

Name:
Enrolment No:



UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
Online End Semester Examination, December 2020

Programme Name: BBA-Digital Marketing
Course Name : Internet and Related Technologies
Course Code : DSIT2002
Nos. of page(s) : 05

Semester : III
Time : 03 hrs
Max. Marks: 100

SECTION A

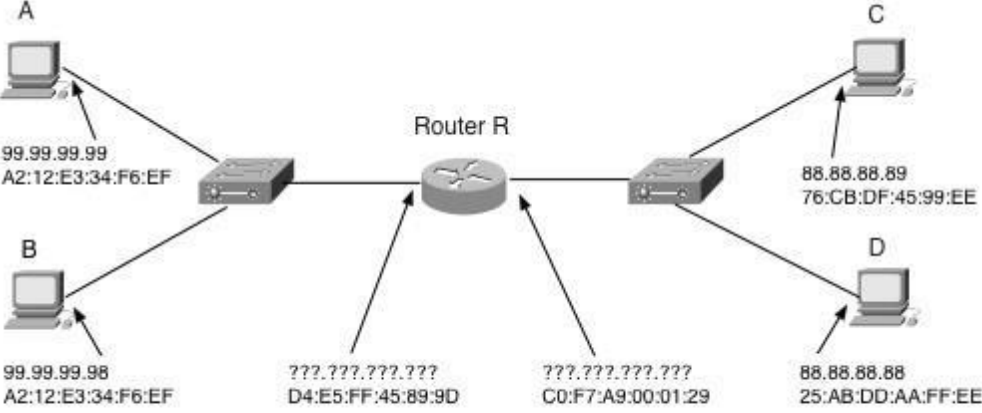
- 1. Each Question will carry 5 Marks**
- 2. Instruction: Complete the statement / Select the correct answer(s)**

S. No.		Marks	CO
Q1	On classic Ethernet, the Maximum Transmission Unit (MTU) for an IP datagram is: (a) 64 bytes (b) 1024 bytes (c) 1500 bytes (d) 8192 bytes (e) 65536 bytes	05	CO1
Q2	In a "Class B" IP address like 136.159.5.20, the network ID portion is: (a) 8 bits long (b) 16 bits long (c) 24 bits long (d) 32 bits long (e) none of the above	05	CO2
Q3	The Internet Control Message Protocol (ICMP) is used by: (a) Web and email applications (b) FTP and email applications (c) SNMP and NTP (d) ping and traceroute	05	CO3

	(e) DNS and ARP		
Q4	<p>A Computer on a 6 Mbps network is regulated by token bucket. Token bucket filled at a rate of 1Mbps. It is initially filled to a capacity with 8 megabits. How long can computer transmit at full 6 Mbps?</p> <p>(a) 1.2 sec (b) 2.6 sec (c) 5.4 sec (d) 2.4 sec (e) 1.6 sec</p>	05	CO4
Q5	<p>In Classless Inter-Domain Routing (CIDR), the network ID in an IPv4 address is:</p> <p>(a) always 8 bits long (b) always 16 bits long (c) always 24 bits long (d) always 32 bits long (e) none of the above</p>	05	CO1
Q6	<p>What is subnetting in IPv4 addressing scheme?</p> <p>(a) Dividing larger sub groups into smaller blocks (b) Divide larger sub blocks into smaller sub groups (c) Combining small groups to form a large block (d) Combining small blocks to form a large group</p>	05	CO2

