

GANPAT UNIVERSITY**B. Tech. Semester: VI (Computer Engineering / Information Technology)****Regular Examination April – June 2015****2CE602/2IT602 Network Protocols and Programming****Total Marks: 70****Time: 3 Hours**

- Instruction:** 1: Figures to right side indicated full marks.
 2: Each section should be written in a separate answer book.
 3: Assume suitable data if required.
 4: Be precise and to the point in your answer.

Section - I

- Que. – 1** [A] How link state routing builds routing table? Explain four sets of actions are required to build routing table. [6]
 [B] Explain RIP version 2 in detail. [6]

OR

- Que. – 1** [A] What is the difference between distance vector routing and link state routing? [6]
 [B] Explain following terms: [6]
 a. Transit Autonomous System
 b. BGP keepalive message
 c. ICMP source quench message

- Que. – 2** [A] The ARP output module receives an IP datagram (from the IP layer) with the destination address **220.1.7.14**. How ARP protocol will handle packets for the same destination? Explain. [5]

Table 1: ARP Catch table

Statc	Queue	Attempts	Time-out	Protocol Addr.	Hardware Addr.
R			600	200.1.7.20	0B2362400FFF
R			840	116.1.7.23	ACAE32457342
F					
P	1	2		116.1.7.24	

- [B] Explain various techniques of forwarding of IP packets based on destination addresses. [6]

OR

- Que. – 2** [A] Explain structure of router at network layer. [6]
 [B] Write short note on IGMP. [5]

- Que. – 3** [A] Explain following ICMP error reporting messages: [6]
 (1) Time exceeded message (2) Parameter Problem message
 [B] Explain Address aggregation with example. [4]
 [C] Explain proxy ARP. [2]

Section – II

- Que. – 4 [A] Explain in brief the four different timers: Retransmission, Persistence, Keep alive and TIME-WAIT used in TCP? [6]
- [B] Answer the following questions: [6]
- What is the minimum size of a UDP datagram?
 - What is the maximum size of a UDP datagram?
 - What is the minimum size of the process data that can be encapsulated in a UDP datagram?
 - What is the maximum size of the process data that can be encapsulated in a UDP datagram?
 - If the sender decides not to include the checksum then what value is sent in checksum field?
 - UDP is suitable for DNS but not suitable for SMTP why?

OR

- Que. – 4 [A] What is Retransmission ambiguity and how it is solved by Karn's Algorithm? What is Exponential back-off strategy of calculating RTO? [6]
- [B] The following is a dump of a UDP header in hexadecimal format. [6]
- CB8400D001C001C**
- What is the source port number?
 - What is the destination port number?
 - What is the total length of the user datagram?
 - What is the length of the data?
 - Is the packet directed from a client to a server or vice versa?
 - What is the client process?

Hint: Well known port for Daytime protocol is 13

- Que. – 5 [A] Briefly describe the SNMP protocol. Define the roles of SNMP, SMI and MIB in network management? [4]
- [B] Show the BER (Basic encoding rules) encoding for the INTEGER 14, where the Tag value of Type INTEGER is 00000010 (in binary) or 02 (in Hex) and size is 4 Bytes. [4]
- [C] TCP opens a connection using an initial sequence number (ISN) of 14,534. The other party opens the connection with an ISN of 21,732. Show the three TCP segments during the connection establishment with complete header information? [3]
- Use the following Flag fields for corresponding segments -
- 000000 → A data segment with no acknowledgment
 - 010000 → An ACK segment with or without data
 - 000010 → A SYN segment
 - 000001 → A FIN segment
 - 010010 → An ACK + SYN segment

You can assume any suitable value for rest of the TCP header fields.

OR

- Que. – 5 [A] Explain the 3 phases of congestion control policy used in TCP? [6]
- [B] Explain the SYN- flooding attack in TCP. How it is overcome by SCTP protocol? [5]

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- Que. – 6 [A] Write short note on: SMTP [4]
- [B] An ISP is granted a block of addresses starting with 190.100.0.0/16. The ISP needs to distribute these addresses to three groups of customers as follows: [6]
- The first group has 64 customers; each needs 256 addresses.
 - The second group has 128 customers; each needs 128 addresses.
 - The third group has 128 customers; each needs 64 addresses.
- Design the subblocks and give the slash notation for each subblock. Find out how many addresses are still available after these allocations.
- [C] What is the broadcast address for Ethernet? [1]
- [D] Which fields of the IP header change from router to router? [1]