Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/B.TECH(BT)/SEM-8/ID-814A/2012

2012

INFORMATION TECHNOLOGY / ARTIFICIAL INTELLIGENCE

Time Allotted : 3 Hours Full Marks : 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for the following : 10 × 1 = 10

i) In TCP/IP, there are ..... layers.

a) 7 b) 3

c) 5 d) None of these.

ii) The process to process communication is done in

a) application layer b) session layer

c) transportation layer d) presentation layer.

iii) A Modem does ..... jobs.

a) only modulation

b) only demodulation

c) both modulation and demodulation

d) none of these.

iv) When a host knows its physical address but not its IP address it can use

a) ICMP b) IGMP

c) ARP d) RARP.

v) Which of the following properties is known as $(A + B) = (B + C)$?

a) Associative Law b) Idempotent Law

c) Commutative Law d) Distributive Law.

vi) In IPV ·4 how many bits are used to represent an IP address ?

a) 64 b) 128

c) 16 d) 32.

vii) ..... layer provides IP addressing.

a) Physical b) Network

c) Application d) Data Link.

viii) Which of the following is not a basic gate ?

a) AND gate b) OR gate

c) NOT gate d) XOR gate.

ix) HTTP server uses the port number

a) 80 b) 23

c) 21 d) 56.

x) A Firewall is

a) used to protect a computer room from fires and floods

b) a form of virus

c) a screen vaver program

d) none of these.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. 3 × 5 = 15

2. What do you mean by Network Topology ? Explain in brief.

3. What is the difference between ASK and FSK ?

4. Describe the Block Coding.

5. How many types of Classes are there in IP addressing ? Define each class with address range.

6. Construct XOR gate using minimum number of NAND gates and also with minimum number of NOR gates. Explain with proper diagram.

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. 3 × 15 = 45

7. a) What is the difference between classful addressing and classless addressing ?

   b) An address is given as 200.11.8.45. Describe the meaning of each squad of the said address.

   c) Write the advantages of IPv6 over IPv4.

   d) Convert to corresponding decimal number from $(101101)_2$.

   e) Explain de-Morgan's Law. 3 + 3 + 3 + 3 + 3

8. a) Briefly explain the modes of data communications in a network.

   b) Write down two dimensional Parity checking technique for error detection ?

   c) Write down the advantages of fiber optic cable over twisted pair and coaxial cables.

   d) Encode the following bits using NRZ-I, and RZ technique : (10011011). 2 + 4 + 4 + 5

9. a) Explain the jobs of Data Link Layer.

   b) Explain Hamming Code technique for single bit error correction.

   c) Write down CRC and Checksum techniques for Error detection with example. 3 + 6 + 6

10. a) Explain Manchester Line coding technique.

    b) Explain the states for Analog to Digital signal conversion.

    c) What are the different connecting devices in a network ? Explain briefly.

    d) Explain why we are using both Physical address and IP address for Data Communication with example.

    3 + 6 + 3 + 3

11. Write short notes on any *three* of the following : 5 + 5 + 5

    i) TDM in Multiplexing

    ii) Distributed Database

    iii) Serial *vs.* Parallel Communication

    iv) Full adder

    v) HTTP, FTP, Telnet, SMTP and POP3 protocols.