

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

**AMIETE – ET/CS/IT (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. The full form of the abbreviation ISDN is
- (A) Integrated Slot Digital Network
  - (B) Integrated Services Digital Network
  - (C) Insight service Dual Neutral
  - (D) Invite Service Design Network
- b. Consider a Voice channel being used via modem to transmit digital data. Assume a bandwidth of 3100 Hz. A typical value of S/N is 30dB. Calculate the channel capacity C
- (A) 20000 bps
  - (B) 40000 bps
  - (C) 30984 bps
  - (D) 20984 bps
- c. A coaxial cable has performance constraints such as attenuation, thermal noise, and Inter-modulation noise only when,
- (A) Several signals are present
  - (B) Several time difference signals are present
  - (C) Several frequencies are present
  - (D) Several space division signals are present
- d. Which of the following digital signal encoding formats describes a Differential Manchester
- (A) 0= high level; 1=low level
  - (B) 0= no transition at beginning of interval; 1= transition at beginning of interval
  - (C) 0= Transition at beginning of interval; 1= no Transition at beginning of interval
  - (D) 0=no line signal; 1= Always a low level transition at beginning of interval

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- e. The data plus preamble, postamble and control information is called \_\_\_\_\_.
- (A) Data (B) Packet  
(C) Message (D) Frame
- f. The Go Back n ARQ is also called the
- (A) Stop and wait ARQ (B) Sliding window ARQ  
(C) Receiver Not Ready ARQ (D) Receiver Ready ARQ
- g. If a statistical multiplexer and synchronous multiplexer both use a link of same data rate, which of these can support more devices
- (A) Both support same no of devices (B) Synchronous multiplexer  
(C) They are not multiplexers (D) Statistical multiplexer
- h. A single stage space division switch has 10 input and 10 output lines. How many cross points are sufficient if a three stage space division switch is used for the same number of input and output lines
- (A) 58 (B) 48  
(C) 38 (D) 68
- i. Which access method is used by fast Ethernet?
- (A) CSMA/CD (B) CSMA/CA  
(C) CSMA/Polling (D) CSMA/CB
- j. Find the correct statement
- (A) SMTP can transmit executable files  
(B) SMTP cannot transmit test data  
(C) SMTP series may reject mail messages over a certain size  
(D) SMTP gateways use consistent set of mappings

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

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- Q.2** a. Describe a three layer model for communication tasks. (8)
- b. With the help of suitable examples explain the relationship between Data rate and bandwidth. (8)
- Q.3** a. Explain the process of transmitting digital data using analog signals. (8)
- b. Explain the Delta modulation with suitable example. (8)
- Q.4** a. Write notes on Synchronous and Asynchronous transmission. (8)
- b. What is meant by sliding window flow control? Explain. (8)

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|------------|-------------------------------------------------------------------------------------------|------------|
| <b>Q.5</b> | a. Explain Synchronous Time Division Multiplexing.                                        | <b>(8)</b> |
|            | b. What is meant by Statistical Time division Multiplexing.                               | <b>(8)</b> |
| <b>Q.6</b> | a. Explain Space division Switching.                                                      | <b>(8)</b> |
|            | b. What is meant by flooding in networks? Explain with suitable example.                  | <b>(8)</b> |
| <b>Q.7</b> | a. Explain the effect of packet size on transmission time with figures.                   | <b>(8)</b> |
|            | b. What is meant by frame relay call control?                                             | <b>(8)</b> |
| <b>Q.8</b> | a. Write notes on Bus, tree, Ring and star topologies.                                    | <b>(8)</b> |
|            | b. Describe the connection mode and connection less mode of operation in Internetworking. | <b>(8)</b> |
| <b>Q.9</b> | a. Explain a simple connection state diagram.                                             | <b>(8)</b> |
|            | b. Explain SMTP and MIME.                                                                 | <b>(8)</b> |