

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

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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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