

18CSC302J-COMPUTER NETWORKS
QUESTION BANK
UNIT-I
(MULTIPLE CHOICE QUESTIONS)

S.NO	QUESTION	BLOOMS LEVEL	CLO	PG. NO
1.	Protocol used for mapping the physical addresses to logical address is A. ARP B. RARP C. ICMP D. IGMP ANSWER: B	L1	CLO1	228
2.	Protocol used to resolve the logical address to an ethernet address A. ARP B. RARP C. ICMP D. IGMP ANSWER: A	L1	CLO1	220
3.	UDP provides additional services over Internet Protocol A. Routing and switching B. Sending and receiving of packets C. Multiplexing and demultiplexing D. Demultiplexing and error checkin ANSWER: D	L1	CLO1	417
4.	The transport layer protocol used for real time multimedia A. TCP B. UDP C. ARP D. RARP ANSWER: B	L1	CLO1	418
5.	One of the header fields in an IP datagram used to prevent packet looping A. Header checksum B. Fragment Offset C. TOL D. TOS ANSWER: C	L2	CLO1	163
6.	ICMP always reports error messages to A. Destination B. Router C. Source D. Previous router ANSWER: C	L1	CLO1	246

7.	Host A sends a datagram to Host B with size 7000 which is routed through router R1. Ethernet is used for transmission where MTU is 1500. How many fragments will be generated? a. 4 b. 5 c. 6 d. 7 ANSWER: b	L1	CLO1	
8.	Which program is used to find a host is live and responding during debugging A. Ping B. Shell C. Traceroute D. Tracert ANSWER: A	L2	CLO1	126
9.	Command used to trace the path of a packet from the source to destination in windows A. Ping B. Locater C. Traceroute D. Tracert ANSWER: D	L2	CLO1	96
10.	No ICMP error message will be generated for a datagram for a ____ Address A. Unicast B. Multicast C. Physical D. Logical ANSWER: B	L1	CLO1	248
11.	What is the maximum packet size of IP PROTOCOL? a. 65,536 bytes b. 1220 bytes c. 65,535 bytes d. 64 bytes ANSWER: c	L1	CLO1	
12.	Field that is used to detect errors over the entire user datagram A. Checksum B. source port C. udp header D. destination port ANSWER: A	L1	CLO1	35
13.	If the value in the protocol field is 6, The transport layer protocol used is A. TCP B. UDP C. ICMP D. IGMP ANSWER: B	L2	CLO1	416

14.	<p>The field that helps to check rearrangement of fragments</p> <p>A. Flag</p> <p>B. TTL</p> <p>C. TOS</p> <p>D. Offset</p> <p>ANSWER: D</p>	L1	CLO1	216
15.	<p>The traffic class field is used to specify the priority of the IP packet which is a similar functionality to the ____field in the IPv4 header</p> <p>A. TOS</p> <p>B. TTL</p> <p>C. Flag</p> <p>D. Offset</p> <p>ANSWER: A</p>	L2	CLO1	197
16.	<p>An Ethernet multicast physical address is in the range of _____</p> <p>a. 02:00:5E:00:00:00 to 01:00:5E:7F:FF:FF.</p> <p>b. 01:00:5E:00:00:00 to 02:00:5E:7F:FF:FF.</p> <p>c. 02:00:5E:00:00:00 to 01:00:5E:7F:FF:FF.</p> <p>d. 01:00:5E:00:00:00 to 01:00:5E:7F:FF:FF.</p> <p>ANSWER: D</p>	L1	CLO1	
17.	<p>IPv6 packet can live up to ____ router hops</p> <p>A. 256</p> <p>B. 512</p> <p>C. 255</p> <p>D. 511</p> <p>ANSWER: C</p>	L1	CLO1	215
18.	<p>Internet Group Management Protocol (IGMP) relates to</p> <p>A. Session Layer</p> <p>B. Transport Layer</p> <p>C. Network Layer</p> <p>D. Data link Layer</p> <p>ANSWER: C</p>	L1	CLO1	252
19.	<p>The maximum transmission unit value for FDDI ring is</p> <p>A. 1500</p> <p>B. 2552</p> <p>C. 4352</p> <p>D. 2343</p> <p>ANSWER: C</p>	L2	CLO1	196
20.	<p>An ARP packet is encapsulated directly into ____ Frame</p> <p>A. Physical</p> <p>B. Network</p> <p>C. Data link</p> <p>D. Transport</p> <p>ANSWER: C</p>	L1	CLO1	236
21.	<p>Identify the debugging tool which is used to find if a host is alive or responding</p> <p>a. ping</p> <p>b. traceroute</p>	L1	CLO1	

