MAULANA ABUL KALAM AZAD UNIVERSITY OF TECHNOLOGY, WEST BENGAL

Paper Code : EC602/PCC-CS602/PCCCS602 Computer Networks

UPID : 006596

Time Allotted : 3 Hours *Full Marks :70*

The Figures in the margin indicate full marks.
Candidate are required to give their answers in their own words as far as practicable

Group-A (Very Short Answer Type Question)

1. Answer *any ten* of the following : [1 x 10 = 10]

(i) Define Data Rate in terms of transmission.

(ii) Name one intradomain routing algorithm.

(iii) Which transport layer protocol is used for SMTP?

(iv) Write one advantage of VPN.

(v) If there are n number of nodes in a network then how many physical links are required in case of MESH Topology?

(vi) What is the maximum efficiency achievable in Pure Aloha?

(vii) What is the purpose of class D address?

(viii) The technique of temporarily delaying outgoing acknowledgements so that they can be hooked onto the next outgoing data frame is called _____.

(ix) What is DNS?

(x) Which technique is used to detect and correct single bit error?

(xi) Which protocol is used to get the MAC address given any IP address?

(xii) Which layer is responsible for Host-to-Host delivery?

Group-B (Short Answer Type Question)

Answer *any three* of the following : [5 x 3 = 15]

2. Compare and contrast between Circuit Switching and Packet Switching. [5]

3. Discuss Mesh topology along with a diagram. [5]

4. State one advantage and disadvantage of Independent Acknowledgement and Cumulative acknowledgement each.In Go Back N ARQ if both the sender window size and receiver window size is 1 then what does it indicate? [5]

5. Explain CRC with a suitable example. [5]

6. What are the two possible transport services? What is meant by segment? What is congestion? [5]

Group-C (Long Answer Type Question)

Answer *any three* of the following : [15 x 3 = 45]

7. (a) Explain bit stuffing method with a suitable example. [5]

(b) Let us assume that data 111001101 is transmitted and the received code is 110001101. Now from the received code, let us detect and correct the error using hamming code. [5]

(c) State the functionalities of MAC Sublayer. [5]

8. (a) Explain Distance Vector Routing algorithm with an example. [10]

(b) What do you mean by count to infinity problem? How this problem is adressed? [5]

9. (a) Explain the functionalities of the Transport layer. [5]

(b) Explain Leaky Bucket algorithm. [5]

(c) Biefly explain different open loop congestion techniques. [5]

10. Write short notes on (Any three): [15]

i. DNS
ii. FTP
iii. Firewall
IV. TELNET

11. (a) An ISP is granted a block of addresses starting with 190.100.0.0/16 (65,536 addresses). The ISP needs to distribute these addresses to three groups of customers as follows: [8]

i. The first group has 64 customers; each needs 256 addresses.

ii. The second group has 128 customers; each needs 128 addresses.

iii. The third group has 128 customers; each needs 64 addresses.

Design the sub-blocks and find out how many addresses are still available after these allocations

(b) Classless Inter-domain Routing (CIDR) receives a packet with address 131.23.151.76. The router's routing table has the following entries: [5]

Prefix Output I nterface Identifier

131.16.0.0/12 3

131.28.0.0/14 5

131.19.0.0/16 2

131.22.0.0/15 1

Explain which interface the router would choose to forward the packet and why?

(c) What do you mean by subnetting and supernetting? [2]

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