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# MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

*A Constituent Institution of Manipal University*

## V SEMESTER B.TECH. (MECHATRONICS ENGINEERING)

## END SEMESTER EXAMINATIONS, NOV/DEC 2016

SUBJECT: COMPUTER NETWORKS AND COMMUNICATION PROTOCOL [MTE 4010]

**REVISED CREDIT SYSTEM**

**(05/12/2016)**

Time: 3 Hours MAX. MARKS: 50

**Instructions to Candidates:**

- Answer **ALL** the questions.
- Missing data may be suitable assumed.

**1A.** What is frame relay? Draw its frame format. **3**

**1B.** A factor in the delay of a store-and-forward packet-switching system is how long it takes to store and forward a packet through a switch. If switching time is 10 µsec, is this likely to be a major factor in the response of a client-server system where the client is in New York and the server is in California? Assume the propagation speed in copper and fiber to be 2/3 the speed of light in vacuum. **3**

**1C.** Define channel capacity (spread spectrum) according to Shannon's theorem, and list any 4 parameters involved in it. **4**

**2A** (i). A client-server system uses a satellite network, with the satellite at a height of 40,000 km. What is the best-case delay in response to a request? **3**

(ii). Draw the ISDN data link layer frame format with labels

**2B.** Describe about Choke Packet Technique in detail with suitable sketch. **3**

**2C.** In what way Token Bucket Algorithm is superior to Leaky Bucket algorithm? Explain about token bucket algorithm with suitable diagram. **4**

**3A.** Explain about Flow based protocols in Network Management. **3**

**3B.** Answer the following :

(I). Why does ATM use small, fixed-length cells?

(II). If a binary signal is sent over a 3-kHz channel whose signal-to-noise ratio is 20 dB, what is the maximum achievable data rate? **3**

**3C.** Elaborate on any 3 major modes of serial transmission in physical layer with Suitable Diagram. **4**

**4A.** In what situation is flooding most appropriate? How can the drawbacks of flooding be minimized? **3**

**4B.** With the neat diagram explain the OSI Reference Model in detail. **4**

**4C.** List & explain 3 metrics of Routing Algorithm. **3**

**5A.** Consider a router is blasting out IP packets whose total length (data plus header) is 1024 bytes. Assuming that packets live for 10 sec, what is the maximum line speed the router can operate at without danger of cycling through the IP datagram ID number space? **2**

**5B.** What is SNMP agent ? Mention the advantages of SNMP. **3**

**5C.** Draw & Explain the UDP format. Describe its application through Multiplexing & Demultiplexing. **5**