2012
M.Sc.
3rd SEMESTER EXAMINATION
COMPUTER SCIENCE
PAPER—COS-301
Full Marks : 50
Time : 2 Hours

The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable.
Illustrate the answers wherever necessary.

Module—I
(Computer Network)
[Marks—25]

Answer any two questions. 2×10

1. (a) State and explain Nyquist's bit rate theorem for noiseless channel. 2

(b) An certain channel can pass signals in the range of 200 Hz to 2700 Hz. The signal to noise ratio of the channel is 1023. Determine the capacity of the channel. 2

(c) What do you mean by signal level and data level of a digital signal? Explain with proper diagram. 3

(d) A signal has four data levels with a pulse duration of 1 nano second calculate the bit rate. 3

(Turn Over)
2. (a) Draw and explain the constellation diagram of an 8-QAM. 3

(b) Explain with proper diagram, the band with of an FM signal, in terms of the modulating signal. 3

(c) How does a light signal traverse through a multimode graded—index fiber optic cable? 3

(d) What is the difference between sky-propagation and line-of-sight propagation of a signal? 1

3. The sender has sent a data as 110010101010110111110. What form of the data will sent over the channel if

   (i) CRC method is used with divisor polynomial $x^4 + x^2 + 1$. 5+5

   (ii) Checksum method is used.

4. (i) Explain circuit switching in detail. 3

   (ii) What is base band or broad band? 2

   (iii) What is FTP and HTTP? 2

   (iv) Explain the different stages of PPP communication in detail. 3

[Internal Assessment — 5 Marks]

Module-II
5. (a) What do you man by subnetting? Give examples.  

(b) In a class & subnet, the IP address and the mask value of a host are as follows:
   IP Address : 125. 134. 112. 66
   Mask : 255. 255. 224. 0
   Determine the network address.  

(c) Explain 'Hierarchical Routing' with suitable example.  

6. (a) "MIME can not replace SMTP; it is only an extension to SMTP".  
   —Verify if the statement is correct or not.  

(b) What is POP3? How does it differ from IMAP4?  

7. (a) Why UDP is called iterative?  

(b) Explain why TCP is concurrent?  

(c) What is persistent TCP connection? When it is useful?  

(d) Why IP is called connection less?  

C/12/M.Sc./3rd Seme/COS-301 (Turn Over)
8. Write short notes *any two* of the following: 2×5

(i) FTP.
(ii) TELNET.
(iii) TCP/IP.
(iv) Congestion control in TCP.
(v) IP datagram.

*Internal Assessment — 5 Marks*