

## KIET Group of Institutions

### Sample Solution of CT Examination (2022-2023) EVEN Semester

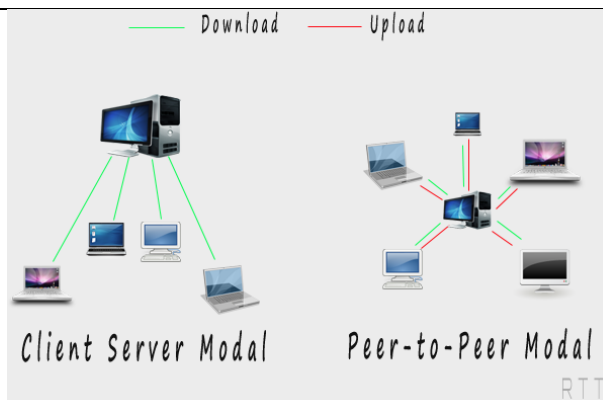
Department: Computer Science  
 Year: III  
 Subject Name: Computer Networks  
 Duration: 2 Hrs

Course: B.Tech  
 Semester: VI  
 Subject Code: KCS 603  
 Max. Marks: 60

Note: Attempt all the questions of each section

Section-A (2X10=20)				
Q. 1		Competitive Exam#	CO	BL/KC*
a	Discuss about transmission mediums in networking.  Mention about the wired and wireless mediums. Refer PPT	AKTU 21-22	1	2 C
b	Calculate the Shannon capacity for the noisy signal where SNR is 255 and bandwidth is 4000 Hz.  Capacity = bandwidth $\times \log_2 (1 + \text{SNR})$ Capacity = $4000 \times \log_2 (1 + 255)$ Capacity = $4000 \times \log_2 256 = 4000 \times 8 = 32000 \text{ bps}$  Refer Section 2.2 : Data Communication Book. Figure 2.3: Forouzan Book	GATE 2017	1	2 C
c	How bit rate and baud rate are different? Justify.  Refer Section 3.3 : Data Communication Book. Figure 2.3: Forouzan Book		1	4 C
d	Discuss the components involved in computer networks. Refer PPT or Refer Section 2.2 : Data Communication Book. Figure 2.3: Forouzan Book		1	2 C
e	Elaborate delay in terms of network performance.  Refer PPT: Four delays are discussed in PPT Refer Section 2.2 : Data Communication Book. Figure 2.3: Forouzan Book		1	2 C
f	How peer to peer network is different from client server architecture?		1	4 C

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- #Reference to Competitive Exams (GATE, GPAT, CAT, GRE, TOFEL, NET, etc. )



Advantages of a Peer-to-Peer Network	Advantages of a Client/Server Network
Less expensive to implement	Provides for better security
Does not require additional specialized network administration software	Easier to administer when the network is large due to centralized administration
Does not require a dedicated network administrator	All data can be backed up on one central location

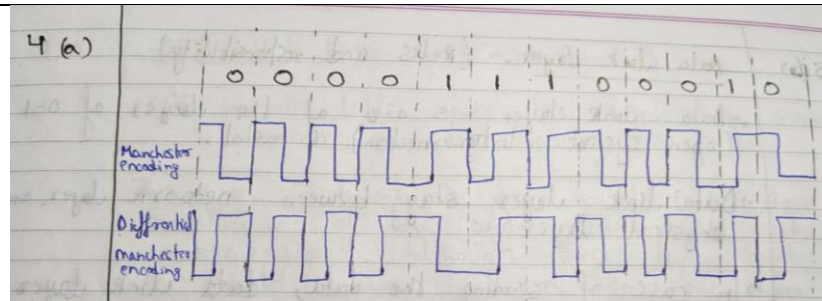
Refer Section 2.2 : Data Communication Book. Figure 2.3: Forouzan Book

