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(2123)

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M. Tech 1st Semester Examination

Design of Data Communication Networks

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 question carry equal marks. Please be brief and precise.

1. (a) Compare relative merits and de-merits of transmission media on the basis of network performance metrics. **(10)**
(b) List the various services being provided by Data Link Layer. How does flow control is managed by DLL? Support your answer with suitable example. **(10)**
2. (a) Discuss differences between the Asynchronous and Synchronous Data Transmission. Explain the Transmission efficiency matrix for both these approaches for various data rates. **(10)**
(b) List the advantages of Packet switched Networks over Circuit as well as message switched networks. Why is it mandatory for the data networks to be Packet switched Networks? **(10)**
3. (a) Compare OSI and TCP/IP model critically and list relative advantages and disadvantages of both models. **(10)**
(b) Most common Local Area Network access methods are "Contention" methods. Do you agree with statement, please comment? How Random Backoff scheme improves the efficiency in Ethernet networks? **(10)**

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4. (a) What do you understand by term "Internetworking"? List various Hardware components used for Internetworking. Explain significance of NIC and Gateway in modern data communication. **(10)**
- (b) Discuss classes 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 Encryption. List the various methods of data Encryption. Explain one encryption method along with algorithm. **(20)**
6. What do you mean by the term "Network Operating Systems"? List the important features of Unix operating system. Would you prefer to use Unix or Linux as network operating system? **(20)**
7. (a) Discuss the various network attacks along with security issues while handling Data Networks. **(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) Transport Layer Protocols.
- (b) Non-Adaptive vs. Adaptive Routing Protocols.
- (c) Bit oriented vs. Character oriented protocols.
- (d) Physical Interfaces & Service Access Points (SAP). **(4×5=20)**
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