Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

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A Constituent Institution of Manipal University

VI SEMESTER B.TECH. (INFORMATION TECHNOLOGY)

MAKEUP EXAMINATIONS, JUNE 2017

SUBJECT: ADVANCED COMPUTER NETWORKS [ICT 304]

REVISED CREDIT SYSTEM
(22/06/2017)

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates:

- Answer **ANY FIVE** questions.
- Missing data may be suitably assumed.

1A. With the help of a neat diagram explain ATM architecture. Also show how AAL converts information into cells. **5**

1B. Describe in detail the various components of Optical Network. **3**

1C. Discuss various control characters used in Telnet for option negotiation. **2**

2A. An FTP server has received a packet from an FTP client with IP address 153.2.7.9. The FTP server wants to verify that the FTP client is an authorized client. The FTP server can consult a file containing the list of authorized clients. However, the file consists only of domain names. The FTP server has only the IP address of the requesting client, which was the source IP address in the received IP datagram. The FTP server asks the resolver (DNS client) to send an inverse query to an authorized DNS server to ask for the name of the FTP client. Refer Fig.Q.2.A. **5**

2B. Design a fully connected CLOS network defined by the parameters (3, 3, 5, 4, 2). Check if the above network is SNB or RNB. **3**

2C. What is Byte- Interleaving? Show how STS-1 is multiplexed to form STS-3. **2**

3A. Draw and elucidate the various types of ring networks in SONET. **5**

3B. Show the steps involved in Header translation using which an IPv6 address is mapped to IPv4 address. **3**

3C. Compare and Contrast Virtual Circuit Switching, Circuit Switching and Packet Switching. **2**

4A. With a neat diagram explain various components of Intelligent Network architecture. Also mention how Intelligent Network performs the call forwarding procedure. **5**

4B. "A central objective of ATM is to provide QoS guarantees in transfer of cell streams across the network. " Explain the different QoS performance parameters that have been defined in the ATM Standard to support the above statement. How these parameters differ from traffic descriptors. 3

4C. What is out-of-band signaling in Telnet? Comment on various escape characters used for the same. 2

5A. Describe the different techniques available for transition from IPv4 to IPv6 addressing. If majority of internet has moved to IPv6, and an IPv6 host (0::FFFF:B300:1234) is willing to send a packet to the system which uses IPv4 (234.145.68.7) address, which transition technique is to be selected? Show the transformed IPv4 address. 5

5B. Mention the limitations of a traditional telephone network. How is the problem resolved in fiber to home network? 3

5C. Show how the following array of records (sequence of sequence) is encoded using SNMPv2. Consider the tag value for IP Address is 04 and for object identifier is 06

IP address	Object Identifier
172.16.19.10	1.3.6.1.2.1
144.4.78.23	1.7.6.1.2.1.5

2

6A. With a neat diagram, explain the various state transitions performed by a DHCP Client for dynamic address allocation. 5

6B. Mention the various channels associated with Discrete Multi-Tone Technique. 3

6C. Distinguish between the SEQUENCE and SEQUENCE OF structured data of SMI. 2

DNS Header Format

Identification	Flags
Number of question records	Number of answer records (all 0's in query message)
Number of authoritative records (all 0's in query message)	Number of additional records (all 0's in query message)

DNS Flag Field

QR	Opcode	AA	TC	RD	RA	Three 0s	rCode

DNS Query and Response Message

Header
Question section

Header
Question section
Answer section
Authoritative section
Additional section

DNS Question Section

Query name	
Query type	Query class

DNS Answer Section

Domain name	
Domain type	Domain class
Time to live	
Resource data length	Resource Data

Fig.Q.2.A