

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 121801

Roll No.

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**B.Tech.**

(SEM. VIII) THEORY EXAMINATION 2013-14

**DATA COMMUNICATION NETWORKS**

*Time : 3 Hours*

*Total Marks : 100*

**Note** :- Attempt all questions. Each question carries equal marks.

1. Attempt any **four** parts of the following : **(5×4=20)**
  - (a) How do the layers of the internet model correlate to the layers of the OSI model.
  - (b) What are the three criteria necessary for an effective and efficient network. Explain in brief.
  - (c) Compare twisted pair, co-axial and optical cables.
  - (d) A low transmission tower is used to transmit data using 3 kHz bandwidth over the link along with 1 watt of noise power. Calculate the rate of data transmission.
  - (e) What is Multiplexing ? Explain frequency division multiplexing. List advantages and disadvantages of FDM.
  - (f) Compare EIA Rs 232 C and EIA Rs 449.
2. Attempt any **four** parts of the following : **(5×4=20)**
  - (a) Explain the reason for moving from the stop and wait ARQ protocol to the 60-Back-N ARQ protocol.
  - (b) Compare and contrast byte stuffing and bit stuffing. Which technique is used in byte oriented protocol ? Which technique is used in bit oriented protocol ?

- (c) Explain about frame format of IEEE 802.5.
- (d) Explain the CRC error detection technique using generator polynomial  $x^4 + x^3 + 1$  and data 11100011.
- (e) Consider the use of 1000 unit frames on a 1 mbps satellite channel. What is the maximum links utilization for :
  - (i) Stop and wait ARQ
  - (ii) Continuous ARQ with window size 7
  - (iii) Continuous ARQ with window size 127.
- (f) Why is the channel throughput double in slotted ALOHA compared to pure ALOHA.

3. Attempt any two parts of the following : (10×2=20)

- (a) Discuss the design issues of Network Layer with example. Explain Bellman Ford routing algorithm.
- (b) What is the Dijkstra's algorithms ? For the network shown in fig (1), show the computations at node (A) using the Dijkstra's algorithms.

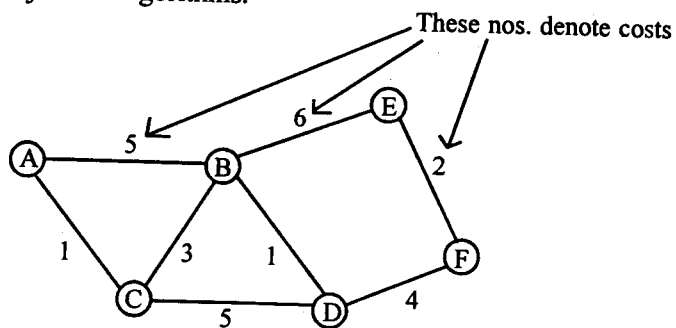


Fig. (1)

- (c) What is the difference between flow control and congestion control. Also discuss the various causes of congestion in subnet.

4. Attempt any two parts of the following : (10×2=20)

- (a) Discuss the role of Bridge, Routers and Gateways in internet connection. List the message types associated with Internet Control Message Protocol (ICMP).
- (b) What are the basic functions of ATM Adaptation Layer (ALL) ? Explain them. What are the drawbacks of ALL 3/4 ? How ALL 5 overcomes them. Explain the operation of ALL 5 clearly.
- (c) Why do we use subnet mask. Explain with example. Convert the IP address whose hexadecimal representation is C22F15B2 to dotted decimal notation.

5. Attempt any four parts of the following : (5×4=20)

- (a) State and explain various applications of the Internet.
- (b) Explain DNS addressing scheme.
- (c) Write a short note on : FTP
- (d) Write a short note on : WWW
- (e) What is the difference between unicasting and multicasting ?
- (f) Compare IPV4 and IPV6.