

[Total No. of Questions - 8] [Total No. of Printed Pages - 2]
(2125)

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M. Tech 1st Semester Examination

Design of Data Communication Networks (NS)

EC-103

Time : 3 Hours

Max. Marks : 100

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Do any five questions. All questions carry equal marks.

1. (a) List and explain the various transmission impairments. Which impairment greatly affects the media performance? (10)
- (b) List the advantages of Cycle Redundancy Codes (CRC) over other error correction measures. Explain your answer with suitable examples. (10)
2. (a) Discuss the various design issues of Data Link Layer. List the services provided by DLL. Explain any one of your choice. (10)
- (b) Compare Circuit, Packet and message switching based on network metrics. "Data Networks are mostly packet switched, rarely circuit switched but never message switched", justify this statement. (10)
3. (a) Compare OSI and TCP/IP model critically and list relative advantages and disadvantages of both models. (10)
- (b) What is the importance of MAC layer? List the advantages of Token Ring over all its predecessor MAC layer protocols. (10)

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4. (a) What do you understand by term "Internetworking"? List various Hardware components used for Internetworking. Explain briefly any two of your choice. (10)
- (b) Discuss significance of IP Addressing. Explain the difficulties involved while implementing transition of IPv4 format to IPv6 format. (10)
5. List the various functions performed by presentation Layer. Explain Data Compression. Why is it necessary? List the various types of data compression. Explain each type with a valid algorithm. (20)
6. What do you mean by the term "Network Operating Systems"? List the important features of Windows NT operating system. Under which circumstance, you would prefer to use LINUX as operating system for your computer. (20)
7. (a) Discuss the various Security Issues while handling Data Networks. Explain the importance of non-repudiation in current scenario. (10)
- (b) "Firewalls are vital saviours for any business establishment" comment on the statement. Explain Packet filtering principle and its implementation. (10)
8. Write short notes on the following:
 - (a) Datagram vs. Virtual Circuit Approach.
 - (b) Connectionless vs. Connection Oriented approach.
 - (c) Guided vs. Unguided Media.
 - (d) Manchester vs. Differential Manchester Coding. (5×4=20)