



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 addressed? [5]
9. (a) Explain the functionalities of the Transport layer. [5]
- (b) Explain Leaky Bucket algorithm. [5]
- (c) Briefly 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 | Interface | 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]

*** END OF PAPER ***