**EAST WEST UNIVERSITY**
Department of Computer Science and Engineering
B.Sc. in Computer Science and Engineering Program
Final Examination, Fall 2021 Semester

Course:	**CSE 405 Computer Networks**
Instructor:	**Dr. Anisur Rahman, Associate Professor, Department of CSE**
Full Marks:	**(5*6 marks) = 30 marks**
Time:	**50 min (to write) + 10 min (to upload) = 60 min**

Note: There are FIVE questions, answer ALL of them. Course Outcome (CO), Cognitive Level and Marks of each question are mentioned at the right margin.

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1. Following is a linear subnet comprises of routers A, B, C, D and E; the internal distances between routers are shown in msec. **Show** the initial state considering router **E** is up. **Calculate** 4 more exchanges after router **E** gone down and additional 4 more exchanges after **E** gone up following the previous 4 exchanges for the following linear subnet. [CO3, C2 marks: 6]
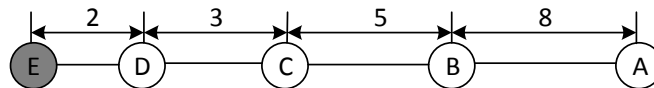

2. **Define** the function of leaky bucket algorithm. Calculate the leak of the bucket if the system needs to be designed to transmit the received data from the PC with a rate of 256MB/sec for 950μsec in 50msec in a network whose data transmission capacity is 32MB/sec. [CO3, C2 marks: 6]

3. Following are the two scenarios where packet delays of 6 packets are shown in between source and destination. Find which of the following scenarios has low jitter and why. Draw a graph of jitter if delays of all the packets to reach the destination are same. [CO3, C2 marks: 6]

Scenario 1		
Source	Destination	Delay (msec)
P₁	P₁	89.5
P₂	P₂	91.6
P₃	P₃	89.4
P₄	P₄	90.7
P₅	P₅	90.8
P₆	P₆	89.9

Scenario 2		
Source	Destination	Delay (msec)
P₁	P₁	6
P₂	P₂	23
P₃	P₃	12
P₄	P₄	59
P₅	P₅	22
P₆	P₆	90

4. An example graph of congestion control in transport layer is given below. If the present threshold is set to be 1210KB and the present congestion window (i.e. transmission size) is 128KB, **find** the sizes of the next 10 consecutive congestion windows considering 1212KB is going to be the timeout point. (you don't need to draw the graph, only values will suffice) [CO3, C3 marks: 6]
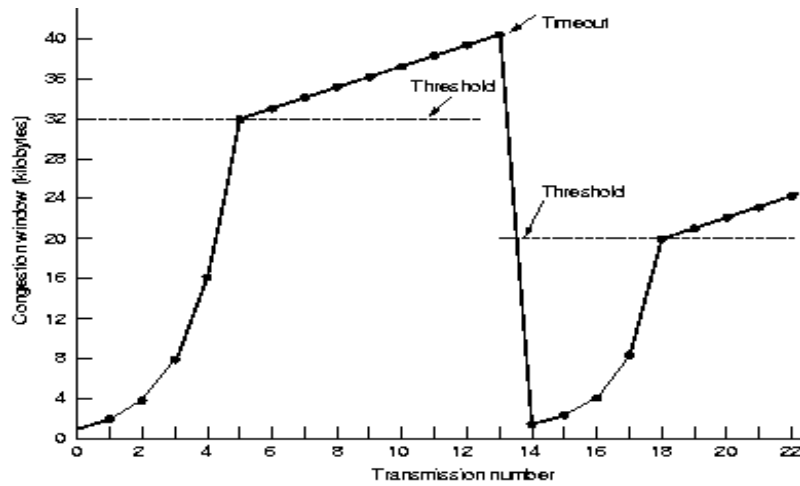
5. Following is the orientation of a typical server farm, which does not have shared cache memory because each processing node has its own cache memory. Briefly describe how this feature (i.e., having own cache memory for each processing node), is used to increase performance of the server farm further.   [CO3, C3 marks: 6]