(iv) List the features of internetworking.

(v) What are the primary services offered by a computer network ?

(vi) What is the significance of flow control ?

(vii) List any *four* services of transport layer.

(viii) Mention the need for domain name system.

(ix) List the components of data communication.

(x) What is the need for routing algorithm ?

1.5×10=15

J-21-0148

B. Tech. EXAMINATION, 2021

Semester VII (CBCS)

COMPUTER NETWORKS AND DATA

COMMUNICATION

EC-701

Time : 2 Hours   *Maximum Marks :* 60

The candidates shall limit their answers precisely within 20 pages only (A4 size sheets/assignment sheets), no extra sheet allowed. The candidates should write only on one side of the page and the back side of the page should remain blank. Only blue ball pen is admissible.

Note : Attempt *Four* questions in all, selecting *one* question from any of the Sections A, B, C and D. Q. No. **9** is compulsory.

Section A

1. Describe the two approaches to packet switching. Also list the *four* major components of packet switch and their functions. **15**

2. How is TCP/IP protocol suite different from OSI model ? Also differentiate between physical address, logical address and port address. **15**

Section B

3. Draw and explain the NRZ, RZ and biphase line coding schemes. What is the data rate for a 2 MHz baseband channel for the following line coding schemes : **15**

    (a) NRZ-L

    (b) MLT-3

    (c) 2BIQQ4.

4. Define linear block code and cyclic code. Let the codeword received at sender side be 100000001 and the generator polynomial be $x^3 + x^2 + 1$. Find if there is error in transmission. **15**

Section C

5. Draw and explain the four most common implementations of the physical layer of standard ethernet. What is the function of MAC sublayer in standard ethernet ? **15**

6. Why is SONET called a synchronous network ? What are the four SONET layers ? Discuss the function of each layer. **15**

Section D

7. How is STS multiplexer different from an add/drop multiplexer ? Also describe the relationship between STS signals and OC signals. **15**

8. What is a mask in IPv4 addressing ? Differentiate subnet and supernet. Also find the class of the following IP address : **15**

    (i) 237.14.2.1.

    (ii) 208.35.54.12

    (iii) 129.14.6.8

    (iv) 114.34.2.8

(Compulsory Question)

9. Short answer type questions :

    (i) What is the principal difference between circuit switching and packet switching ?

    (ii) Explain, how errors are detected using CRC.

    (iii) Compare virtual circuits and datagrams.