

**M S RAMAIAH INSTITUTE OF TECHNOLOGY**  
(Autonomous Institute, affiliated to VTU)  
**DEPARTMENT OF INFORMATION SCIENCE & ENGINEERING**

<b>Term:</b>	17.08.2016 to 17.12.2016	<b>Course Code:</b>	IS531 / IS611
<b>Course:</b>	Computer Networks	<b>Semester:</b>	V – A, B & C
<b>CIE:</b>	Test – I	<b>Max Marks:</b>	30
<b>Date:</b>	03.10.2016	<b>Time:</b>	9.30 AM – 10.30 AM

**Portions for Test:** Lecture Nos. from 1 to 18 as per lesson plan.

**Instructions to Candidates:** Answer any two questions.

**Note:** Mobiles and Programmable Calculators are strictly prohibited.

Sl. #	Question	Marks	Bloom's Level #	COs
1.	a) Give the full form of CIDR? An organization is granted the address block starting with 211.17.180.0/24. The administrator wants to create 32 subnets with equal number of addresses. (i) Find the number of addresses in each subnet (ii) Find the subnet mask (iii) Find the first and last address in subnet 1 (iv) Find the first and last addresses in subnet 32	5	A	CO1
	b) Give the advantages of IPV6 over IPV4.	5	An	CO1
	c) Explain the different ICMP error reporting messages.	5	U	CO2
2.	a) Sketch the header format for IPV4 datagram.	5	R	CO1
	b) Discuss the use of tunneling in IP transition from version 4 to version 6.	5	U	CO1
	c) Write a brief note on Proxy ARP.	5	U	CO2
3.	a) Briefly discuss the procedure for NAT address translation using one IP address.	5	U	CO1
	b) Give any five comparisons between IPV4 and IPV6 packet headers.	5	An	CO1
	c) What is the need for delayed response strategy in IGMP? Change the multicast IP address 235.153.212.96 to an Ethernet multicast physical address	5	A	CO2

**#R – Remember; U – Understand; A – Apply; An - Analyze**

**10 b)    IA TEST 1 – ANSWER SCHEME**

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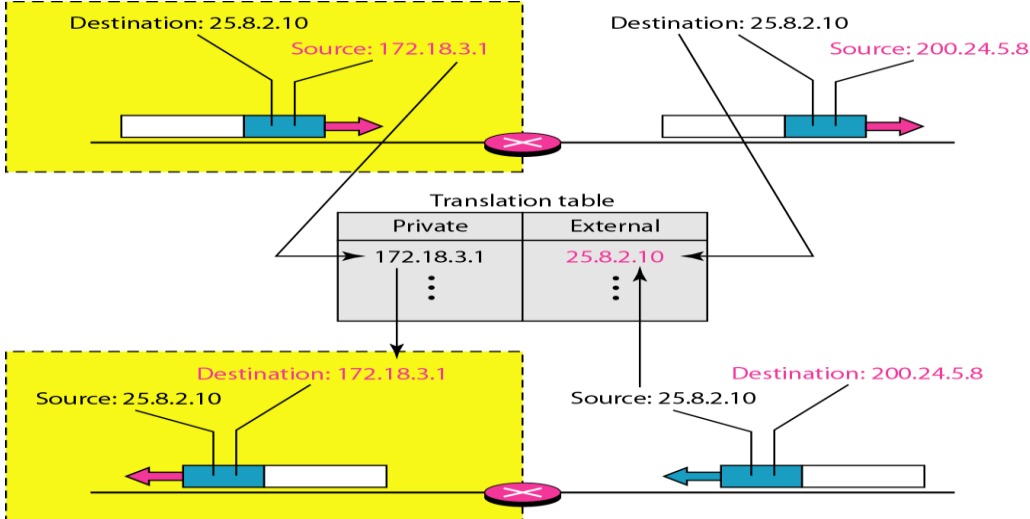
**Evaluation Scheme**

