TRIBHUVAN UNIVERSITY
FACULTY OF MANAGEMENT
Office of the Dean
2016

Full Marks: 40
Time: 2 hrs.

BIM / Fifth Semester / IT 223: Advance Internetworking

Candidates are required to answer all the questions in their own words as far as practicable.

Group "A"

1. ***Brief Answer Questions:*** ***[10 × 1 = 10]***

   i. Place the following protocols/mechanisms in the correct TCP/IP protocol layer: ICMP, DCCP, RTSP, and FTP

   ii. What is the aggregated network of the following subnets: 199.1.1.0/26, 199.1.1.64/26, 199.1.1.128/26, 199.1.1.192/26?

   iii. Define routing.

   iv. What protocol is used between a multicast router and its connected hosts in IP multicast?

   v. FDEC: BA98 : 0000 : 3210 : 000F : 0000 : 0000 : FFFF is an IPv6 address. Use the IPv6 abbreviation rules to give this address in its shortest form.

   vi. List the functions of IPQoS.

   vii. What is jitter?

   viii. How does Skype handle users that are behind a NAT/firewall?

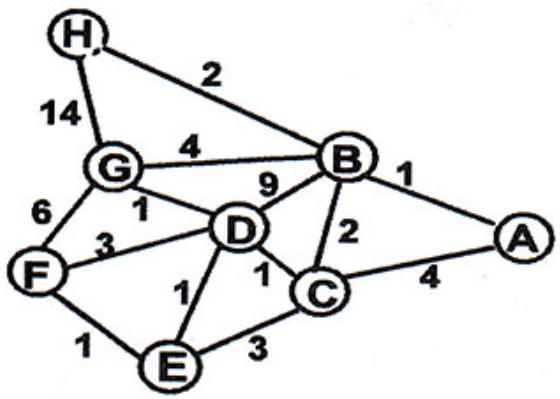
   ix. List the differences between DCCP and UDP.

   x. List the type of message that ICMP protocol does not report.

Group "B"

Exercise Problems: ***[5 × 4 = 20]***

2. A,B,C,E,F,G and H are routers interconnected as shown in the figure below. Each link represents a physical link directly between each two routers. Assume that a link state protocol is used in all routers, and that the number on each link represents the cost of each link. Find the shortest path from node F to all other nodes and base on the result, write down F's forwarding table (on the format destination/next_hop) for all destinations.



3. How Multimedia content from streaming server is displayed in clients' media player? Explain process with appropriate figure.

4. A UDP datagram with 4096 bytes of user data is to be sent over a TUEXAM-NETLINK. TUEXAM-NET has MTU of 1400 bytes. There are no IP options involved. How many IP fragments are transmitted and what are the offset and IP payback length of each fragment?

5. Explain connection establishment and termination process in SCTP.

6. From the following information convert MAC address into IPv6 address

   MAC address: 31:AB:CD:10:0A:DE

   IPv6 NetworkID: C0B4:ACOD:ADAC:CCBA::/64

Group "C"

Comprehensive Questions: ***[2 × 5 = 10]***

7. List the differences between Multicast and multiple unicast. Explain group-shared tree and source-based tree and also list multicast routing protocols using source based tree and shared tree.

8. Explain the major factors that create congestion in the network and how can it be solved? How Congestion control is done in datagram subnet (UDP)?