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## UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, December 2017

Program: CS+CL  
Subject (Course): DCN  
Course Code :CSEG204  
No. of page/s:02

Semester – 3rd  
Max. Marks : 100  
Duration: 3 Hrs

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### SECTION A

5\*4=20 Marks

Q.1 Two packets have arrived with a M bit value of 0 and a M bit 1. Are these the first fragment, the last fragment, or a middle fragment? Do we know if the packet was fragmented?

Q.2 Why do we need “Sequence No”. field in TCP Segment format?

Q.3 Find propagation time & transmission time for 2.5kbyte message if bandwidth of network is 1Gbps? Assume distance between sender and receiver is 12,000km and light travels at  $3 \times 10^8$  m/s.

Q.4 A block of addresses is granted to a small organization. If one of the addresses is 205.16.37.39/28. What is the first address and last address in the block.

Q.5 Identify the four fundamental characteristics on which data communication depends.

### SECTION B

4\*10=40

Q.6 Explain Stop and wait ARQ mechanism with an appropriate diagram.

Assume that in stop and wait ARQ system, Bandwidth of line=1Mbps, and 1 bit takes 20ms to make a round trip. What is Bandwidth Delay Product? If the system data frames are 1000 bits in length. What is utilization% of link?

Q.7 Explain DNS protocol clearly describing distribution of Namespace.

Q.8 Explain the different services offered by TCP with an appropriate diagram as and where necessary.

Q.9 Explain IPv4 Frame format with an appropriate diagram clearly explaining each and every field.

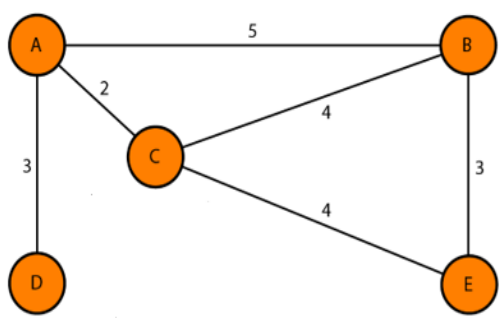
**SECTION C**

**2\*20=40**

Q.10 Network layer don't provide the reliable delivery. Transport layer was designed for reliable and unreliable delivery across the network. Transport layer also provides services to application layer. Answer the following questions with respect to transport layer:

- a. Explain the difference between the two approaches namely, reliable and unreliable. (5)
- b. Explain the frame format of reliable protocol used at transport layer. (5)
- c. What is three-way handshaking at transport layer? Explain connection establishment phase with an appropriate diagram. (5)
- d. Explain Multiplexing & De multiplexing at Transport layer. (5)

Q.11 Explain the different stages of DVR algorithm with reference to following figure.



**OR**

Q.12 a. Explain Congestion control at transport layer with an appropriate diagram.

b. Explain TCP/IP protocol stack with the protocols on each and every layer.

SET 2

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SECTION A

5\*4=20 Marks

Q.1	Differentiate between Propagation time,throughput and vulnerable time.	CO1
Q.2	Why do we need TTL field in IPv4 segment format.	CO4
Q.3	Two packets have arrived with a M bit value of 0 and a M bit 1. Are these the first fragment, the last fragment, or a middle fragment? Do we know if the packet was fragmented?	CO4
Q.4	Find propagation time & transmission time for 3.5kbyte message if bandwidth of network is 1Gbps? Assume distance between sender and receiver is 12,000km and light travels at $3 \times 10^8$ m/s	CO1
Q.5	5 Identify the different types of topologies. Briefly explain pros and cons of any one.	CO1

SECTION B

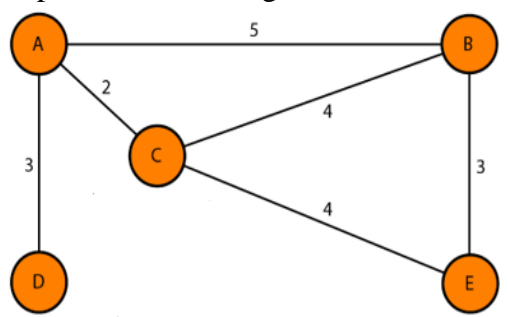
4\*10=40 Marks

Q.6	Protocols in which stations listen for a carrier and act accordingly have proven to show quite less collisions. Explain the Carrier sensing technique used for the wired networks with appropriate figure. Also explain the different persistence methods with appropriate figure.	CO3
Q.7	Explain FTP protocol. Also explain basic model of FTP with an appropriate figure	CO5
Q.8	Find Hamming code for the data 1100110	CO3
Q.9	Explain IPv4 Frame format with an appropriate diagram clearly explaining each and every field.	CO4

SECTION C

2\*20=40 Marks

<p><b>Q.10</b></p>	<p>Network layer don't provide the reliable delivery. Transport layer was designed for reliable and unreliable delivery across the network. Transport layer also provides services to application layer. Answer the following questions with respect to transport layer:</p> <ol style="list-style-type: none"> <li>Explain the difference between the two approaches namely, reliable and unreliable. (5)</li> <li>Explain the frame format of unreliable protocol used at transport layer. (5)</li> <li>What is three-way handshaking at transport layer? Explain connection establishment phase with an appropriate diagram. (5)</li> <li>Explain Multiplexing &amp; De multiplexing at Transport layer. (5)</li> </ol>	<p><b>CO5</b></p>
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<p><b>Q.11</b></p>	<p>Explain different stages of LSR with reference to the following figure.</p> 	<p><b>CO4</b></p>
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OR

<p><b>Q.12a.</b></p>	<p>Explain various component protocols in SNMP with their roles</p>	<p><b>CO5</b></p>
<p><b>b.</b></p>	<p>Explain OSI model,clearly giving the functions of each and every layer in detail.</p>	<p><b>CO2</b></p>

