

**DiplETE – ET/CS (Current & New Scheme)**

Time: 3 Hours

**June 2018**

Max. Marks: 100

*PLEASE WRITE YOUR ROLL NO. AT THE SPACE PROVIDED ON EACH PAGE IMMEDIATELY AFTER RECEIVING THE QUESTION PAPER.*

**NOTE:** There are 9 Questions in all.

- Question 1 is compulsory and carries 20 marks. Answer to Q.1 must be written in the space provided for it in the answer book supplied and nowhere else.
- The answer sheet for the Q.1 will be collected by the invigilator after 45 minutes of the commencement of the examination.
- Out of the remaining EIGHT Questions answer any FIVE Questions. Each question carries 16 marks.
- Any required data not explicitly given, may be suitably assumed and stated.

**Q.1 Choose the correct or the best alternative in the following: (2×10)**

- a. An older type of data communications channel using multiple copper wires is called \_\_\_\_\_ technology.
- (A) fiber-optic cable                      (B) twisted pair  
(C) microwave                              (D) coaxial cable
- b. \_\_\_\_\_ command is used to manipulate TCP/IP routing table.
- (A) Ipconfig                                  (B) Traceroute  
(C) route                                      (D) Ifconfig
- c. Simple mail transfer protocol (SMTP) utilizes \_\_\_\_\_ as the transport layer protocol for electronic mail transfer.
- (A) DCCP                                      (B) SCTP  
(C) UDP                                        (D) TCP
- d. If a symbol is composed of 3 bits, there are \_\_\_\_\_ data levels.
- (A) 8    (B) 2  
(C) 16    (D) 4
- e. In \_\_\_\_\_ congestion control, policies are applied to prevent congestion before it happens
- (A) closed-loop                              (B) open-loop  
(C) either (A) or (B)                      (D) Inverted loop
- f. \_\_\_\_\_ is a bit-oriented protocol for communication over point-to-point and multipoint links.
- (A) Network Control Protocol            (B) High-Level Data Link Control  
(C) Authentication Protocol              (D) Line Control Protocol

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- g. A Congestion Control mechanism in which a congested node stops receiving data from the immediate upstream node or nodes is \_\_\_\_
- (A) Implicit Signaling                      (B) Explicit Signaling  
(C) Choke packet                              (D) Backpressure
- h. In cyclic redundancy checking, what is the CRC
- (A) The dividend                              (B) The divisor  
(C) The remainder                              (D) The quotient
- i. LAN stands for
- (A) Least area network                      (B) Land access network  
(C) Loop around network                      (D) Local area network
- j. In electronic mail, Multipurpose Internet Mail Extension (MIME) allows the transfer of \_\_\_\_\_.
- (A) Data    (B) Multimedia messages  
(C) Signals    (D) Files

**Answer any FIVE Questions out of EIGHT Questions.  
Each question carries 16 marks.**

- Q.2** a. Draw the block diagram of data communication and explain. (4)
- b. Explain various layers in TCP/IP protocol. (8)
- c. Briefly state any two applications that have been standardized to operate on the top of TCP. (4)
- Q.3** a. Enlist the advantages of Digital transmission of data over Analog transmission. (8)
- b. Two computers using TDM take up turns to send 100- bytes packet over a shared channel that operates at 64000 bits per second. The hardware takes 100 microseconds after one computer stops sending before the other can begin. How long will it take for each computer to send one megabyte data file? (8)
- Q.4** a. What are the three major classes of guided media? (6)
- b. Discuss the types of errors that occur in data communication system. (5)
- c. What is CRC? Explain. (5)
- Q.5** a. Draw the frame format of HDLC and explain. (8)
- b. What do you mean by statistical Time division multiplexer? Explain with suitable diagrams. (8)

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- Q.6** a. What do you mean by routing in packet-switching network? Why is it sometimes called an optimization problem? Explain any *two* basic routing algorithms. (8)
- b. Discuss the mechanisms employed for congestion control with a suitable diagram. (8)
- Q.7** a. Discuss various types of network topologies in computer network. (8)
- b. What is the need for Fast Ethernet? What are its main features? Why is there no need for CSMA/CD in Fast Ethernet? (8)
- Q.8** a. Draw IPv6 Header format and write about various field used in it. (10)
- b. Write about principles of internetworking. (6)
- Q.9** a. Briefly explain, Multipurpose Internet Extensions (8)
- b. Write short note on the following: (4×2)
- (i) Manchester Encoding
- (ii) Multicasting