

AMIETE – ET/CS/IT (CURRENT SCHEME)

Time: 3 Hours

JUNE 2015

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. Identify the requirements that call for high speed LANs.
- (A) Centralized Server Farms
 - (B) Power Work Group, High Speed Local Back Bone
 - (C) Both A and B
 - (D) None of the above
- b. Application Layer contains
- (A) Logic needed to support applications
 - (B) Sub Networks Applications
 - (C) Server and Workstation
 - (D) None of the Above
- c. For a channel with 1 MHz bandwidth and $SNR = 63$, the channel capacity is
- (A) 4 Mbps
 - (B) 6 Mbps
 - (C) 2 Mbps
 - (D) None of these
- d. For a parabolic reflective antenna with a diameter of 2m, operating at 12 GHz, what is the Antenna Gain?
- (A) 35.186dB
 - (B) 46.45dB
 - (C) 10dB
 - (D) 45.46dB
- e. Hamming distance between two sequences $v_1=011011$ and $v_2 = 110001$ is
- (A) 5
 - (B) 3
 - (C) 4
 - (D) None
- f. The time it takes for a transmitter to send out a block of data is
- (A) Node Delay
 - (B) Propagation Delay
 - (C) Transmission Time
 - (D) All of these

g. The IEEE802.1D specification defines the protocol architecture for

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|-----------------|----------|
| (A) LLC | (B) MAC |
| (C) MAC Bridges | (D) HDLC |

h. Nomadic Access provides a wireless link between a

- (A) TELNET & TCP
 (B) HTTP & TELNET
 (C) OSPF & RIP
 (D) LAN Hub and Mobile Data Terminal

i. The OSPF protocol is used as the

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|------------------------------|--------------------------|
| (A) Border Gateway Protocol | (B) Path Vector Protocol |
| (C) Interior Router Protocol | (D) Link State Protocol |

j. The UDP is specified in

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|-------------|-----------------------|
| (A) RFC768 | (B) RFC2582 |
| (C) RFC2581 | (D) None of the above |

Answer any FIVE Questions out of EIGHT Questions.

Each question carries 16 marks.

Q.2 a. Explain simple model of communication with block diagram. **(8)**

b. Compare OSI and TCP/IP Protocol Architectures. **(8)**

Q.3 a. Explain the following –
 (i) Frequency, Spectrum and Bandwidth.
 (ii) Relationship between Data Rate and Bandwidth
 (iii) Attenuation and Attenuation Distortion. **(8)**

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

Q.4 a. Explain with waveforms three basic encoding techniques for transforming digital data into analog signals. **(8)**

b. An asynchronous transmission scheme uses 8 data bits, an even parity bit, and a stop element of length 2 bits. What percentage of clock inaccuracy can be tolerated at the receiver with respect to the framing error? Assume that the bit samples are taken at the middle of the clock period. Also assume that at the beginning of the start bit the clock and incoming bits are in phase. **(8)**

- Q.5** a. Explain the basic characteristics of data link protocol HDLC. (8)
- b. Explain the working of FDM system transmitter and Receiver. (8)
- Q.6** a. Explain with example connection over a Public Circuit-Switching Network. (8)
- b. Explain the Effects of Congestion drawing profiles of Delay v/s Load and Normalized throughput and Load. (8)
- Q.7** a. Explain the Typical characteristics of Backend Networks and Storage Area Networks. (8)
- b. Explain the functions Frame Format of IEEE 802.3 and explain the function of each field. (8)
- Q.8** a. Explain the protocol functions of Encapsulation, Fragmentation and reassembly. (8)
- b. Draw and explain functions of IPv4 Header. (8)
- Q.9** a. Explain the functions of BGP and also justify why BGP has become the preferred exterior router protocol for internet. (8)
- b. Explain the MIME transfer Encodings. (8)