ITS 323 – QUIZ 5 ANSWERS

First name: _____ Last name: _____

ID: _____ Total Marks: _____
out of 10

Question 1 [4 marks]

a) One aim of Medium Access Control (MAC) in LANs is to ensure frames (or transmissions) do not collide with each other. **T** / F

b) One aim of Medium Access Control (MAC) in LANs is to ensure only one user (computer) transmits at a time. **T** / F

c) Distributed control for Medium Access Control protocols has the advantage of avoiding performance bottlenecks at a central node. **T** / F

d) Centralised control for Medium Access Control (MAC) has the advantage (compared to distributed control) that if the controlling station fails, the network can still operate. T / **F**

e) The IEEE 802 series of LAN standards focus on the Physical Layer, Data Link Layer and Network Layer of the OSI model. T / **F**

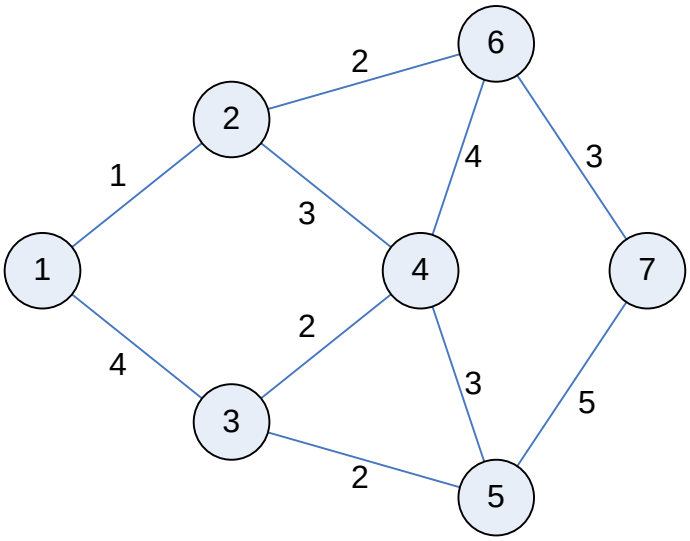
f) The IEEE 802 series of LAN standards focus on the Physical Layer and Data Link Layer of the OSI model. **T** / F

g) A contention-based MAC protocol allows stations to reserve time slots for transmissions in the future. T / **F**

h) A contention-based MAC protocol gives each station a turn at transmitting in an ordered manner (e.g. station 1, station 2, station 3, …). T / **F**

Question 2 [3 marks]

The following diagram shows a network of 7 nodes with the costs shown for each link (the costs are the same in both directions of the link). Assuming least-cost routing, complete the routing table for node 1/6/7.



Node 1			
Destination	Path	Cost	Next Node
2	1-2	1	2
3	1-3	4	3
4	1-2-4	4	2
5	1-3-5	6	3
6	1-2-6	3	2
7	1-2-6-7	6	2

Node 6			
Destination	Path	Cost	Next Node
1	6-2-1	3	2
2	6-2	2	2
3	6-4-3	6	4
4	6-4	4	4
5	6-4-5	7	4
7	6-7	3	7

Node 7			
Destination	Path	Cost	Next Node
1	7-6-2-1	6	6
2	7-6-2	5	6
3	7-5-3	7	5
4	7-6-4	7	6
5	7-5	5	5
6	7-6	3	6

Question 3 [3 marks]

If flooding is used to send a packet from 1 to 7 in the network above, and a hop limit of 2 is used:

a) How many copies of the packet are transmitted in the network?

b) Does the destination receive the packet? Why or why not?

Answers

One copy from 1-2 and one copy from 1-3. Then 2 copies sent from 2 (to 4 and 6) and from 3 (to 5 and 4). Total of 6 copies of the packet sent.

With a hop limit of 2, nodes 4, 5 and 6 will not forward any further (hop count will have been reduced to 0), and hence node 7 will not receive a copy.

If a probability-based selective flooding protocol is used, where a node randomly chooses one output link with a probability inversely proportional to the cost (assume no hop limit):

c) What is the most likely path the packet will take from source to destination?

Answers

Most likely path is 1-2-6-7 (i.e. least cost path). A node will most likely (i.e. with higher probability) choose the least cost link, and hence the least cost path will be chosen.