	c. FTP d. UDP ANSWER: a			
22.	The protocol used to create sub netting effect A. ARP B. RARP C. ICMP D. Proxy ARP ANSWER: A	L1	CLO1	235
23.	Number of socket addresses needed to use the services of UDP A. 1 B. 2 C. 3 D. 4 ANSWER: B	L1	CLO1	423
24.	Server program informs TCP that it is ready to close connection is called as ____ a. Active close b. Passive close c. Active open d. Passive open ANSWER: B	L1	CLO1	
25.	UDP packets are encapsulated in the form of A. Data link frame B. Ethernet frame C. TCP segment D. IP datagram ANSWER: D	L1	CLO1	426
26.	Which of the following is not a component of an ARP package A. Cache table B. Cache control module C. Checksum D. Queues ANSWER: C	L2	CLO1	237
27.	The length of logical address in TCP/IP is a. 64 bits b. 32 bits c. 48 bits d. 16 bits ANSWER: b	L1	CLO1	
28.	Two protocols can be used instead of RARP A. DHCP and ICMP B. Boot and ICMP C. IGMP and ICMP D. DHCP and Boot ANSWER: D	L1	CLO1	240

29.	Additional services provided by the UDP protocol over Internet Protocol is A. Demultiplexing and error checking B. Routing and switching C. Multiplexing and demultiplexing D. Sending and receiving of packets ANSWER: C	L1	CLO1	426
30.	Which field helps to check rearrangement of the fragments? A. offset B. Flag C. Identifier D. TTL ANSWER: A	L1	CLO1	115
31.	IP is a Datagram A. unreliable B. static C. connection oriented D. reliable ANSWER: A	L1	CLO1	117
32.	Select the bit size of the cumulative acknowledgement a. 64 bits b. 32 bits c. 16 bits d. 8 bits ANSWER: b	L1	CLO1	
33.	In _____, there is one source and a group of destinations a. Unicasting b. Multicasting c. Broadcasting d. Multitasking Answer: b	L1	CLO1	336
34.	Identify the Multicast applications a. Audio streams b. Teleconferencing c. Video streams d. Text related documents Answer: b	L2	CLO1	338
35.	Identify the block which is called Stream Multicast Group Block a. 224.10.0.0/16	L2	CLO1	340

	b.224.111.0.0/16 c. 224.1.11.0/16 d. 224.1.0.0/16 Answer:d			
36.	_____allows multiple IP addresses for each end a. SCTP association b. TCP association c. UDP association d. FTP association Answer: a	L1	CLO1	505
37.	The connection establishment in TCP is called _____ a.Three-way handshaking b.Two way handshaking c. One way handshaking d.Four way handshaking Answer: a	L1	CLO1	442
38.	Identify the stream-oriented protocol a.UDP b.FTP c.TCP d.ICMP Answer: c	L2	CLO1	446
39.	_____segment consumes one sequence number if it does not carry data a.FIN b.ACK c.PSH d.TCP Answer: a	L1	CLO1	446
40.	Identify the heart of the error control mechanism. a.Segments	L2	CLO1	466

	b.Frame c.Datagram d. Retransmission of segments Answer: a			
41.	Which protocol can be best modeled as a Selective Repeat protocol. a.IP b.FTP c.TCP d. UDP Answer: C	L2	CLO1	467
42.	Find out actual window size. a minimum (cwnd) b. minimum (rwnd) c. maximum (rwnd, cwnd) d. minimum (rwnd, cwnd) Answer: C	L2	CLO1	473
43.	In the _____ algorithm, the size of the congestion window increases exponentially until it reaches a threshold a. Slow start b. RTT c.MSS d.CWND Answer: a	L1	CLO1	475
44.	_____ balances the rate a producer creates data with the rate a consumer can use the data. a.Error Control b. Flow control c.Checksum d. Congestion control Answer: b	L1	CLO1	459
45.	Which of the following protocols uses both TCP and UDP? a.FTP b.SMTP	L2	CLO1	

