**\*\*\*\*\*Use file Capture 1 for questions 1-2\*\*\*\***

1. Apply a capture filter to obtain all the packets that are either coming from a hardware address of 00:06:25:da:af:73 from TCP Port 80 or 00:08:74:4f:36:23 from TCP Port 4247. What is the filter you write? [1]
2. Suppose that we assign Number 1 to the first packet obtained after applying filter with each successive packet number increasing by one (2nd Filtered Packet will be called Number 2 and so on). Also suppose that someone replaced the recent data present on the server (gaia.cs.umass.edu) with another bogus data having 250 Bytes on 9 Nov, 2018. In that case, what would have been **the sequence number and acknowledgement number** in Packet Number 10 if we would have applied the same HTTP get request as present in packet Number 8? Explain briefly how calculated the values.[2]

**\*\*\*\*\*Use file Capture 2 for questions 3-7\*\*\*\*\*\***

1. Apply a capture filter to obtain all the packets that are either going from client IP: 192.168.1.2 to server TCP Port:21 or from server IP:195.89.6.167 and server TCP Port: 20 or 21. Write the filter which you have applied? [1]
2. In the filtered packets, client asks for data from server over FTP connection for two times and server sends the data at the port specified by the client. Now suppose that at the start of FTP connection, the first command was issued using Port No: 16979 and Source IP: 178.128.12.54. Now, if the client wants to get the data third time using the updated credentials, what will be the specific command for such a request made by the client to the server? [1]
3. In regard to the request made by client to server in question no. 4 what will be Destination Port and Destination IP in the response generated by the server? [1]
4. Apply a capture filter to get all the packets which are directed from client with MAC Address: 60:67:20:55:7b:ac to the Server UDP Port: 53. What filter did you apply? [0.5]
5. If we take the first filtered packet as Packet No. 1 with each successive packet increasing one in number, then what will be the acknowledgement number of the DNS request made in Packet No. 11 as the result of filter applied in question no. 6? [0.5]

**\*\*\*\*\*Use file Capture 3 for questions 8-10\*\*\*\*\*\***

1. Apply a filter to obtain all those packets which are either going from client with IP:192.168.1.102 to server tcp port: 80 or from server with IP:128.119.245.21 to client tcp port: 1161. What is the filter which you applied? [0.5]
2. If we analyze all the filtered packets, then we come to know that sequence number in all the packets since the beginning remains at one while acknowledgement number keep on increasing. Why is this so? [0.5]
3. If we look at the last packet in the filtered packets then Seq=164091 and Ack=731. How come so that the Seq=1 has abruptly converted into such big value even when the total packet length (including headers) of last packet is only 784 bytes? Why the Acknowledgement Number has decreased so much only with the transmission of one packet? Explain briefly by calculating ? [2]