
| 80 | The _____ manages associations between TC-providers.   |
| 81 | Which message from the forward set-up group is used when a call is being set-up?   |
| 82 | MAP-MSC, MAP-VLR, MAP-HLR, MAP-EIR are four of the MAP Aes. The fifth is MAP-_____.  |
| 83 | The SSP takes up the _____ table data in order to identify calls requiring intelligent Network (IN) access.  |
| 84 | Name the switching technology to be used in B-ISDN.  |
| 85 | What is the bit rate on the Primary Rate Access (PRA) signalling channel?  |



|     |   |
|-----|---|
| 86  | The ____ service allows the subscriber to choose whether they want the calling party's identity presented on call set up.   |
| 87  | Customer access to ISDN packet switching service can be either on the D or the B-channel. If the D-channel is used the packets are ____ with the normal D channel signalling. |
| 88  | At the subscriber interface the ISDN is divided into functional groups and the interfaces between each functional group are called the _____.                                 |
| 89  | Non-ISDN compatible equipment is attached to the S-Bus with a _____.  |
| 90  | Echo cancellation is a technique which enables full ____ transmission on a single pair of wires.  |
| 91  | What technique is used for digital circuit switching?   |
| 92  | The A subscriber sends a SETUP message to the local exchange , and the _____ message transmits the information across the network.  |
| 93  | Nodes in the SS No.7 networks are interconnected by _____ which are used to convey the signalling messages.   |
| 94  | Which field in a LAPD frame is responsible for identifying the type of frame being transmitted?   |
| 95  | In the case of a call being delivered successfully to the ISDN user, then the terminating ISDN exchange should generate ____ ring-back tone towards the PSTN user.            |
| 96  | The two types of scenarios available to interconnect public and private ISDN are concatenation and _____.   |
| 97  | Network Administrators aim to have a _____ that can be used to manage all the elements of the network.  |
| 98  | Customer ____ is based on a rental charge and a per usage charge.   |
| 99  | With the advent of digital switches the connection of a new customer required the physical connection of the line and the setup of the customer parameters in a _____.        |
| 100 | ISDN offers a " pay as you use" _____ scheme, which is very attractive for periodical users.  |