National University of Computer and Emerging Sciences, Lahore Campus

Course:	Computer Networks	Course Code:	CS307
Program:	BS(Computer Science)	Semester:	Fall 2019
Duration:	20 Minutes	Total Marks:	20
Date:	27 Nov, 2019	Quiz:	4
Section:	E	Page(s):	2

Name_____ Roll No._____

Question 1: **[Marks 12]**

For each of the following IP address ranges, specify the network address, broadcast address, and maximum number of host IPs available. (Show all your work).

- **192.168.100.0/24**

N/W: 192.168.100.0
B/C: 192.168.100.255
No. of IPs: 254

- **100.10.8.0/22**

N/W: 100.10.8.0
B/C: 100.10.11.255
No. of IPs: 1022

- **202.1.0.0/16**

N/W: 202.1.0.0
B/C: 202.1.255.255
No. of IPs: 65534

- **101.51.192.0/18**

N/W: 101.51.192.0
B/C: 101.51.255.255
No. of IPs: 16382

Question 2: **[Marks 8]**

What is fragmentation. How does the IP layer specify that a packet is fragmented (Name the IP header fields and their applications).

Fragmentation is done by the network layer when the maximum size of datagram is greater than maximum size of data that can be held a frame i.e., its Maximum Transmission Unit (MTU). The network layer divides the datagram received from transport layer into fragments so that data flow is not disrupted.

Fields in IP header for fragmentation

- Fragment offset (13 bits) – use to identify sequence of fragments in the frame.
- More fragments (MF = 1 bit) – tells if more fragments ahead of this fragment.
- Don't fragment (DF = 1 bit) – if we don't want the packet to be fragmented then DF is set to 1.