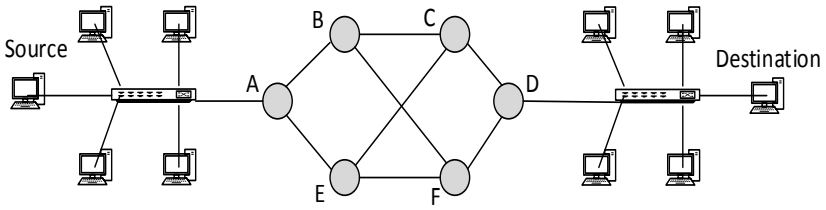
EAST WEST UNIVERSITY
Department of Computer Science and Engineering
B.Sc. in Computer Science and Engineering Program
Mid Term I Examination, Fall 2021 Semester

Course: **CSE 405 Computer Networks**
Instructor: **Dr. Anisur Rahman, Associate Professor, CSE Department**
Full Marks: **30**
Time: **(50 min + 10 min) = 1 Hour**

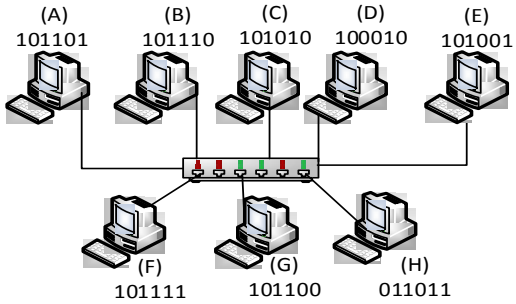
Note: There are FIVE questions, answer ALL of them. Course Outcome (CO), Cognitive Level and Mark of each question are mentioned at the right margin.

---

1. Show the environment of datalink layer in the following figure and show the encapsulation technique between router B and C emphasizing how frames are transmitted from router to router even though routers are considered to be a device of network layer. [CO1,C3, Mark: 6]

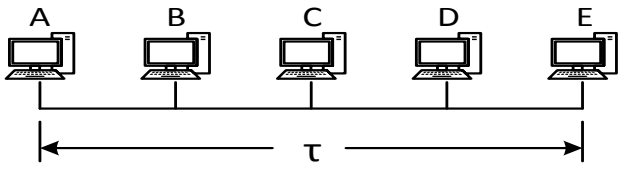


2. **Solve** which of the following numbered stations will acquire the channel at first if B, C, D, G and H are interested to acquire channel by following "Binary countdown" protocol? [CO1,C3, Mark: 6]



3. **Illustrate** how and when three hosts A, B and C get into collision consecutively if sets to pick elements for the aforesaid hosts are *setA={0,1,2,3}, setB={0,1,2,3}* and *setC={0,1,2,3,4,5,6}* respectively. **Analyze** why it is not possible for C to communicate with other nodes whatever the element C picked randomly from its own set. [CO1,C2, Mark: 6]

4. Briefly **explain** why CSMA/CD is inherently half duplex and analyze why contention period is 2τ even when **A** is considered to be source and **C** is considered to be the destination for the following orientation of the LAN. [CO1,C3, Mark: 6]



5. **Find** and **analyze** the problems exists in the following Petri net model for mutual exclusion between two processes $\mathbf{P_1}$ and $\mathbf{P_2}$, on the critical resource $\mathbf{C_1}$. [CO1,C3, Mark: 6]