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# MANIPAL INSTITUTE OF TECHNOLOGY

## MANIPAL

*A Constituent Institution of Manipal University*

### V SEMESTER B.TECH. (COMPUTER SCIENCE AND ENGINEERING)

### END SEMESTER EXAMINATIONS, NOV/DEC 2017

### SUBJECT: COMPUTER NETWORKS [CSE 3103]

### REVISED CREDIT SYSTEM (17/11/2017)

Time: 3 Hours

MAX. MARKS: 50

#### Instructions to Candidates:

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

- 1A.** Explain about Bit stuffing and character stuffing in framing with an example. **5M**
- 1B.** In SMTP,
- a. A non-ASCII message of 100 bytes is encoded using base64. How many bytes are in the encoded message? How many bytes are redundant? What is the ratio of redundant bytes to the total message?
  - b. A message of 1000 bytes is encoded using quoted-printable. The message consists of 90 percent ASCII and 10 percent non-ASCII characters. How many bytes are in the encoded message? How many bytes are redundant? What is the ratio of redundant bytes to the total message?
- 3M**
- 1C.** With a neat diagram, explain the two common types of switched networks? **2M**
- 2A.** "An e-mail is one of those applications that needs three uses of client-server paradigm to accomplish its task". Justify the statement by explaining each client-server connection. **5M**
- 2B.** Discuss any three features of UDP with their advantages and disadvantages? **3M**
- 2C.** Explain the architecture of a Web Browser? **2M**
- 3A.** With a neat state transition diagram for both server and client, explain half-close scenario in TCP? **5M**
- 3B.** Explain count-to-infinity problem in a two-node loop and any two proposed solutions for this? **3M**

**3C.** With an example explain why the size of the send window of Go-Back-N must be less than  $2^m$ .

**2M**

**4A.** Explain the following pairs of terms:

- (a) Baseband transmission and Broadband transmission
- (b) Attenuation and Distortion

**4M**

**4B.** Briefly explain the working of pure ALOHA and slotted ALOHA?

**4M**

**4C.** Explain with a neat diagram, the use of choke packet in network layer?

**2M**

**5A.** Consider a four-node internet as shown in Fig Q5A.

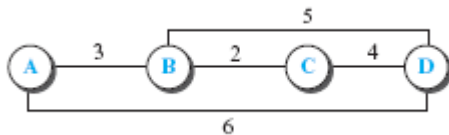


Fig Q5A

Assume that all the nodes are initialized first. Also assume that the algorithm is applied, one at a time, to each node. Using Distance vector algorithm, show that the process converges and all nodes will have their stable distance vectors

**4M**

**5B.** In a TCP connection, the initial sequence number at the client side is 2171. The client opens the connection, sends three segments, the second of which carries 1000 bytes of data and closes the connection. What is the value of the sequence number in each of the following segments send by the client?

- a) The SYN segment
- b) The data segment
- c) The FIN segment

**3M**

**5C.** Write a brief note on the following error-messages:

- a) Redirection
- b) Time exceeded
- c) Parameter problem

**3M**