<b>g</b>	<p>Discuss any two network devices and on which OSI layer they work.</p> <p>Mention any two like :</p> <ol style="list-style-type: none"> <li>1. Hub on Physical Layer</li> <li>2. Switch/Bridge/etc</li> <li>3. Router on Network Layer</li> </ol> <p>Refer PPT</p>		1	2 C
<b>h</b>	<p>Consider the noiseless channel with the bandwidth of <b>5000 Hz</b> transmitting a signal with two signal levels. What will be the maximum bit rate as per Nyquist Theory of bit rate?</p> <p>Formula:</p> <p>Bitrate = 2 x Bandwidth x log<sub>2</sub> (Signal Level)</p> <p>Bitrate = 2 x 5000 x log<sub>2</sub> (2) = 10,000 bps</p> <p>Refer Chapter 3: Data Communication Book. Example 3.34: Forouzan Book</p>	GATE 2016	1	3 C
<b>i</b>	<p>Differentiate between Frequency division multiplexing and Time division multiplexing.</p> <p>Refer PPT</p> <p>Refer Section 2.2 : Data Communication Book. Figure 2.3: Forouzan Book</p>		1	4 C

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Roll No.				
j	Which layer of ISO-OSI model adds both the header and trailer? <b>Data Link Layer</b>	NET 2012	2	2 C
<b>Section-B</b>			<b>(5X4=20)</b>	
Q. 2	“Computer network is the part of all domains in current scenario”. Justify the statement and discuss some applications of computer networks in current scenario. <b>Refer PPT</b> Give application names like education → online teaching → video calls → business : e-commerce , and many more with detailed description <b>Refer Section 2.2 : Data Communication Book. Figure 2.3: Forouzan Book</b>	AKTU 2021-22 RCS601	1	2 C
	OR			
	Why computer networking is important? Justify your answer by mentioning the goals of computer networks. <b>Refer PPT</b> <b>Chapter 1: Data Communication Book. Forouzan</b>			
Q. 3	How the following terms impact the signal: i. Attenuation      ii. Noise      iii. Distortion <b>Refer Section 3.4: Data Communication Book. Figure 3.25: Forouzan Book</b>		1	4 C
	OR			
	Which of the following cable you prefer if you are deploying the network for data transmission: i. Twisted pair      ii. Co-axial      iii. Fiber optics Discuss the reason of opting the specific one. <b>Refer PPT</b> And mention any one in detail like Fibre optics: as it is fast for transmission of data signals and covers more distance. <b>Section 7.1 Page 193, Forouzan Book</b>	AKTU 2013-14		
Q. 4	Take a mentioned bit stream and apply Manchester encoding and differential Manchester encoding schemes on it to generate signals. <b>0 0 0 0 1 1 1 0 0 0 1 0</b> <b>Mention the format, which you are using... like</b> <b>1 tends to low to high</b> <b>0 tends to high to low.</b> And then solve question. It is bi-phase signal encoding scheme. So divide the signal period in bi-phase. <b>Refer PPT</b> <b>Refer Section 4.1, Chapter 4: Data Communication Book. Forouzan Figure 4.8</b>	GATE 2017	1	3 C

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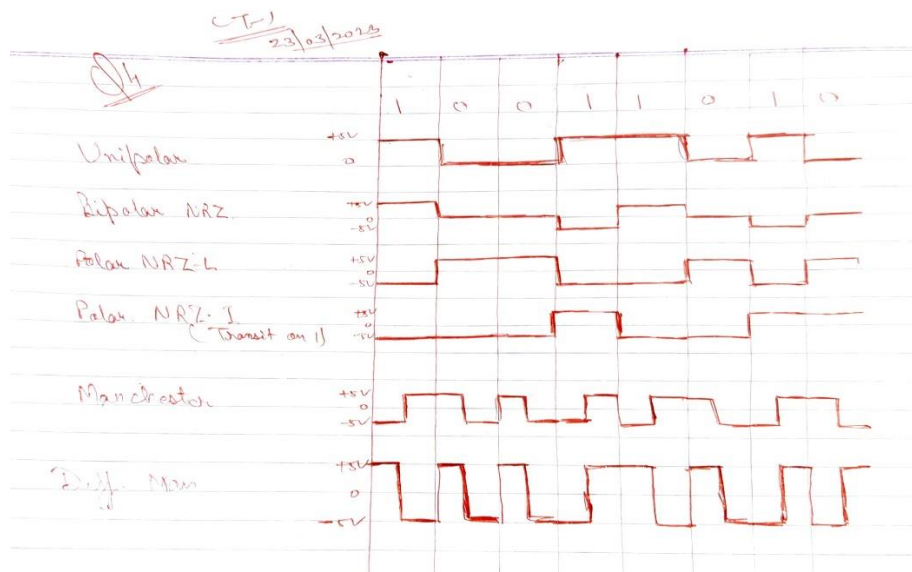
OR

Encode **10011010** data stream using the following encoding schemes.

