I D NO.	

PRESIDENCY UNIVERSITY, BENGALURU

SCHOOL OF ENGINEERING

Weightage: 40 % Max Marks: 40 Max Time: 2 hrs. 10 May 2018, Thursday

ENDTERM FINAL EXAMINATION MAY 2018

Even Semester 2017-18 Course: **ECE 212 Digital Communication** VI Sem. ECE

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

(5 Q x 2 M = 10 Marks)

1. What are the main requirement to select a particular digital modulation technique?
2. For a standard telephone circuit with a signal to noise ratio of 500 and a bandwidth of 3.4kHz, calculate the Shannon limit for information capacity?
3. What is the difference between coherent and non-coherent modulation techniques? Give one example each?
4. Sketch the spectrum of ASK signal?
5. What are the objectives of coherent quadrature modulation techniques?

Part B

(3 Q x 5 M = 15 Marks)

6. An BPSK system transmit binary data at the rate of 1.2Mbps. During transmission white Gaussian noise of zero mean and double sided power spectral density 10^{-20} watts/Hz gets added to the signal. In the absence of noise the amplitude of the received sinusoidal wave for the binary 1 or binary 0 is $1\mu V$. Determine the average probability of error if $erfc(u) \approx \frac{e^{-u^2}}{\sqrt{\pi}\,u}$
7. Give the scheme to generate coherent binary FSK signal and draw its waveform?
8. What is QPSK? Give the scheme to generate QPSK wave?

Part C

(2Q x 7.5 M = 15 Marks)

9. With the aid of block diagram, explain the operation of DPSK generator?
10. Why PN sequence is required in digital communication? How to generate PN sequence with three stages and initial condition 011?

ID NO:	

PRESIDENCY UNIVERSITY, BENGALURU

SCHOOL OF ENGINEERING

Weightage: 20% Max Marks: 20 Max Time: 1 hr. 26 March Monday 2018

TEST – 2 **SET A**

Even Semester 2017-18 Course: **ECE 212 Digital Communication** VI Sem. ECE

Instruction:

(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

(2 Q x 2 M = 4 Marks)

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

Part B

(2 Q x 3 M = 6 Marks)

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 ia 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) α=0 (ii) α=0.5 (iii) α=1

Part C

(2Q x 5 M = 10 Marks)

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?

ID NO:	

PRESIDENCY UNIVERSITY, BENGALURU

SCHOOL OF ENGINEERING

Weightage: 20 % Max Marks: 20 Max Time: 1 hr. 21 Feb Wednesday 2018

TEST – 1

Even Semester 2017-18 Course: **ECE 212 Digital Communication** VI Sem. ECE

Instruction:

(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

(2 Q x 2 M = 4 Marks)

1. What is the effect that can be encountered when an ideal samples are convolved with rectangular pulse, sketch the necessary waveforms?
2. What is the use of source encoder and channel encoder in digital communication?

Part B

(2 Q x 3 M = 6 Marks)

3. A signal $x_1(t)$ is band limited to 3kHz, there are three more signals $x_2(t)$, $x_3(t)$ and $x_4(t)$ which are band limited to 1kHz 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. A message signal is band limited to 4 kHz is to be transmitted using a PCM system. If the quantization error of any sample is to be at the most ±1% of the dynamic range of the message signal. (a) Determine minimum number of bits used to encode a sample (b) Determine the minimum sampling rate (c) Determine bit rate

P.T.O.

Part C

(2Q x 5 M = 10 Marks)

5. A signal g(t)=10cos(20πt) cos(200πt) 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. What is delta modulation? Explain transmitter and receiver delta modulation with block diagram?