



VEERMATA JIJABAI TECHNOLOGICAL INSTITUTE

[Central Technological Institute, Maharashtra State]

Matunga, Mumbai-400 019

SEMESTER EXAMINATION	<i>ESE MAY '13</i>	DATE OF EXAM	<i>22.05.2013</i>
SEMESTER & PROGRAM	<i>IV & B. Tech.</i>	TIME	<i>1:30 p.m - 4:30 p.m</i>
TIME ALLOWED	<i>3 HRS.</i>	MARKS	<i>100</i>
COURSE (CourseCode) :	<i>TCP/IP</i>		

- Instructions
1. All questions carry equal marks.
 2. Figures to the right indicate full marks.
 3. All questions are compulsory.

Section-I

Q.1 1. Find the error, if any, in the following IPv4 addresses. 4

- a. 111.56.045.78
- b. 221.34.7.8.20
- c. 75.45.301.14
- d. 11100010.23.14.67

2. An IPv4 packet has arrived with the first few hexadecimal digits as shown.

Ox45000028000100000102 ...

How many hops can this packet travel before being dropped? The data belong to what upper-layer protocol? 4

3. Explain IGMP Message Format? 4
4. Explain ISO-OSI Reference model with respect to its layers and protocols. 4
5. Draw the UDP datagram format in detail. 4

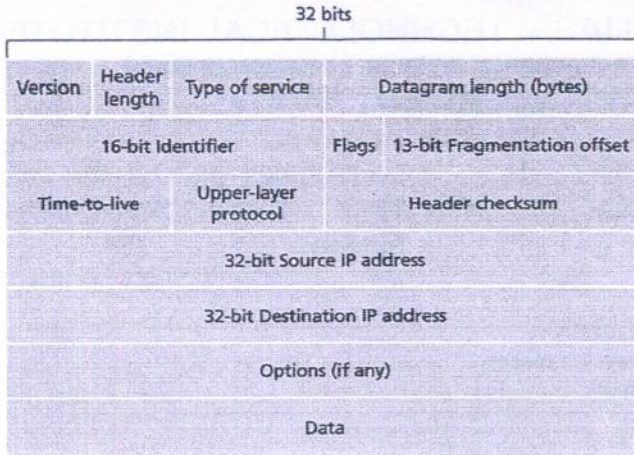
Q.2 1. An ICMP message has arrived with this header (in hexadecimal) 10

(05 00 11 12 11 0B 03 02)₁₆

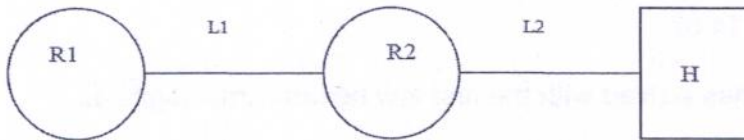
- i) What is the type of message?
- ii) What is the code?
- iii) What is the purpose of message?
- iv) What is the value last four bytes?
- v) What does the last byte signify?

2. What is sliding window protocol explain with suitable diagram? 10

Q.3 1.



The picture above describes the format of an IPv4 datagram. The diagram below illustrates Router R1 sending a datagram to host H through Router R2.



Link L1 only permits a MTU of 1500 bytes. Link L2 only permits a MTU of 1100 bytes. (MTU= Maximum Transfer Unit) A is an IP datagram which i) Has size 4000 bytes (the size of a datagram includes its header) ii) Is not using any of the option fields in its header. Because A is larger than the MTUs of Links L1 and L2, A must be fragmented as it is sent from R1 to H. Assume that all datagrams sent are received successfully.

- a) Into how many IP datagrams is A fragmented when it is sent from R1 to R2 over L1? What is the size (in bytes) of each of these smaller fragments? Which of these fragments has its offset-flag bit set to 0? 5
- b) In order for Host H to receive the data in A, R2 must also send some datagrams to H. How many IP datagrams does H receive? What is the size (in bytes) of each of these smaller fragments? Which of these fragments has its offset-flag bit set to 0? 5

OR

1. A host uses TCP to send a 100KB file. Assume all the packets it sends have size 1000B (not including the IP and TCP headers). Thus, if there were no losses it would take exactly 100 packets to send the entire file. However, due to congestion, three packets are lost: the 2nd, the 50th, and the 98th packet sent by the sender. (Note that due to retransmission(s), the 50th sent packet is not the 50th chunk of the file.) No other packets are lost.

Plot the congestion window (cwnd) versus time for both TCP Tahoe and TCP Reno. Please make sure that you specify the size of cwnd when a packet loss occurs, size of ssthresh, and label the diagrams with slow start, AIMD, fast retransmit, and retransmission timeout where appropriate. Assume cwnd is measured in packets.

10

Section II

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| Q.1 | 1. Explain the Ethernet frame format. | 05 |
| | 2. An ISP is granted a block of addresses starting with 150.80.0.0/16. The ISP wants to distribute these blocks to 2600 customers as follows:
i. The first group has 200 medium-size businesses; each needs approximately 128 addresses.
ii. The second group has 400 small businesses; each needs approximately 16 addresses.
iii. The third group has 2000 households; each needs 4 addresses. Design the sub blocks and give the slash notation for each sub block. Find out how many addresses are still available after these allocations. | 08 |
| | 3. Explain the ARP package. | 07 |
| Q.2 | 1. Explain the DHCP operation in detail | 15 |
| | 2. What is the difference between link state and distance vector | 05 |
| Q.3 | Explain the DNS Resolution. | 10 |

-: All the best :-

