UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, July 2020

Course: Data communication and networking   Semester: IV
Program: B.Tech + CSE (BAO)   Time   : 02 hrs.
Course Code: CSEG2009   Max. Marks: 60

Instructions:

1.	"In the slow-start algorithm, the size of the congestion window increases _____ until it reaches a threshold."	Exponentially	1
2.	In selective repeat, Consider frames from 0 to 6 have been transmitted, now imagine that 0 times out, a new frame 7 is transmitted, 1 times out, 2 times out and new frame 8 is transmitted. what will be the outstanding packets in the senders window?	345607128	2.5
3.	Which of the following IP address can be used in WAN?	15.1.5.6	1
4.	If the packet size is 1kb and propagation time is 10 ms, the channel capacity is 10^6 b/s then find the transmission time and utilization of sender in stop and wait protocol.	0.29	2
5.	Suppose a network has network id 196.1.2.128/26. Perform the sub netting by divide the network into two equal parts and calculate the range of both the subnets.	196.1.2.128 to 196.1.2.159 and 196.1.2.160 to 196.1.2.191	2
6.	What is the maximum number of IP addresses that can be assigned to hosts on a local subnet that uses the 255.255.0.0 subnet mask?	2^16	1
7.	If the subnet mask of the network is 255.255.255.224. Calculate the number of subnets present in class A.	2^19	1.5
8.	What is the subnet mask for a class B Network?	255.255.0.0	1
9.	Calculate the total number of bits allocated for NID and HID in 30.190.155.232 address?	NID-24 bits HID=8 bits.	2

10. Match the following:- List I List II a)200.10.192.100 i)Class A b) 17.10.230.1 ii) Limited broadcast address c)128.1.1.254 iii)Direct broadcast address d)255.255.255.255 iv)class C e)100.255.255.255 v)class	1-iv, 2-i,3-v,4-ii,5-iii	1.75
11. Two broad categories of congestion control are	Open-loop and Closed-loop	1
12. Which of the following is reliable communication?	TCP	1
13. Consider a node with IP address 150.100.1.1. Suppose it wants to transmit a data to all nodes within the network. What is the source IP address and Destination IP address.	SIP- 150.100.1.1 DIP-255.255.255.255	2
14. "If a class B network on the Internet has a subnet mask of 255.255.248.0, what is the maximum number of hosts per subnet?"	2046	1
15. X and Y are the only stations on the Ethernet. Each has a steady queue of frames to send both X and Y attempt to send a frame, collide and Y wins first back off race. Now again X and Y attempt to transmit and collide. The probability that X wins the second back off is :	0.125	2.5
16. suppose the subnet mask of a network is 255.240.0.0.calculate no. of subnets in class A	2^{12}	1
17. A CSMA/CD network sends packet at a rate of 150 Mbps over 1.5 km cable. Suppose the minimum fame size for the network is 1000 bytes. What is the signal speed in km/sec?	56250	2.5
18. The class-based addressing is also known as	Classful Model	0.5
19. A computer network uses a cyclic redundancy check (CRC) for this message using the divisor polynomial $x^5 + x^4 + x^2 + 1$	1.0101E+13	2

	as the generator polynomial to generate the check bits. In this network, the message 1010101010 is transmitted as:		
20.	consider a network with network id 201.1.2.0. Perform the subnetting in this network by dividing it into 4 parts. The network id of subnet A will be	201.1.2.128	1.5
21.	Discarding policy is mainly done by _____	Router	1
22.	Classless inter-domain routing (CIDR) receives a packet with address 128.16.10.10. The router's table has the following entities:- Prefix output Interface 128.9.0.0/12 3 3128.0.0.0/10 2 2128.110.0.0/14 1 1128.0.0.0/16 0 The packet will be forwarded to which interface?	2	2.5
23.	suppose the subnet mask of a network is 255.240.0.0. calculate number of hosts present in the network	$(2^{12}-2)$	1.5
24.	The meaning of Straight-through Cable is	The cable Which Directly connects Computer to Computer	0.25
25.	A medium has propagation delay of 35 msec and a bit rate of 6kbps. For what range of frame size does stop and wait give an efficiency of 50%?	420 bits	2.5
26.	"In the IPv4 addressing format, the number of networks allowed under Class B addresses is"	2^{16}	1
27.	Suppose a source and destination 20 km apart and one way delay of 200 microsec. At what data rate does the round trip delay equals the transmission delay for a 1KB packet?	20.48 mbps	2
28.	"To test the IP stack on your local host, which IP address would you ping?"	127.0.0.1	1
29.	If the subnet mask of the network is 255.255.255.224. Calculate the number of hosts present in the network	30	1
	i. Transport layer protocols deals with _____	`  <table border="0" cellpadding="0" cellspacing="0" style="border-collapse: collapse; width: 204px;"> <colgroup> <col width="204" style="width: 153pt;"> </colgroup> <tbody>   <tr height="20" style="height: 15.0pt;">    <td width="204" height="20" style="height: 15.0pt; width:`	2

	153pt;">process to process communication</td> </tr> </tbody> </table>	
30. In Ipv4 addressing format, the number of network allowed under class A address is:	2^8	1
31. "if the bandwidth of the line is 3.0 mbps, RTT is 30 ms and packet size is 1 KB, then find the sender utilization in stop and wait protocol."	8.34%	2
32. A datagram of 3000 Byte (20 byte of IP header + 2980 Byte IP payload) reached at router and must be forward to link with MTU of 500 Bytes. How many fragments will be generated and also calculate offset value of packet 6.	None of the above	3
33. which of the following characteristic accurately reflect the given IP/subnet mask.IP:194.122.14.5 Mask: 255.255.255.0 i) Host ID =14.5 ii) Network Id 194.122.14.0 iii) 0.0.0.100 may be host of this network. iv) network consists of 2^8-2 hosts, 0 subnets v) 1 bit is borrowed from Host ID.	i,ii,iii are correct.	2.5
34. consider a network with network id 201.1.2.0. Perform the subnetting in this network by dividing it into 4 parts. The network id of subnet B will be	201.1.2.128	1
35. Let the size of congestion window of a TCP connection be 32 KB when a timeout occurs. The round trip time of the connection is 100 msec and the maximum segment size used is 2 KB. The time taken (in msec) by the TCP connection to get back to 32 KB congestion window is _____.	1100 to 1300	1
36. What is the usable size of Network bits in Class B of IP address?	14	0.25
37. Calculate the supernet mask of the following supernet id: SN1-200.1.0.0/24 SN2-200.1.1.0/24 SN3-200.1.2.0/24 SN4-200.1.3.0/24	255.255.252.0	2.5
38. If the ip address of a hop is 195.10.20.128/22. Calculate the value of HID.	10	1
39. "In a Go-Back-N ARQ, if the window size is 63, what is the range of sequence numbers?"	0 to 63	0.25