Third Year B. C. A. Examination
April/May – 2003
Data Communication & Networks (301)
(Theory)

Time : 3 Hours] [Total Marks : 50

Instructions : (1) Draw diagrams wherever necessary.
              (2) Write new question on new page.

1 Do as directed : (any ten) 10
   (i) Define signal to noise ratio.
   (ii) Synchronous transmission is more efficient than asynchronous transmission. (T/F)
   (iii) State any two advantages of coaxial cable.
   (iv) Evesdropping is not possible in fiber optic cable. (T/F)
   (v) What is multipath fading ?
   (vi) What is phase jitter ?
   (vii) Sketch the transmitted waveform for the bit pattern 101011 using PSK technique.
   (viii) Draw mixer diagram.
   (ix) What is a trunk ?
   (x) What is the function of Bridge ?
   (xi) What protocol is used at Data-link layer in X-25 ?
   (xii) What is IEEE name for token ring ?

2 Answer the following : (any five) 10
   (i) Explain Bit Rate and Baud Rate.
   (ii) On a transmission channel, 600 character message using ASCII 7 bit code is used. For asynchronous data transmission, there is one start bit and one stop bit and a single error detection character is added. Calculate the efficiency of transmission.
   (iii) Explain Infrared waves.
   (iv) State the characteristics of Radio waves.
   (v) What is the concept of Differential phase shifting ?
   (vi) List the functions of network node.
   (vii) Differentiate between star bus and star ring topology.
3 (a) Explain the different data transmission modes with example.  

OR

(a) Explain satellite and terrestrial microwave transmission.  

(b) What is modulation? Explain AM, FM and PM with waveforms.  

OR

(b) Explain physical topologies with diagram.  

4 Answer the following: (any five)  

(i) What is data compression technique?  
(ii) A 4-6 cost signal is naturally sampled at the rate of 56 kHz using 1.50 micro second sampling pulses. What is the value of the reconstructed output signal?  
(iii) Explain Bit stuffing technique. How 1101111111110 frame will be transmitted using this technique?  
(iv) Explain different rate access techniques in ISDN.  
(v) State the advantages of fiber optic cable.  
(vi) Explain Active Repeater.  
(v) Enlist three components of satellite and what is the main function of space component?  

5 (a) Explain PCM with block diagram.  

OR

(a) Explain FDDI in detail. How does the backup system work in case of one or both rings are broken.  

(b) Explain Data link, Network and Transport layer in detail.  

OR

(b) Explain optical scanning method with functional diagram.