ROLL NO. _____

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

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

Time: 3 Hours **JUNE 2016** **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 HDLC _____ field defines the beginning and end of a frame.
(A) Flag **(B)** Address
(C) FCS **(D)** Control

b. 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

c. _____ provides a remote logon capability.
(A) SMTP **(B)** TELNET
(C) FTP **(D)** RSVP

d. Ethernet address is an example of _____ addressing while IP address is an example of _____ addressing.
(A) hierarchical, flat **(B)** flat, hierarchical
(C) flat, flat **(D)** hierarchical, hierarchical

e. IPv6, priorities are assigned to various types of congestion-controlled traffic. The control traffic is assigned the highest priority 7 and it is addressed by the protocols such as _____.
(A) TELNET & TCP **(B)** HTTP & TELNET
(C) OSPF & RIP **(D)** TCP & HTTP

f. A signal passes through an amplifier, and its power is increased by 20 times. The amplification gain of an amplifier is _____.
(A) 10 dB **(B)** 1.301 dB
(C) 2 dB **(D)** 13.01 dB

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. The process of determining symmetrically, how to forward messages toward the destination node based on its address is called _____.
(A) Hosting **(B)** Switching
(C) Inter-connecting **(D)** Routing

i. Number of channels of 100 kHz in a frequency range from 1800 MHz to 1862

MHz is equal to
(A) 62 **(B)** 612
(C) 620 **(D)** 310

j. Even parity is achieved by padding additional
(A) Even number high bits to make number of high bits even
(B) Odd number of low bits to make number of high bits even
(C) Odd number of high bits to make number of high bits even
(D) Odd number of low bits to make number of low bits even.

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

Q.2 a. Define and briefly explain the following terms associated with internet: ISP, NAP, NSP, POP. **(8)**

b. Explain functioning layers in OSI Model. Mention the necessity of using layer concept in OSI Model. **(8)**

Q.3 a. Explain the functioning of terrestrial and satellite systems in wireless transmission. Give their respective characteristics. **(8)**

b. What is multi path fading? What is the effect of multi path fading on network communication? **(8)**

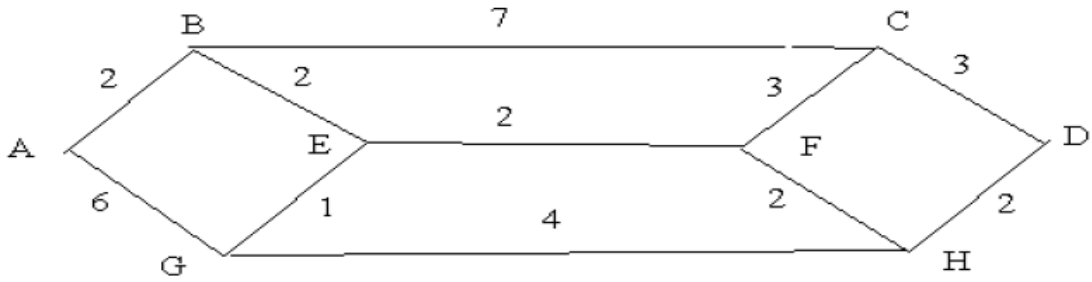
Q.4 a. Explain the various digital signal encoding schemes with relevant waveforms. **(8)**

b. Discuss any two methods to transform analog data to digital signal with a block diagram. **(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. What is multiplexing? Explain the FDM methodology to allow sharing of single resources among various users. **(8)**

Q.6 a. Explain Dijkstra algorithm use Dijkstra algorithm to find the shorted path from A to D. **(8)**



b. Explain Bellman-Ford Least Cost Algorithm. **(8)**

Q.7 a. What is the role of transmission media in communication network? Give three examples of transmission media used in LAN. **(8)**

b. What is the function of a bridge in networking? Discuss the architecture and operation of a bridge connected network. **(8)**

Q.8 a. Explain Gigabit Ethernet with its specifications. **(8)**

b. Describe IPv6 addresses and briefly explain three types of IPv6 addresses. **(8)**

Q.9 a. Discuss the basic e-mail operation with a diagram illustrating SMTP mail flow. **(8)**

b. Explain MIME transfer encodings. **(8)**