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Paper Code : CS-602

COMPUTER NETWORKS

Time Allotted : 3 Hours | *Full Marks* : 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for the following : $10 \times 1 = 10$

i) In an optical fibre, the inner core is ..... the cladding.

a) denser than

b) less dense than

c) the same density as

d) another name for .

ii) In the string 219.46.123.107, what is the network address of the host we are looking for ?

a) 219.46.123.0 b) 107.123.0.0

c) 107.123.46.0 d) 107.0.0.0

iii) The two parameters used for measuring the performance of a network are

a) throughput & delay

b) power & delay

c) power and throughput

d) throughput & buffer size.

iv) Sliding window protocol is used for

a) error control b) session control

c) flow control d) concurrency control.

v) Which of the following protocols is a network layer protocol ?

a) FTP b) ARP

c) UDP d) Telnet.

vi) The subnet mask 255.255.255.192 extends the network portion to

a) 16 bits b) 24 bits

c) 26 bits d) 32 bits.

vii) A bridge has access to the ..... address of a station on the same network.

a) Physical (MAC) b) Network

c) Service access point d) all of these.

viii) Hamming code is a method of

a) error detection b) error-correction

c) error-encapsulation d) both (a) & (b).

ix) Connection establishment involves a ..... – way handshake in TCP.

a) one b) two

c) three d) four.

x) Which the following is an inter-domain routing protocol ?

a) RIP b) OSPF

c) BGP d) Both (a) & (b).

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. $3 \times 5 = 15$

2. Compare Mesh and Star Topology.

3. Explain ALOHA and Slotted ALOHA. Compare between them.

4. Explain Distance Vector Routing with an example.

5. Compare Leaky Bucket Algorithm with Token Bucket Algorithm.

6. Why do we need a DNS system ? What is inverse domain ? $3 + 2$

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

7. a) Find NRZ-I, Manchester and Differential Manchester encoding for the binary data 11001000.

   b) What sampling rate is required for a signal with bandwidth of 10,000 Hz (2,000 to 12,000 Hz) ?

c) State the advantages of FM over AM.

d) What is transmission impairment ? Discuss various types of transmission impairments. 6 + 2 + 2 + 5

8. a) How selective-repeat ARQ will work for lost frame ?

b) In Go-Back-N ARQ show why the window size should be $< 2^m$.

c) Applying CRC algorithm determine the transmitted frame for the frame 10101000 where the generator polynomial is $x^3 + x + 1$.

d) Compare bit stuffing with byte stuffing with an example. 3 + 3 + 5 + 4

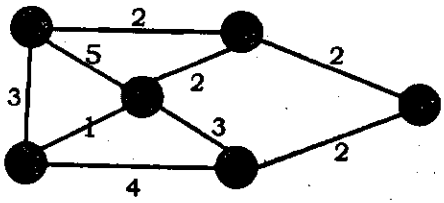
9. a) Describe the fields of an IP Datagram.

b) An IP network 192.168.130.0 is using the subnet mask 255.255.255.224. Determine the number of subnets, number of hosts in each subnet and from what subnet the following hosts belong to :

192.168.130.10 192.168.130.93

192.168.130.222 192.168.130.250

c) Apply Dijkstra's algorithm to find the shortest path from node 4 to node 6 of the network graph shown in the figure below :



5 + 5 + 5

10. a) Compare TCP with UDP.

b) Describe Quality of Service (QoS).

c) Discuss the methods of closed loop congestion control.

d) Compare circuit switching with packet switching.

4 + 4 + 4 + 3

11. Write short notes on any *three* of the following : 3 × 5

a) DQDB

b) FTP

c) Cryptography

d) DNS

e) ICMP

f) HTTP.