Roll No.											

GAIN MORE KNOWLEDGE
REACH GREATER HEIGHTS

PRESIDENCY UNIVERSITY
BENGALURU

SCHOOL OF ENGINEERING

TEST - 1

Even Semester: 2018-19 | **Date**: 01 March 2019

Course Code: ECE 212 | **Time**: 1 Hour

Course Name: Digital Communication | **Max Marks**: 40

Programme & Sem: B.Tech (ECE) & VI Sem | **Weightage**: 20%

Instructions:

(i) *Read the question properly and answer accordingly.*
(ii) *Question paper consists of 3 parts.*
(iii) Scientific and Non-programmable calculators are permitted.

Part A

Answer **all** the Questions. **Each** question carries **four** marks. (2Qx4M=8)

1. Compare analog and digital communication?
2. State sampling theorem for low pass signal? Define Nyquist rate of sampling?

Part B

Answer **all** the Questions. **Each** question carries **six** marks. (2Qx6M=12)

3. A signal $x_1(t)$ is band limited to 4kHz, there are two more signals $x_2(t)$ and $x_3(t)$ which are band limited to 2kHz each. These signals are to be transmitted using TDM scheme. Determine (i) The speed of the commutator if each signal is sampled at its Nyquist rate (ii) Minimum transmission bandwidth (iii) Give the commutator arrangement?
4. What is the purpose of quantizer in Digital communication? With neat sketches, explain Mid-Tred type quantizer?

Part C

Answer **all** the Questions. **Each** question carries **ten** marks. (2Qx10M=20)

5. A signal $g(t)=5\cos(20\pi t)\cos(200\pi t)$ is sampled at the rate of 250sample/sec.
   (a) Sketch the spectrum of the sampled signal
   (b) Specify the cutoff frequency of ideal reconstruction filter so as to recover g(t) from $g_\delta(t)$
   (c) Specify the Nyquist rate for the signal g(t)
6. Explain DPCM transmitter and receiver with block diagram?

Roll No.											

PRESIDENCY UNIVERSITY
BENGALURU

SCHOOL OF ENGINEERING

TEST - 2

Even Semester: 2018-19
Course Code: ECE 212
Course Name: Digital Communication
Program & Sem: B.Tech & VI Sem

Date: 13 April 2019
Time: 1 Hour
Max Marks: 40
Weightage: 20%

Instructions:

(i) *Read the question properly and answer accordingly.*
(ii) *Question paper consists of 3 parts.*
(iii) Scientific and Non-programmable calculators are permitted.

Part A

Answer **both** the Questions. **Each** question carries **four** marks. (2Qx4M=8)

1. What is base band pulse shaping for data transmission?
2. Give the ideal and practical solution to minimize ISI?

Part B

Answer **both** the Questions. **Each** question carries **six** marks. (2Qx6M=12)

3. Sketch the unipolar RZ and polar NRZ and RZ for the binary sequence 1011010
4. Binary data output of a computer is at a rate of 64kbps, the computer output is transmitted using a base band binary PAM system, that is designed to have a raised cosine spectrum. Determine transmission bandwidth required for each of the following roll-off factors (i) $\alpha=0$ (ii) $\alpha=0.5$ (iii) $\alpha=1$

Part C

Answer **both** the Questions. **Each** question carries **ten** marks. (2Qx10M=20)

5. Derive the equation for PSD of NRZ unipolar format?
6. Give the Duo Binary signaling output and reconstructed output for the binary sequence 10011010. Draw Duo Binary signaling scheme?

Roll No												

PRESIDENCY UNIVERSITY
BENGALURU

SCHOOL OF ENGINEERING

END TERM FINAL EXAMINATION

Even Semester: 2018-19 | **Date**: 21 May 2019

Course Code: ECE 212 | **Time**: 3 Hours

Course Name: Digital Communication | **Max Marks**: 80

Program & Sem: B.Tech. & VI Sem | **Weightage**: 40%

Instructions:

(i) *Read the question properly and answer accordingly.*

(ii) *Question paper consists of 3 parts.*

(iii) Scientific and Non-programmable calculators are permitted.

Part A

Answer **all** the Questions. **Each** question carries **two** marks. (10Qx2M=20M)

1.

i. What is the role of source encoder in digital communication?

ii. Write any one difference between analog and digital communication?

iii. Write the mathematical equation for Nyquist rate of sampling for low pass signal?

iv. Mention various blocks used in PCM?

v. Write the definition of eye diagram in digital communication?

vi. ISI in digital communication is an abbreviation for

(a) Indian Statistical Institute (b) Inter Symbol Interference

(c) International Standard Institute (d) None of the above

vii. Representation of binary '1' in polar form is ----------

viii. Write the equation for practical solution to minimize ISI?

ix. MFSK stands for ----------

x. Write the probability of bit error equation in BPSK?

Part B

Answer **all** the Questions. **Each** question carries **five** marks. (6Qx5M=30M)

2. Define the terms process gain, Jamming margin and output signal to noise ratio?

3. A PN sequence is generated using linear feedback shift register with 5 stages. The chip rate is 10^5/seconds. Determine (i) length of the PN sequence (ii) chip duration of the PN sequence (iii) period of the PN sequence

4. What is QPSK? Give the scheme to generate QPSK wave?

5. Derive the condition for no ISI in frequency domain?
6. Draw and explain the block diagram of non-coherent FSK receiver?
7. Draw eye diagram and label the parts?

Part C

Answer **all** the Questions. **Each** question carries **ten** marks. (3Qx10M=30M)

8. With the aid of block diagram, explain the operation of DPSK generator?
9. Why PN sequence is required in digital communication? How to generate PN sequence with three stages and initial condition 011?
10. Three signals $S_1(t)$, $S_2(t)$, $S_3(t)$ and $S_4(t)$ is as shown in the Fig.1. Apply Gram Schmidt procedure to obtain an orthonormal basis for the signals. Express the signals $S_1(t)$, $S_2(t)$, $S_3(t)$ and $S_4(t)$ in terms of orthonormal basis functions?

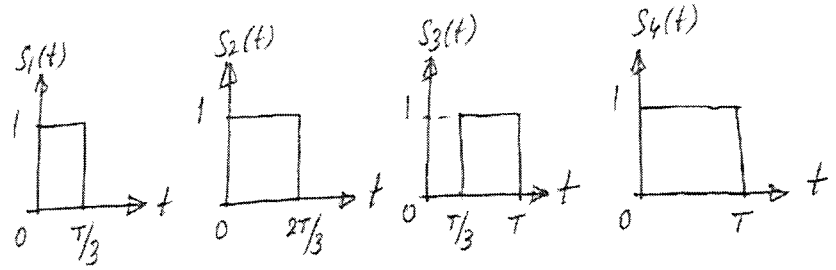

Fig.1