	c.Telnet d.DNS Answer: d			
46.	Which is used to check for a corrupted segment a.FIN b.Error c.ACK d. Checksum field Answer: d	L2	CLO1	465
47.	_____reports a block of data that is out of order. a. SACK b.ACK c. Cumulative Acknowledgement d.FIN Answer: a	L1	CLO1	465
48.	Identify the solution proposed to prevent the silly window syndrome a.Additive Increase b.Multiplicative Decrease c.Clark's solution d. Slow start Answer: c	L2	CLO1	464
49.	A serious problem can arise in the _____when either the sending application program creates data slowly or the receiving application program consumes data slowly, or both. a. Sliding window operation b. silly window syndrome c. Additive Increase d.Multiplicative Decrease Answer: a	L1	CLO1	463
50.	Delaying the acknowledgment provides solution for _____. a. Sliding window operation b. silly window syndrome c. Additive Increase d. Multiplicative Decrease Answer: b	L1	CLO1	463
51.	Identify the protocol that uses multicast link state routing to create source-based trees. a. Multicast Open Shortest Path First	L2	CLO1	359

	b. Multicast Shortest path first c. Multicast Open Shortest Path d. Multicasting Answer: b			
52.	_____broadcasts packets, but creates loops in the systems. a. Unicasting b. Multicasting c. Flooding d. Broadcasting Answer: c	L1	CLO1	360
53.	Which of the following are TCP/IP protocols used at the Application layer of the OSI model? IP TCP Telnet FTP TFTP a.1 and 3 b.1, 3 and 5 c.3, 4 and 5 d. 1 and 2 Answer: c	L2	CLO1	432
54.	A TCP packet is called as _____ a.Datagram b.Frame c.Segment. d.Packet Answer: c	L1	CLO1	435
55.	Which of the following are layers in the TCP/IP model? 1.Application 2.Session	L2	CLO1	432

	3.Transport 4.Internet 5.Data Link 6.Physical a.1 and 2 b.1, 3 and 4 c.2, 3 and 5 d.3, 4 and 5 Answer: b			
56.	Identify the packet that is encapsulated in IP a. Datalink frame b.TCP packet c. Frame d. Physical layer packet Answer: b	L2	CLO1	432
57.	Which protocol conserves the message Boundaries a.UDP b.TCP c.FTP d. SMTP Answer: a	L2	CLO1	503
	10 Marks			
S.NO	QUESTION	BLOOMS LEVEL	CLO	PG. NO
1	Explain in detail about the TCP/IP protocol suite with a neat diagram.	L1	CLO 1	
2	Summarize the need for IP Fragmentation & Reassembly.	L1	CLO 1	
3	An IP datagram has arrived with the following information in the header (in hexa-decimal): 45 00 00 54 00 03 00 00 20 06 00 00 7C 4E 03 02 B4 0E 0F 02 a. Are there any options? b. Is the packet fragmented? c. What is the size of the data? d. Is a checksum used?	L3	CLO 1	

