



**BUDDHA INSTITUTE OF TECHNOLOGY, GIDA, GORAKHPUR**  
**DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING**  
**CLASS TEST-2 (EVEN SEMESTER 2022-23)**  
**May-2023**

Course: B.Tech

Semester: 6

Subject: Digital Communication

Subject Code: KEC-601

M.M.: 30

Time: 2:00 hrs

Roll No. \_\_\_\_\_

**SECTION-A**

1. Attempt all questions. Each questions carry equal marks.

Marks: 5\*1=5

Q. No.	Question	Level of Taxonomy	Course Outcome
a.	Define code tree and trellis diagram.	Understanding	(CO5)
b.	Explain digital communication system with suitable block diagram.	Understanding	(CO2)
c.	Explain eye diagram with suitable diagram.	Understanding	(CO2)
d.	Discuss the function of decision-making device in digital receiver.	Understanding	(CO3)
e.	Explain spread spectrum techniques.	Understanding	(CO4)

**SECTION-B**

2. Attempt all questions. Each questions carry equal marks.

Marks: 3\*5= 15

Q. No.	Question	Level of Taxonomy	Course Outcome
a.	<p>Consider a (7,4) block code generated by;</p> $G = \begin{pmatrix} 1 & 0 & 0 & 0 & 1 & 1 & 0 \\ 0 & 1 & 0 & 0 & 0 & 1 & 1 \\ 0 & 0 & 1 & 0 & 1 & 0 & 1 \\ 0 & 0 & 0 & 1 & 1 & 1 & 1 \end{pmatrix}$ <p>Analyze errors syndrome S helps in correcting the single error.</p> <p align="center"><b>OR</b></p>	Applying	(CO5)
a.	<p>For a (5,2) LBC, the generator matrix is of the form <math>[I_k:P]</math> where P is given by</p> $[P] = \begin{bmatrix} 1 & 1 & 1 \\ 1 & 1 & 0 \end{bmatrix}$ <p>Identify :</p> <ul style="list-style-type: none"> <li>(i) Generator matrices</li> <li>(ii) Parity check matrix</li> <li>(iii) All possible code vectors</li> </ul> <p>Find the <math>d_{min}</math>.</p>	Applying	(CO5)

<b>b.</b>	Explain pulse shaping and also discuss the term roll off factor in raised cosine.  <b>OR</b>	<b>Applying</b>	<b>(CO2)</b>
<b>b.</b>	Discuss the power spectral density of Manchester line coding format.	<b>Applying</b>	<b>(CO2)</b>
<b>c.</b>	Consider the {3,1,2} Convolutional encoder with impulse response  $g^{(1)} = \{110\}, g^{(2)} = \{101\}, g^{(1)} = \{111\}$  (i) Analyze encoder block diagram. (ii) Identify code vector corresponding to information source $m = \{11101\}$ .	<b>Applying</b>	<b>(CO5)</b>

### SECTION-C

**3. Attempt any all questions. Each questions carry equal marks.**

**Marks: 2\*5=10**

<b>Q. No.</b>	<b>Question</b>	<b>Level of Taxonomy</b>	<b>Course Outcome</b>
<b>a.</b>	Draw BASK And BPSK of the following binary sequence.  (i) 100111011  (ii) 011010011  <b>OR</b>	<b>Applying</b>	<b>(CO3)</b>
<b>a.</b>	A binary data stream 0010010011 needs to be transmitted using DPSK techniques. Prove that reconstruction of the DPSK signal by the technique is independent of the choice of the extra bit.	<b>Applying</b>	<b>(CO3)</b>
<b>b.</b>	Explain matched filter. Derive the Bit error rate equation of Binary Phase Shift Keying.	<b>Applying</b>	<b>(CO4)</b>

**Note: Revised Bloom's Taxonomy Levels-**

**L1->Remembering, L2-> Understanding, L3-> Applying, L4-> Analyzing, L5-> Evaluating, L6-> Creating**