



Printed Pages : 4

CS – 602

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

PAPER ID : 1036

Roll No.

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B. Tech.

(SEM. VI) EXAMINATION, 2007

COMPUTER NETWORKS

Time : 3 Hours]

[Total Marks : 100

- Note :**
- (1) Attempt *all* questions.
 - (2) All questions carry *equal* marks.

1 Attempt any **four** parts : **5×4=20**

- (a) Explain the working principle of optical fibre transmission media. Show how it works :
 - (i) Multi mode graded index
 - (ii) Mono mode step index.
- (b) What is ISDN? Describe in brief the ISDN working to provide various services.
- (c) Answer whether true or false with justification :
 - (i) Switch breaks the 543 rule for Network topology.
 - (ii) The maximum length of a cable segment in 10 base T can be 200 meters.
 - (iii) Entire bandwidth is occupied by a single frequency when using a broadcast data transmission.
 - (iv) Bridge isolate the two broadcast domains.

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- (d) A low transmission tower 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) Draw the layer diagram of TCP/IP protocol suit and explain it briefly.
- (f) What is meant by terminal handling? Explain it with the help of suitable diagram.

2 Answer any **four** of the following : **5×4=20**

- (a) What are the different types of error detection methods? Explain the CRC error detection technique using generator polynomial $x^4 + x^3 + 1$ and data 11100011.
- (b) Describe the stop and wait flow control technique.
- (c) Two neighbouring nodes A and B uses sliding window protocol with 3 bit sequence number. As the ARQ mechanism Go back N is used with window size of 4. Assume A is transmitting and B is receiving show window position for the following events :
 - (i) Before A send any frame
 - (ii) After A send frame 0,1,2 and receive ACK (acknowledgement) from B for 0 and 1.
- (d) An Aloha network user 19.2 kbps channel for sending message packets of 100 bit long size. Calculate the maximum throughput for pure ALOHA network.
- (e) Describe with the help of suitable diagram the Go-back-N continuous RQ error control scheme.

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- (f) Prove that the throughput of Network using slotted Aloha can be given as

$$S = Ge^{-G}$$

where G is the load and S is throughput.

3 Answer any **four** of the following : **5×4=20**

- (a) What is count to infinity problem? How it can be solved using split horizon algorithm? What are its limitations?
- (b) Answer the following question :
 - (i) Why the leaky bucket algorithm allow just one packet per tick, irrespective of packet size?
 - (ii) Why the reassembly of packets is done at destination instead of intermediate system in Internet?
- (c) Explain the following terms with example :
 - (i) Multicast addressing
 - (ii) Unicast addressing
 - (iii) Anycast addressing.
- (d) Explain the different types of headers supported by IPr6.
- (e) Complete the final routing table at node A using RIP protocol for the following network. Assume the cost of hop count.

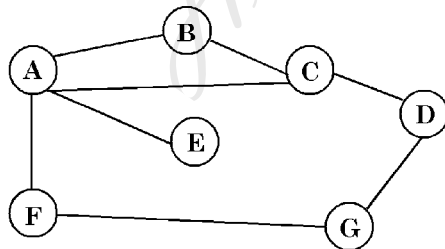


Fig. 1

Distance	Cost	Next Hop

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- (f) What is meant by congestion in network?
Explain the Debit algorithm for congestion avoidance.

4 Answer any **two** of the following : **10×2=20**

- (i) Explain the message authentication operation used in RSA technique.
- (ii) Generate the public key and secret key for the following prime numbers using RSA algorithm :
 $P = 3, Q = 11$ take $E = 5$
- (iii) Differentiate between the block cypher with transposition cypher.
- (iv) Discuss the RPC design and implimentation issues.

5 Answer any **two** of the following : **10×2=20**

- (a) Answer the following related to DNS :
- (i) How does DNS perform name resolution?
- (ii) What are the different types of name servers?
- (iii) Mention the DNS message format for query and reply messages.
- (b) Answer the following related to SMTP :
- (i) What are the three main components of internet mail system?
- (ii) Give three SMTP commands issued by client and explain it briefly.
- (iii) How does the SMTP perform the mail data transfer operation ?
- (iv) Give mail message format using multimedia mail extension.
- (c) Write short notes on any **two** of the following :
- (i) FTP and TFTP
- (ii) Virtual private networking
- (iii) Firewall.