SECTION B

1. Each question will carry 10 marks

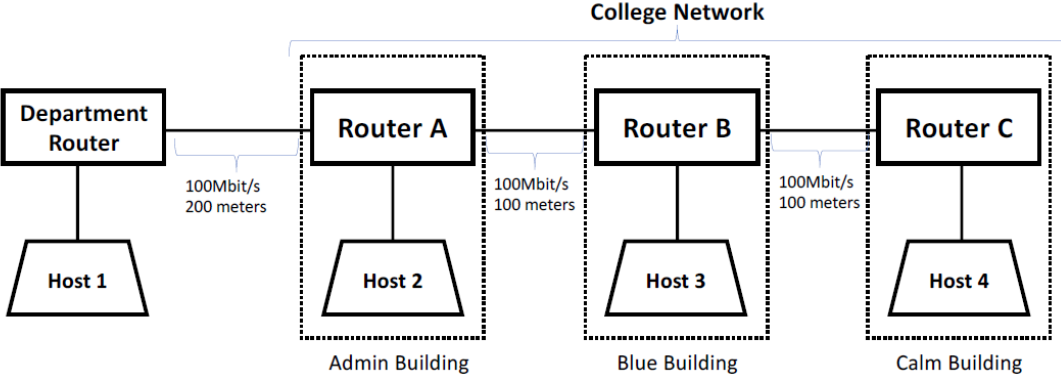
<p>Q7</p>	 <p>Suppose computer A wants to send an IP datagram to computer C and knows C's IP address. Does computer A also need to know C's MAC address to send the datagram to computer C? If yes, explain the operation used by A to obtain C's MAC address. If no, explain why not and what information would be used for the datagram to arrive to computer C.</p>	<p>10</p>	<p>CO3</p>
<p>Q8</p>	<p>Consider a wireless network. For each of the following cases, state whether the packet transmission would be successful; assume no collision avoidance. Explain your answers.</p> <p>(a) Nodes A and B are in range of each other; nodes B and C are in range of each other; A and C are not in range of each other. Both A and C send a packet to B simultaneously.</p> <p>(b) Nodes A and B are in range of each other; nodes B and C are in range of each other; A and C are not in range of each other. A is transmitting and B wants to send a packet to C.</p>	<p>10</p>	<p>CO4</p>
<p>Q9</p>	<p>Compare the TCP and UDP headers by detailing the fields that are missing from the UDP header when compared to the TCP header. What is meant by flow control and how it is implemented in TCP?</p>	<p>10</p>	<p>CO1</p>
<p>OR</p>			
	<p>Does the nature of the Internet naturally lead to dominant firms in ecommerce markets? Justify your answer with suitable case study.</p>	<p>10</p>	<p>CO1</p>

Q10	With the gradual transition from IPv4 to IPv6, discuss the techniques ISP's could use to make this transition easier and achieve interworking between the two. Recommend one solution and justify your choice.	10	CO2
Q11	Discuss the difficulties in measuring the use of your website and related social media campaign. Justify whether the use of third party analytics creates opportunities to leak personal information or not.	10	CO3

SECTION-C

1. Each Question carries 20 Marks.

2. Instruction: Write long answer.

Q12	 <p>Computers in Calm building are often not getting allocated IP addresses and the performance is quite poor. The department router serves DHCP for the College network and is operating correctly. Residents in Blue report intermittent performance issues, but no one in Admin reports any problems. Network measurements reveal that the per-router packet loss for each switch under load can be as high as one packet in five thousand, but it is significantly worse for packets smaller than 1000 bytes, where as many as one packet in twenty are lost.</p> <p>(a) With these insights, explain the cause of the problems experienced. Make clear any simplifying assumptions you have made.</p> <p>(b) Some students in Calm have found using IPv6 will 'work' (i.e., connecting to the wider University services is possible, but not to Internet services); although still not performing as well as when they are in the Admin building. Describe the steps by which IPv6 addresses are allocated without DHCP and consider why this service may be working more reliably than IPv4?</p>	20	CO4
OR			

	<p>Five prisoners are locked up in adjacent cells in a prison. They would like to communicate with each other but the walls and doors are too thick. One day, one of the prisoners discovers that if he hits the water pipe in his cell with a metal spoon, the sound travels to two cells in each direction, i.e. the sound from cell i can be heard in cells $i-2$, $i-1$, $i+1$, and $i+2$, assuming these cells exist. After some experiments, they discover this is true for all the cells.</p> <p>Over lunch, they decide to define a protocol that will allow efficient communication. One of the prisoners has taken 441 and argues that this is very much like an Ethernet so they decide to use the Ethernet protocol over their Water Pipe Network. The prisoners planning the break are in five adjacent cells that are lined up in a row. Unfortunately, there are some problems. Can you help them?</p> <ol style="list-style-type: none">1. In the Water Pipe Network, not all cells can hear each other. What mechanism could you use so all inmates can talk to each other?2. As they get closer to the night they plan to escape, traffic on the Water Pipe network increases. Unfortunately, they discover that using CSMA/CD (Carrier-sense multiple access with collision detection) over the Water Pipe Network results in a significant packet loss rate. Can you identify the problem responsible for the packet losses and propose a solution?	20	CO4
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