

5E3252

B.Tech. V Sem. (Main/Back) Examination Dec. 2012

Computer Science

5CS3 Telecommunication Fundamentals

Common for CS & IT

Time : 3 Hours

Maximum Marks : 80

Min. Passing Marks : 24

Instructions to Candidates:

*Attempt any five question selecting one question from each unit .
All Questions carry equal marks. Schematic diagrams must be
shown wherever necessary. Any data you feel missing suitably be
assumed and stated clearly. Units of quantities used / calculated
must be stated clearly.*

Use of following supporting material is permitted during examination.
(Mentioned in form No. 205)

1. _____ Nil

2. _____ Nil

UNIT-I

- Q.1 (a) What is channel capacity? Discuss Shannon capacity formula.
Suppose there is spectrum of a channel 3Mhz & $SNR_{dB} = 24dB$ then
find out its capacity & How many signaling levels are required.
[2+4+4=10]
- (b) What is the difference between OSI model & TCP/IP model? [6]

OR

- Q.1 (a) What are the various transmission media? Explain guided media in
detail. [8]
- (b) What is transmission impairments? Explain. [4]
- (c) Consider a stream of binary sequence 0100101011. Draw the wave
form for this sequence using- [4]
- (i) Manchester encoding (ii) NRZ
(iii) Bipolar - AMI (iv) Pseudo ternary

UNIT-II

- Q.2 (a) What is sliding window protocol? what should be the size of window? Explain. [8]
- (b) Define following:-
- (i) Bit stuffing
 - (ii) Parity check
 - (iii) Checksum
 - (iv) Functions of data link layer [4x2=8]

OR

- Q.2 (a) Give the mathematical derivation of stop & wait ARQ. [8]
- (b) Find the FCS for message $D=1010001101$ & Pattern $P=110101$ by the cyclic redundancy check. [8]

UNIT-III

- Q.3. (a) What is HDLC? Explain [8]
- (b) How slotted aloha is twice more efficient than pure aloha ? [4]
- (c) What is channel allocation methods ? [4]

OR

- Q.3. (a) What is CSMA/CD? Explain. [8]
- (b) Compare throughput of CSMA & CSMA/CD. [4]
- (c) Define collision free multiple access. [4]

UNIT-IV

- Q.4 (a) Explain TDMA frame structure. [4]
(b) Compare TDM & FDM. [4]
(c) Explain time division & space- time - space division multiplexing. [8]

OR

- Q.4 (a) Explain synchronus TDM. [4]
(b) What is the TDMA super frame structure? Explain. [4]
(c) Explain ADSL, Compare performance of FDMA & TDMA [8]

UNIT-V

- Q.5 (a) What are the various spread spectrum techniques? Explain frequency hopped spread spectrum techniques. [8]
(b) Explain CDMA. What is forward & reverse CDMA channel ? [8]

OR

- Q.5 (a) Describe following -
(i) M-sequence
(ii) Handoff
(iii) IMT-2000 [12]
(b) What is Walsh code synchronization ? Explain. [4]