TELECOMMUNICATION SYSTEMS AND ENGINEERING
(ECEN 5231)

Time Allotted : 3 hrs.   **Full Marks : 70**

Figures out of the right margin indicate full marks.

Candidates are required to answer Group A and
<u>any 5 (five)</u> from Group B to E, taking <u>at least one</u> from each group.

Candidates are required to give answer in their own words as far as practicable.

Group – A
(Multiple Choice Type Questions)

1. Choose the correct alternative for the following: **10 × 1 = 10**

   (i)   QoS is measured in terms of
           (a) Quality of Speech   (b) Percentage of lost calls
           (c) Ease of connectivity   (d) All of these.

   (ii)   ISDN is designed to serve
           (a) digital voice   (b) slow scan video
           (c) Facsimile   (d) all of these and more.

   (iii)   Out of band signalling frequency preferred by CCITT is
           (a) 3.4K Hz   (b) 3 KHz   (c) 3.85 KHz   (d) None of these.

   (iv)   The Erlang B formula is based on
           (a) LCH concept   (b) LCC concept
           (c) LCD concept   (d) LCR concept.

   (v)   ATM cell consists of
           (a) 50 octets   (b) 54 octets   (c) 53 octets   (d) 55 octets.

   (vi)   In DS1 signal format the one bit which is added as a framing bit is called
           (a) S bit   (b) P bit   (c) supervisory bit   (d) None of these.

   (vii)   The maximum length of subscriber loop is governed by
           (a) resistant limit   (b) loss limit
           (c) telephone subset   (d) both (a) and (b).

   (viii) The term "wire center" is often used to denote a single location housing one or
           more
           (a) 1000 lines exchanges   (b) 10,101 lines exchanges
           (c) 100 line exchanges   (d) 10,000 lines exchanges.

(ix)   Baseband and broadband are the two generic transmission techniques used by
(a) LAN   (b) WAN
(c) TRUNKS   (d) Subscriber telephone lines.

(x)   According to IEEE 802.11a each channel in WLAN can support upto
(a) 54Mbits/s   (b) 11Mbits/s
(c) 5Mbits/s   (d) 24 Mbits/s.

Group – B

2. (a)   Draw the block diagram of a folded network system. What are the type of connections that can be established in switching network with incoming and outgoing trunks and subscriber lines?

    (b)   Write a short note on "Handling" of lost calls.

                                                                (2 + 4) + 6 = 12

3. (a)   Draw the block diagram of interexchange control register of crossbar switching. Briefly explain its function.

    (b)   What is tandem exchange? Explain the term TDH with respect to routing.
                                                          (2 + 4) + (2 + 4) = 12

Group – C

4. (a)   Discuss the framing structure of North American DSI system and E1 European PCM system.

    (b)   Explain the term distortion, echo and crosstalk in PCM transmission.
                                                                    6 + 6 = 12

5. (a)   Explain the principle of operation of a Synchronous Optical Network (SONET).

    (b)   What is meant by bit synchronization in digital network? How it is achieved in European E1 system?
                                                              6 + (2 + 4) = 12

Group – D

6. (a)   Define a local area network. What are the two basic underlying techniques used for LAN?

    (b)   What are the various LAN topologies commonly used?
                                                                (2 + 4) + 6 = 12

7. (a)   Draw the LAN IEEE 802 architecture related to OSI. How LAN protocols are related to OSI?

    (b)   Explain CSMA access technique. Why CSMA/CD is sometimes called "listen while transmitting"?
                                                          (3 + 3) + (4 + 2) = 12

Group – E

8. (a)   Describe briefly the protocol architecture of ISDN according to OSI model.

    (b)   Explain the term Basic Rate access & Primary Rate Access.

6 + 6 = 12

9. (a)   Write a short note on Asynchronous Transfer Mode.

    (b)   What to you understand by Interactive & Distribution services in B-ISDN?

6 + 6 = 12

Department & Section	Submission Link
ECE	https://classroom.google.com/w/MzA2OTcwMzU0Mjkw/tc/Mzc0Mjg3NTYxMzIz