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**Roll No. ....**

**TBC-301/TBI-301/TBS-301**

**B. C. A./B. SC. (IT)/B. SC. (H) (CS)  
(THIRD SEMESTER)**

**MID SEMESTER**

**EXAMINATION, Oct., 2023**

**DATA COMMUNICATION AND COMPUTER  
NETWORKS**

**Time : 1½ Hours**

**Maximum Marks : 50**

**Note :** (i) Answer all the questions by choosing  
any *one* of the sub-questions.

(ii) Each sub-question carries 10 marks.

1. (a) What do you mean by Data  
Communication ? Explain various  
components of a computer network. (CO1)

**OR**

(b) What is network topology ? Explain its  
types. Also explain advantages and  
disadvantages of each topology. (CO1)

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2. (a) What is an OSI reference model ? Explain functions of different layers of OSI reference model. (CO1)

OR

- (b) What is multiplexing ? Explain the types of multiplexing in brief. (CO1)

3. (a) What is Switching ? Explain different types of switching techniques. (CO1)

OR

- (b) Differentiate between the following :

(CO1)

(i) Asynchronous and Synchronous data transfer

(ii) Analog and Digital Signal

(iii) Serial and parallel transmission

4. (a) If a signal is thought to have a maximum frequency between 1000 Hz and 6000 Hz, what will be the sample rate ? (CO2)

OR

- (b) Explain various encoding and modulation techniques in detail. (CO2)

(3)

5. (a) What are the advantages of fiber optics over copper as a transmission medium ? Is there any downside of using fiber optics over copper ? (CO2)

OR

- (b) Explain the different types of guided and unguided transmission media in detail.

(CO2)