

Seat No.: _____

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GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII (NEW) EXAMINATION – WINTER 2018****Subject Code: 2171008****Date: 03/12/2018****Subject Name: Data Communication and Networking****Time: 10:30 AM TO 01:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) What are two reasons for using layered protocols? What is one possible disadvantage of using layered protocols? **03**
- (b) Give Comparison among Circuit switching, Packet switching and Message Switching. **04**
- (c) List the Data Link Layer design issues. What is framing? List all methods used for framing and explain any two methods used for framing in detail. **07**

- Q.2** (a) Discuss Remote Procedure Call in Transport Layer. **03**
- (b) Suppose that a message 1001 1100 1010 0011 is transmitted using Internet Checksum (4-bit word). What is the value of the checksum? **04**
- (c) Properly Explain the channel allocation problem. Also explain its solution in detail. **07**

OR

- (c) Explain Slotted ALOHA in Detail **07**
- Q.3** (a) What is the length of a contention slot in CSMA/CD for **03**
- (i) 2-km twin-lead cable (signal propagation speed is 82% of the signal propagation speed in vacuum) and (ii) a 40-km multimode fiber optic cable (signal propagation speed is 65% of the signal propagation speed in vacuum).
- (b) Explain The Count-to-infinity Problem. **04**
- (c) Explain The 802.11 Architecture and Protocol Stack. **07**

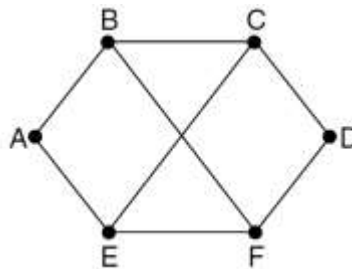
OR

- Q.3** (a) A group of N stations share a 56-kbps pure ALOHA channels. Each station outputs a 1000-bit frame on average once every 100 sec, even if the previous one has not yet been sent (e.g., the stations can buffer outgoing frames). What is the maximum value of N? **03**
- (b) Define following: **04**
- (i) Session Routing (ii) Forwarding (iii) Flooding (iv) Admission Control
- (c) Explain in Detail with diagram, Why it is required to define the Maximum and Minimum Frame size of Ethernet? What is Binary Exponential Back off and why it is used in Ethernet? **07**

- Q.4** (a) Assuming that all routers and hosts are working properly and that all software in both is free of all errors, is there any chance, however small, that a packet will be delivered to the wrong destination? **03**
- (b) How Resolver looking up remote name in DNS? **04**
- (c) Explain Connection Release in Transport Layer. Discuss the Two-army problem and show how to resolve it. **07**

OR

- Q.4** (a) Justify the Sentence: "RTP is just another variant of UDP" **03**
- (b) Consider the network of Fig.1. Distance vector routing is used, and the following vectors have just come in to router C: from B: (5, 0, 8, 12, 6, 2); from D: (16, 12, 6, 0, 9, 10); and from E: (7, 6, 3, 9, 0, 4). The cost of the links from C to B, D, and E, are 6, 3, and 5, respectively. What is C's new routing table? Give both the outgoing line to use and the cost. **04**



(Fig. 1)

- (c) What is Quality of Service? What is its significance? List the techniques available to improve Quality of Service and Explain any two of them in detail. **07**
- Q.5** (a) Explain Streaming of media using the web and media server. **03**
- (b) Explain Domain Resource Records. Describe Following DNS Resource Records. **04**
- I. cs.vu.nl 86400 IN MX 1 zphyr
- II. flits 86400 IN A 130.37.20.10
- (c) What is Digital Signature? List the methods used for Digital Signature and explain them in detail. **07**

OR

- Q.5** (a) How E-mail is delivered from sender to receiver? Explain with diagram. **03**
- (b) Explain a multithreaded web server with a front end and processing modules. **04**
- (c) Explain the Data Encryption Standard (DES) in details. **07**
