5. (a) What is Domain Name system ? Briefly explain flat name space and hierarchical name space with diagram. Explain the need of DNS in the IP networks ? (DCN5)

(b) Explain Anycast and Multicast Routing. Explain Distance Vector Routing with the help of suitable example. (DCN5)

(c) Write short notes on the following : (DCN5)

(i) SMTP

(ii) FTP

(iii) HTTP

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TBC–301

B. C. A. (THIRD SEMESTER) END SEMESTER EXAMINATION, Jan., 2023

DATA COMMUNICATION AND COMPUTER NETWORKS

Time : Three Hours

Maximum Marks : 100

Note : (i) All questions are compulsory.

(ii) Answer any *two* sub-questions among (a), (b) and (c) in each main question.

(iii) Total marks in each main question are **twenty**.

(iv) Each sub-question carries 10 marks.

1. (a) What is meant by Data Communication ? List the essential elements of network architecture and explain in brief. (DCN1)

(b) Explain the following : (DCN1)

(i) Packet switching and Circuit switching

(ii) Simplex, Half duplex and Full duplex

(c) What is network topology ? Explain the different network topology. Also explain advantages and disadvantages of each topology. (DCN1)

2. (a) Discuss in detail various encoding and modulation techniques. (DCN2)

(b) What are the different types of guided and unguided transmission media ? Explain. (DCN2)

(c) Explain channel capacity for noisy as well as noiseless channel. We have a 6 kHz channel whose signal-to-noise ratio is 30 dB. A binary signal is sent by this channel. What is the maximum achievable data rate ? (DCN2)

3. (a) What is multiple access protocol ? Explain how collision can be avoided within a shared medium. (DCN3)

(b) Explain briefly OSI reference model. Compare it with TCP/IP reference model. (DCN3)

(c) Write about Stop and Wait protocol, Go-Back-N and Sliding window protocol. (DCN3)

4. (a) Discuss the services and functions of Network layer and list various internet working devices and explain their functions. (DCN4)

(b) What do you understand with IP addressing ? Explain IPV4 in detail. What is the main advantage of using IPv6 over IPv4 ? (DCN4)

(c) With the help of suitable example briefly explain : (DCN4)

(i) Congestion Control

(ii) Routers