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5. (a) Explain the responsibilities of transport layer in detail. Also, discuss the use of TCP and UDP protocols. (CO5)
- (b) Explain the domain name system and its working with an suitable example. (CO5)
- (c) Explain the following : (CO5)
- (i) WWW
 - (ii) SMTP
 - (iii) FTP
 - (iv) HTTP

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**B. C. A. (FOURTH SEMESTER)
END SEMESTER**

EXAMINATION, June/July, 2022

**DATA COMMUNICATION AND COMPUTER
NETWORK**

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 are the various network criteria ?
Explain various goals and applications of
computer networks. (CO1)

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- (b) How many categories of networks are present in computer networks ? Also define the name of the topologies used in these networks. (CO1)
- (c) Explain different modes of communication in computer networks with proper diagram. (CO1)
2. (a) What do you mean by transmission impairment ? Explain all the causes of impairments in detail. (CO2)
- (b) Calculate the theoretical highest bit rate of a regular telephone line. A telephone line normally has a bandwidth of 3000 Hz assigned for data communications. The signal-to-noise ratio is usually 15. (CO2)
- (c) Why do we need encoding ? Draw the signals using Manchester and differential Manchester for the string 1010011 with proper example. (CO2)
3. (a) What is the significance of Switching ? Explain the various switching techniques with a neat and clean diagram. (CO3)

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- (b) Explain the functions of each layer of the OSI model. Compare OSI model with TCP/IP protocol suite. (CO3)
- (c) What is frame relay ? Explain the architecture of frame relay in detail. (CO3)
4. (a) What do you mean by logical addressing ? Explain the header format of IPv4 and discuss the relevance of various fields. (CO4)
- (b) What will be default subnet mask, host address, network address, broadcast IP, for the following IP address ? (CO4)
- (i) 192.168.10.2
- (ii) 10.10.10.10
- (iii) 130.10.30.40
- (c) What do you mean by routing in networking ? Explain the characteristics and types of routing algorithms. (CO4)

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