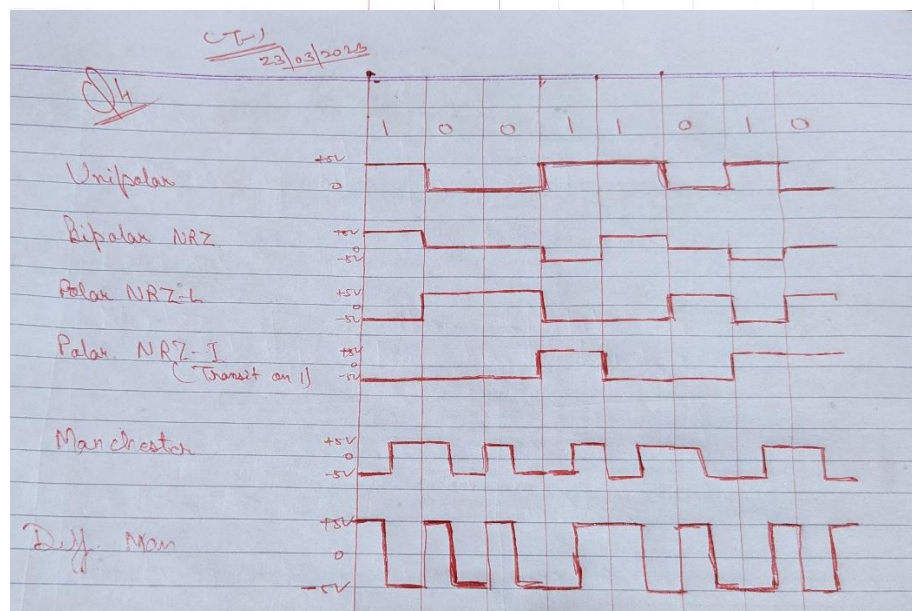
- Unipolar
- Bipolar NRZ-L
- Bipolar NRZ-I
- Manchester
- Differential Manchester

**Refer PPT and**

**Refer Section 4.1, Chapter 4: Data Communication Book. Forouzan**



AKTU  
2018-19



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Roll No. _____				
Q. 5	Discuss the importance of Data Link Layer. How the Data link layer is contributing to the transmission of data.		2	2 C
	Refer Page 34-35 : Data Communication Book. Figure 2.6: Forouzan Book			
	OR			
	Discuss the roles and responsibilities of Data Link layer.			
	Refer Section 2.2 : Data Communication Book. Figure 2.3: Forouzan Book			
Section-C (10X2=20)				
Q. 6	How the OSI model layers are defined and work independently? Discuss the working of each layer in detail.	AKTU 2018-19, 2021-22	1	4 P
	Refer Section 2.3: Data Communication Book. Forouzan Book			
	OR			
	Differentiate between ISO-OSI Reference model and the TCP/IP Model in detail.			
	Refer Section 2.4 : Data Communication Book. Figure 2.16: Forouzan Book			
Q. 7	a. Why topology is important? How does the topology impact on any network?	AKTU 2016-17	1	4 C
	Refer Section 1.2 : Data Communication Book. Page 12: Forouzan Book			
	b. How the circuit switching and packet switching methods are different?			
	Refer Section 8.1, Chapter 8 : Data Communication, Forouzan Book			
	OR			
	How is the network affected if you were using the Ring topology earlier and now using Mesh topology? Discuss the advantages and disadvantages of both. Draw the figure of both topologies.	AKTU 2017-18		
	Refer Section 1.2 : Data Communication Book. Page 12-13 Forouzan Book			

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