JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year I Semester Examinations, March - 2021
COMPUTER NETWORKS
(Common to ECE, ETM)

Time: 3 Hours

Max. Marks: 75

Answer any Five Questions
All Questions Carry Equal Marks
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1.a) What is the difference between network layer delivery and transport layer delivery?
 b) Which of the three multiplexing techniques is common for fiber optic links? Explain the reason.
 c) What is the role of the address field in a packet traveling through a virtual-circuit network?
  [4+5+6]

2.a) A stream of data is being carried by STS-1 frames. If the data rate of the stream is 49.530 Mbps, how many frames per second should leave one empty byte after the H3 byte?
 b) Compare and contrast the Go-Back-N ARQ Protocol with Selective-Repeat ARQ.
 c) Define random access. List and explain three protocols in this category. [4+3+8]

3.a) How can we distinguish a multicast address in IPv4 addressing? How can we do so in IPv6 addressing?
 b) A host with IPv4 address 114.45.7.9 receives an IGMP query. When it checks its group table, it finds no entries. What action should the host take? Should it send any messages?
 c) What is the basis of classification for the four types of links defined by OSPF? [4+7+4]

4.a) In SCTP, the state of a sender is as follows:
 i. The sending queue has chunks 18 to 23.   ii. The value of cumTSN is 20.
 iii. The value of the window size is 2000 bytes. iv. The value of inTransit is 200.
 If each data chunk contains 100 bytes of data, how many DATA chunks can be sent now?
 What is the next DATA chunk to be sent?
 b) What is the difference between open-loop congestion control and closed-loop congestion control? [7+4+4]
 c) What are the three FTP transmission modes?

5.a) What is the purpose of the Kerberos authentication server?
 b) Are both AH and ESP needed for IP security? Why or why not? [5+5+5]
 c) What is a VPN and why is it needed?

6.a) What is the difference between a port address, a logical address, and a physical address?
 b) What is the maximum size of the TCP header? What is the minimum size of the TCP header? [5+4+6]
 c) What are four general techniques to improve quality of service?

7.a) Compare and contrast flow control and error control.
  b) What are the common Gigabit Ethernet implementations?
  c) How are congestion control and quality of service related?   [5+5+5]

8.a) What is the size of an ARP packet when the protocol is IPv4 and the hardware is Ethernet?
  b) How can a system prevent a guessing attack on a password? How can a bank prevent PIN guessing if someone has found or stolen a bank card and tried to use it?   [7+8]

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