2022

COMPUTER SCIENCE — HONOURS

Paper : CC-8

(Data Communication Networking and Internet Technology)

Full Marks : 50

The figures in the margin indicate full marks.

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

Answer ***question no.*** **1** and ***any four*** questions from the rest.

1. Answer ***any five*** questions : 2×5

(a) Define : bit rate and baud rate.

(b) Why is multiplexing done?

(c) Why is coaxial cable superior to twisted pair cable?

(d) What is Minimum Hamming distance?

(e) How does a single bit error differ from a burst error?

(f) Write down the differences between switch and hub.

(g) FDM is for analog signals, TDM is for digital signals. Explain why.

(h) What are the different functions of network layer of OSI model?

2. (a) What is transmission impairment? Discuss various types of transmission impairments.

(b) State the advantages of FM over AM. Differentiate between circuit switching and packet switching. 1+3+2+4

3. (a) Describe the following encoding techniques with suitable diagrams :

(i) QPSK

(ii) QAM

(iii) FSK

(b) Discuss the advantages of fibre optic cable.

(c) Find out the number of links in a mesh topology with n number of devices. 6+2+2

4. (a) Discuss the advantage of two dimensional parity over simple parity. Explain with suitable example.

(b) Given a 10 bit sequence 1010011110 and a divisor 1011. Find the CRC. 4+6

5. (a) What is channelization? Explain TDMA with example.

   (b) Explain how digital information is transmitted over an analog channel. 6+4

6. (a) Discuss the need of ARP and RARP.

   (b) Why is dynamic routing preferred over static routing algorithm in a network, which changes continuously?

   (c) Why do we need a DNS system? What is intranet? 4+3+(2+1)

7. (a) State the basic difference between TCP and UDP.

   (b) Explain the use of SMTP.

   (c) What is the purpose of transparent bridge? Define bandwidth of a media.

   (d) Twisted pair cable offers better bandwidth than untwisted pair cable. How? 3+3+2+2

8. (a) Discuss and differentiate between persistent CSMA and non-persistent CSMA.

   (b) How does Manchester encoding differ from differential Manchester encoding?

   (c) State the functions of DNS. 4+2+4
