

## C2-R4 : ADVANCED COMPUTER NETWORKS

**NOTE :**

1. Answer question 1 and any FOUR questions from 2 to 7.
2. Parts of the same questions should be answered together and in the same sequence.

**Total Time : 3 Hours**

**Total Marks : 100**

1. (a) Why is slotted ALOHA better than pure ALOHA ? Justify your answer.  
(b) In context of ATM, what is UNI and NNI ?  
(c) Four channels are multiplexed using TDM. If each channel sends 200 bytes/sec and we multiplex 1 byte per channel, find the size of the frame, the duration of the frame, the frame rate and the bit rate for the link (in bits per seconds) ?  
(d) In TCP segment, what does Acknowledgement number identify.  
(e) What are the advantages provided by the CIDR technology ? What prevents its widespread use ?  
(f) Differentiate between Multicasting and Multiple Unicasting.  
(g) Define Burke's theorem. (7x4)
2. (a) Differentiate between the Synchronous Time Division Multiplexing (STDM) and Asynchronous Time Division Multiplexing (ATDM).  
(b) Explain the elements and working of Queuing systems.  
(c) What is Protocol ? Also discuss Protocol suite using an example. (8+7+3)
3. (a) How do other stations defer sending their data if one station acquires access to channel in carrier sense multiple access networks ? Name and explain the technique ?  
(b) What is an ATM ? Explain various ATM services ? For which service category does the ATM network explicitly control the data flow ? Why doesn't it use flow control for other types of services ? (8+10)
4. (a) Write the steps involved in Remote Procedure Call ?  
(b) What is SIP and how is it used ?  
(c) Define :
  - (i) Packet loss
  - (ii) delay Jitter(6+6+6)

5. (a) List four main principles used in defining layered OSI model.  
 (b) Explain the use of the Flow Field in IPv6 ?  
 (c) Name and explain three address types of IPv6.  
 (d) Give the relation between the length of the prefix of a continuous pool of IP addresses and the number of addresses included in that pool ? Justify your answer. (4+3+9+2)
6. (a) Does RPB actually create a shortest path tree ? Explain. What are the leaves of the tree ?  
 (b) What is tunneling ? How is it done and explain why is it required ?  
 (c) Which OSI layers determines which route through the subnet to use ? Name and explain the layer. (5+10+3)
7. (a) Compare TCP and UDP ?  
 (b) The following is a dump of a TCP header in hexadecimal format  
 E1320117 00000001 00000000 500207FF 00000000  
 (i) What is the source port number and the destination port number ?  
 (ii) What is sequence number ?  
 (iii) What is the acknowledgement number ?  
 (iv) What is the length of the header ?  
 (v) What is the type of the segment ?  
 (vi) What is the window size ?  
 (c) What is the significance of sequence number in RTP ?  
 (d) What is VoIP ? List any two advantages of VoIP ? (8+3+3+4)

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