

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

Time: 3 Hours

**DECEMBER 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. Which type of switching uses the entire capacity of a dedicated link?
 

(A) Circuit switching	(B) Datagram packet switching
(C) Message switching	(D) Virtual circuit packet
  
- b. Which layer provides upper layers with independence from the data transmission and switching technologies uses to connect systems?
 

(A) Network	(B) Transport
(C) Data link	(D) Physical
  
- c. In a \_\_\_\_\_ connection, two or more devices are connected by a link.
 

(A) multipoint	(B) point-to-point
(C) both (A) and (B)	(D) none of these
  
- d. Which of the following primarily uses guided media?
 

(A) Radio broadcasting	(B) Satellite communications
(C) Local telephone system	(D) Cellular telephone system
  
- e. In the \_\_\_\_\_ code, there is a transition at the middle of each bit period.
 

(A) Polar NRZ	(B) Manchester
(C) AMI	(D) Unipolar RZ
  
- f. The SMTP standard adopts.
 

(A) RFC 822	(B) RFC 824
(C) RFC 823	(D) RFC 821
  
- g. If SNR=251 and bandwidth =1 MHz the maximum channel capacity will be
 

(A) 8 Mbps	(B) 5 Mbps
(C) 10 Mbps	(D) 12 Mbps
  
- h. In \_\_\_\_\_, we combine signals from different sources to fit into a larger bandwidth.
 

(A) line coding	(B) block coding
(C) spread spectrum	(D) none of these

- i. Class B default subnet mask is  
(A) 255.255.255.0 (B) 255.255.0.0  
(C) 255.0.0.0 (D) 255.255.255.255
- j. HDLC is an acronym for  
(A) Half-duplex digital link combination (B) Host double-level circuit  
(C) High-duplex line communication (D) High-level data link control

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

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- Q.2** a. What are the key elements of the internet? Explain with simple network diagram? (6)  
b. Explain TCP/IP Protocol Architecture with the help of block diagram. (6)  
c. Explain half-duplex and full-duplex mode of communication and give examples of each. (4)
- Q.3** a. Define Channel Capacity. What key factors affect channel capacity? (6)  
b. What are the important features of digital signaling? (4)  
c. Write a Short note on Twisted Pair Cable. (6)
- Q.4** a. Explain the process of Delta Modulation (DM) technique. (8)  
b. In a CR code, the message bits are given by  $D = 1011001001$  and Pattern  $P = 101011$ . Find the transmitted code word. (8)
- Q.5** a. Mention key advantages and disadvantages of stop-and-wait ARQ technique? Also explain Go-Back-N and Selective Repeat ARQ. (8)  
b. Explain Synchronous Time Division Multiplexing with the help of Diagram. (8)
- Q.6** a. How packet switching and circuit switching differs? Explain in detail. (8)  
b. Explain Bellman-Ford Least Cost Algorithm. (8)
- Q.7** a. What are the basic topologies used in LAN? Describe LAN protocol architecture. (8)  
b. What is the purpose of IEEE-802 Reference model? Explain IEEE802 Protocol layers compared to OSI model. (8)
- Q.8** a. Explain in detail IPv4 Header with the help of figure. (8)  
b. Explain about next generation IP protocol version IPv6. Draw its header diagram. (8)
- Q.9** a. Differentiate UDP and TCP (8)  
b. Explain MIME transfer encodings. (8)