**Portions for Test:** Lecture Nos. from 1 to 18 as per lesson plan.

**Instructions to Candidates:** Answer any three questions.

Q.#	Answer	Marks
1a)	<b>CIDR:</b> Classless Interdomain Routing ----- (i) Number of addresses in each subnet = 8 ----- (ii) Subnet mask = /29 ----- (iii) In subnet 1: ----- First address = 211.17.180.0/29 and Last address = 211.17.180.7/29 (iv) In subnet 32: ----- First address = 211.17.180.248/29 and Last address = 211.17.180.255/29	<b>1</b> <b>1</b> <b>1</b> <b>1</b> <b>1</b>
1b)	<b>Advantages of IPV6 over IPV4: Explain any five (5X1)-----</b> (i) Larger address space (ii) Better header format (iii) New options (iv) Allowance for extension (v) Support for resource allocation (vi) Support for more security	<b>5</b>
1c)	<b>ICMP error reporting messages: Explain all five (5X1) -----</b> (i) Destination Unreachable (ii) Source Quench (iii) Time Exceeded (iv) Parameter Problem (v) Redirection	<b>5</b>
2a)	<b>IPV4 header format (only diagram) -----</b>	<b>5</b>

	<div><div><div><div><div></div><div>20–65,536 bytes</div></div><div><div></div><div>20–60 bytes</div></div></div><div><div></div><div>Header</div><div>Data</div></div></div><div><table><tr><td>VER 4 bits</td><td>HLEN 4 bits</td><td>Service 8 bits</td><td colspan="2">Total length 16 bits</td></tr><tr><td colspan="3">Identification 16 bits</td><td>Flags 3 bits</td><td>Fragmentation offset 13 bits</td></tr><tr><td colspan="2">Time to live 8 bits</td><td>Protocol 8 bits</td><td colspan="2">Header checksum 16 bits</td></tr><tr><td colspan="5">Source IP address</td></tr><tr><td colspan="5">Destination IP address</td></tr><tr><td colspan="5">Option</td></tr></table><div>32 bits</div></div></div>	VER 4 bits	HLEN 4 bits	Service 8 bits	Total length 16 bits		Identification 16 bits			Flags 3 bits	Fragmentation offset 13 bits	Time to live 8 bits		Protocol 8 bits	Header checksum 16 bits		Source IP address					Destination IP address					Option					
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2c)	<div><div><div><div><div>The proxy ARP router replies to any ARP request received for destinations 141.23.56.21, 141.23.56.22, and 141.23.56.23.</div></div><div><div>141.23.56.21</div><div>141.23.56.22</div><div>141.23.56.23</div></div><div><div>Added subnetwork</div><div>Proxy ARP router</div></div><div><div>Router or host</div><div>Request</div></div></div></div><div><div>5</div></div></div>																															

3a)	<p><b>NAT address translation using one IP address (Dig: 2.5 marks and Explanation: 2.5 marks)</b> -----</p> 	5									
3b)	<p><b>Any five comparisons (5X1)</b> -----</p> <table><tr><th>Comparison</th></tr><tr><td>1. The header length field is eliminated in IPv6 because the length of the header is fixed in this version.</td></tr><tr><td>2. The service type field is eliminated in IPv6. The priority and flow label fields together take over the function of the service type field.</td></tr><tr><td>3. The total length field is eliminated in IPv6 and replaced by the payload length field.</td></tr><tr><td>4. The identification, flag, and offset fields are eliminated from the base header in IPv6. They are included in the fragmentation extension header.</td></tr><tr><td>5. The TTL field is called hop limit in IPv6.</td></tr><tr><td>6. The protocol field is replaced by the next header field.</td></tr><tr><td>7. The header checksum is eliminated because the checksum is provided by upper-layer protocols; it is therefore not needed at this level.</td></tr><tr><td>8. The option fields in IPv4 are implemented as extension headers in IPv6.</td></tr></table>	Comparison	1. The header length field is eliminated in IPv6 because the length of the header is fixed in this version.	2. The service type field is eliminated in IPv6. The priority and flow label fields together take over the function of the service type field.	3. The total length field is eliminated in IPv6 and replaced by the payload length field.	4. The identification, flag, and offset fields are eliminated from the base header in IPv6. They are included in the fragmentation extension header.	5. The TTL field is called hop limit in IPv6.	6. The protocol field is replaced by the next header field.	7. The header checksum is eliminated because the checksum is provided by upper-layer protocols; it is therefore not needed at this level.	8. The option fields in IPv4 are implemented as extension headers in IPv6.	5
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3c)	<p><b>Need for delayed response strategy in IGMP</b> -----</p> <p>To ensure only one response is sent for a particular group and prevent unnecessary traffic (Explain)</p> <p><b>Solution to the problem</b> -----</p> <p><b>01:00:5E:19:D4:60</b></p>	<p>3</p> <p>2</p>									