This question paper contains **4** printed pages]

Roll No.

S. No. of Question Paper : **5024**

Unique Paper Code : **234561**   **D**

Name of the Paper : **Computer Networks (CSPT-505)**

Name of the Course : **B.Sc./Math. Sc.**

Semester : **V**

Duration : **3 Hours**   Maximum Marks : **75**

(Write your Roll No. on the top immediately on receipt of this question paper.)

Question No. **1** is compulsory. Attempt any *five* from remaining

seven questions. In all *Six* questions are to be attempted.

Marks are indicated against each question.

All parts of the questions must be done together.

1. Attempt *all* parts :

    (*i*)   Identify any *four* components of data communication system.   2

    (*ii*) A color image uses 32 bits to represent a pixel. What is the maximum number of different colors that can be represented ?   2

    (*iii*) Which layer in the TCP/IP model is the user support layer ?   1

    (*iv*) Why do we need a DNS system when we can directly use an IP address ?   2

    (*v*)   Change the following IP addresses from binary notation to dotted decimal notation :

        (*a*) 01111111 11110000 01100111 11111001

        (*b*) 10101111 11000111 11111000 00011101.   4

(*vi*) What kind of files types can FTP transfer ?   3

(*vii*) Which special port is provided to allow wireless keyboard to communicate with PC ? 1

(*viii*) Name the layers on which the following connecting devices operate :

    (*a*) Bridge

    (*b*) Router

    (*c*) Gateway.   3

(*ix*) Why HTTP is called a stateless protocol ?   2

(*x*) Define acronyms :

    (*a*) CIDR

    (*b*) ICANN

    (*c*) TTL

    (*d*) TELNET

    (*e*) MTA.   5

2. (*a*) A light signal is travelling through a fiber. What is the delay in the signal if the length of the fiber-optic cable is 50 m, 100 m (assume a propagation speed of 2×10^8 m/sec and speed of light 3×10^8 m/sec).   4

(*b*) List *two* responsibilities of the following layers of the internet model :

    (*i*) Network Layer

    (*ii*) Transport Layer

    (*iii*) Application Layer.   6

3. (a) Identify the different categories of connecting devices mentioning the layer on which each operates in a network. 5

(b) How does Stop and Wait protocol handles the situation to prevent the receiver being overloaded ? Explain by drawing flow diagram. 5

4. (a) Even though circuit switched network is less efficient than datagram network, delay in these networks are minimal. Explain why. 5

(b) An address space has a total of 1024 addresses. How many bits are needed to represent an address ? 2

(c) In a block of addresses, we known the IP address of one host is 25.34.12.56/16. What are the first address, last address and total number of addresses in this block ? 3

5. (a) What are the advantages of Dynamic routing table over static routing table. 5

(b) Explain the role of NVT and pseudoterminal driver in communication using TELNET with diagram. 5

6. (a) In Electronic mail, discuss the various task of the user agent in SMTP protocol. 5

(b) What is the purpose of firewall ? Explain packet filter firewall and proxy firewall. 5

7. Differentiate between the following : 5×2=10

(a) Horn antenna and dish antenna

(b) Multimode step index fiber and multimode graded index fiber

(c) Router and Bridge

(d) Fixed sized framing and variable sized framing

(e) FQDN and PQDN.

8. Write short notes on any *two* of the following : 2×5=10

(a) Private Network

(b) Hybrid Network

(c) Virtual Private Network

(d) Radio Waves

(e) Network Security Services.