

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

**Please Turn Over**

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
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