

Code: AE71/AC67/AT67/AE119/AC119/AT119
Subject: DATA COMMUNICATION & COMPUTER NETWORKS

AMIETE – ET/CS/IT (Current & New Scheme)

Time: 3 Hours

December 2017

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. A key feature of a protocol that includes control information for coordination and error handling is

(A) Syntax	(B) Semantics
(C) Timing	(D) None of these
- b. The internet evolved from the

(A) CSNET	(B) NSFNET
(C) ARPANET	(D) ANSNET
- c. Signal with a frequency of 1 kHz has time period of _____.

(A) 0.1 Second	(B) 0.01 Second
(C) 0.001 Second	(D) 0.0001 Second
- d. When a beam of light travels through media of two different densities and if the angle of incidence is greater than the critical angle, _____ occurs.

(A) refraction	(B) reflection
(C) criticism	(D) incidence
- e. The original IEEE 802.11, has a data rate of _____Mbps.

(A) 11	(B) 22
(C) 6	(D) 1
- f. A high-performance switching and multiplexing technology that utilizes fixed-length packets to carry different types of traffic

(A) ATM	(B) ADSL
(C) SONET	(D) None of these
- g. What is the hexadecimal equivalent of the Ethernet address 01011010 00010001 01010101 00011000 10101010 00001111?

(A) 5A:81:BA:81:AA:0F	(B) 5A:11:55:18:AA:0F
(C) 5A:88:AA:18:55:F0	(D) 5A:18:5A:18:55:0F
- h. Coaxial cables are widely used on

(A) Telephone networks	(B) Cable TV networks
(C) Broadband networks	(D) None of these

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- i. A full domain name is a sequence of labels separated by _____.
 (A) Semicolons (;) (B) Dots (.)
 (C) Colons (:) (D) None of these
- j. In TDM, the transmission rate of the multiplexed path is usually _____ the sum of the transmission rates of the signal sources.
 (A) greater than (B) less than
 (C) equal to (D) not related to

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

- Q.2** a. What is data communication model? Explain with block diagram. (8)
 b. How internet evolved? Explain key elements of internet. (8)
- Q.3** a. What is the bandwidth efficiency for FSK, ASK, PSK & QPSK for a bit rate of 10^7 on a channel with an SNR of 12 dB. (8)
 b. What do you understand by Transmission impairments? Explain. (8)
- Q.4** a. Explain ASK (Amplitude Shift Keying) technique in detail with the help of suitable diagrams. (8)
 b. Discuss types of errors and some popular error control techniques. (8)
- Q.5** a. Explain frame structure of HDLC. (8)
 b. Explain FDM and TDM in detail and also draw a comparison between FDM, TDM. (8)
- Q.6** a. What is the meaning of the term "Congestion"? State the causes of Congestion and congestion control techniques. (8)
 b. Explain the working model of switched communication networks with suitable diagrams. (8)
- Q.7** a. Explain Least Cost Algorithm (Dijkstra's Algorithm) with suitable example. (8)
 b. Discuss advantages and disadvantages of packet switched networks and circuit switched networks. (8)
- Q.8** a. Explain key elements and general applications of LAN. (8)
 b. Explain the shortcomings and possible solutions of distance vector routing. (8)
- Q.9** a. Explain the following:
 (i) Draw fixed header of IPv6 and discuss its features. (4)
 (ii) MIME (4)
 b. Compare TCP and UDP. (8)