	<p>e. How many more routers can the packet travel to? f. What is the identification number of the packet? g. What is the type of service? Answer: a. Since HLEN is 5, there is no option b. The packet is not fragmented because the offset value is 0 and the flags value is 0 c. The size of the data is $54 - 20 = 34$ bytes d. No checksum is used e. The packet can travel to 20 more routers f. The identification number of this packet is 0003 g. The type of service is normal (0)</p> <table border="1"><tr><td>Ver: 4</td><td>HLN: 5</td><td>DS: 00</td><td colspan="2">Total Length:0054</td></tr><tr><td colspan="3">Identification :0003</td><td>Flags :00</td><td>Offset :00</td></tr><tr><td colspan="2">TTL : 20</td><td>Protocol :06</td><td colspan="2">Header Check Sum: 0000</td></tr><tr><td colspan="5">Source IP: 7C4E0302</td></tr><tr><td colspan="5">Destination IP: B40E0F02</td></tr></table> <p>Source Address: 0x7C4E0302 = 124.78.3.2 Destination Address: 0xB40E0F02 = 180.14.15.2</p>	Ver: 4	HLN: 5	DS: 00	Total Length:0054		Identification :0003			Flags :00	Offset :00	TTL : 20		Protocol :06	Header Check Sum: 0000		Source IP: 7C4E0302					Destination IP: B40E0F02							
Ver: 4	HLN: 5	DS: 00	Total Length:0054																										
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TTL : 20		Protocol :06	Header Check Sum: 0000																										
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Destination IP: B40E0F02																													
4	Explain in detail about the format of an ARP packet?	L1	CLO 1																										
5	How Address Resolution Protocol (ARP) works? Explain the 4 cases in detail.	L1	CLO 1																										
6	Elaborate in detail ARP and RARP Package with neat diagram.	L2	CLO 1																										
7	<p>a) In a datagram, the M bit is zero, the value of HLEN is 5, the value of total length is 200, and the offset value is 200. What is the number of the first byte and number of the last byte in this datagram? Is this the last fragment, the first fragment, or a middle fragment?</p> <p>Answer:</p> <p>Since HLEN is 5 then there is no option so the header length is 20 bytes. Knowing the total length 200 bytes we can find the data length which is $200 - 20 = 180$ bytes.</p> <p>Since the offset is 200 then the first byte in this fragment is $200 * 8 = 1600$ bytes. The last byte number is $1600 + 180 - 1 = 1779$. Since $M=0$ then it's the last fragment</p> <p>b) If the original timestamp is 46, receive timestamp is 59 and transmit timestamp is 60, return time is 67 then Compute the round trip time and Time difference.</p> <p>Answer:</p> <p>Round Trip time = Sending time + receiving time $= (59-46) + (67-60)$ $= (13+7) = 20$ RTT = 7 Time difference =receive time stamp –(Original time stamp + one way RTT (RTT/2)) $= 59- (46 + (20/2))$ $= 59 -(46+10) = 3$</p>	L3	CLO 1																										

8	Explain the use of Internet Control Message Protocol (ICMP) in detail	L1	CLO 1	
9	Outline the message format of Internet Control Message Protocol (ICMP) in detail	L1	CLO 1	
10	<p>Calculate the checksum for the following ICMP packet: Type: Echo Request Identifier: 123 Sequence number: 25 Message: HELLO Assume that message is divided into 8-bits(1 bytes) Steps:</p> <ol style="list-style-type: none"> 1. The checksum field is set to zero. 2. The sum of all the 16-bit words (header and data) is calculated. 3. The sum is complemented to get the checksum. 4. The checksum is stored in the checksum field. <p>Answer:</p> <p>Type = 8 and Code = 0-----</p> <p>Identifier = 123 = 7B in hex</p> <p>Sequence number = 25 = 19 in hex</p> <p>Each character is represented as 1 byte and we have to group these in 16 bits or 2 bytes</p> <p>H and E = 48 and 45 respectively = 4845 in hex</p> <p>L and L = 4C and 4C respectively = 4C4C in hex</p> <p>O and 0 = 4F and 0 respectively = 4F00 in hex</p> <p>So Add these in 16 bits chunk in order to get checksum = 0800+007B+0019+4845+4C4C+4F00 = EC25</p> <p>checksum = 1's complement of EC25 = FFFF-EC25 = 13DA in hex</p>	L3	CLO 1	
11	<p>Suppose two packets arrive to two different input ports of a router at exactly the same time. Also suppose there are no other packets anywhere in the router.</p> <ol style="list-style-type: none"> Suppose the two packets are to be forwarded to two different output ports. Is it possible to forward the two packets through the switch fabric at the same time when the fabric uses a shared bus? Suppose the two packets are to be forwarded to two different output ports. Is it possible to forward the two packets through the switch fabric at the same time when the fabric uses switching via memory? Suppose the two packets are to be forwarded to the same output port. Is it possible to forward the two packets through the switch fabric at the same time when the fabric uses a crossbar? <p>Answer:</p> <p>a) No, you can only transmit one packet at a time over a shared bus.</p>	L1	CLO 1	

	<p>b) No, as discussed in the text, only one memory read/write can be done at a time over the shared system bus.</p> <p>c) No, in this case the two packets would have to be sent over the same output bus at the same time, which is not possible.</p>			
12	<p>a) Distinguish UDP header and TCP header in detail. List the fields in the TCP header that are missing in the UDP header. Give the reasons for their absence.</p> <p>b) If an application needs to protect the boundaries of its message, which protocol should be used, UDP or TCP? Discuss.</p>	L1	CLO 1	
13	Explain how TCP handles error control and flow control.	L1	CLO 1	
14	Compare Multicast & Multicast Routing Protocols in detail	L1	CLO 1	
15	Outline the importance of Stream Control Transmission Protocol	L1	CLO 1	