Enrollment No: _____ **Exam Seat No:**_____

C.U.SHAH UNIVERSITY
Winter Examination-2015

Subject Name: Electronics Communication
Subject Code: 4TE05COM1 **Branch : B.Tech (EEE)**
Semester: 5 **Date : 9/12/2015** **Time :2:30 To 5:30** **Marks : 70**

Instructions:

(1) Use of Programmable calculator & any other electronic instrument is prohibited.
(2) Instructions written on main answer book are strictly to be obeyed.
(3) Draw neat diagrams and figures (if necessary) at right places.
(4) Assume suitable data if needed.

Q-1 **Attempt the following questions:** **(14)**

a) Noise which assumes great importance at high frequencies is 01
A. flicker noise B. Transit-time noise
C. Johnson noise D. Shot noise

b) Which one is Analog Continuous modulation technique? 01
A.AM B.DM
C.PAM D.PCM

c) AGC voltage is applied to the stages which are 01
A. before the detector stage B. after the detector stage
C. either before or after the detector stage D. none of the above

d) A cordless telephone using separate frequencies for transmission in base and portable units is known as 01
A. duplex arrangement B. either (a) or (b)
C. half duplex arrangement D. neither (a) nor (b)

e) VSB modulation is preferred in TV because 01
A. it reduces the bandwidth requirement to half
B. it avoids phase distortion at low frequencies
C. it results in better reception
D. none of the above

f) A 400 W carrier is amplitude modulated with $m = 0.75$. The total power in AM is 01
A. 400 W B. 588 W
C. 512 W D. 650 W

g) A carrier wave carries information.
A.True B.False 01

h) If the frequency of a wave 20 Hz, the time period is
A. 20 secs B. 0.2 secs
C. 2 secs D. 0.05 secs 01

i) Quantizing error occurs in 01

A. TDM B. FDM

C. PCM D. PWD

j) PAM stands for 01

A. Phase Angle Modulation B. Pulse Amplitude Modulation

C. Phase Amplitude Modulation D. Pulse Angle Modulation

k) The radio receivers mostly used now a days are 01

A. TRF receivers B. CW receivers

C. super heterodyne receivers D. pulsed receivers

l) Give the definition of Modulating Index. 01

m) Give the Full Form of AGC in heterodyne receiver. 01

n) What are the types of angle modulation? 01

Attempt any four questions from Q-2 to Q-8

Q-2 **Attempt all questions** **(14)**

A. Draw and explain schematic block diagram of Communication System. **07**

B. Derive mathematical representation of AM wave in time Domain & Frequency Domain. **07**

Q-3 **Attempt all questions** **(14)**

A. Write a short note on Pre-emphasis and De-emphasis of noise. **07**

B. Explain Phase Shift Method for LSB suppression with mathematical expression? **07**

Q-4 **Attempt all questions** **(14)**

A. List properties of Fourier transform and State and Prove the following properties: 1. Symmetry property 2. Time shifting property 3. Frequency shifting property 4. Time differentiation property 5. Convolution property. **07**

B. In a FM system, the audio frequency is 1 kHz and audio voltage is 2volts, the deviation is 4khz. If the AF voltage is now increased to 8 volts and its frequency is dropped to 500 Hz. Find the modulating index in each case and the corresponding bandwidth using Carson's rule? **07**

Q-5 **Attempt all questions** **(14)**

A. Define Noise. and the sources of Noise. Explain in detail : 1. Shot Noise 2. Flicker Noise **05**

B. Obtain the Fourier transform of cosine wave having a peak amplitude of 1 volt and frequency of f_0 Hz. Also plot its spectrum. **04**

C. Define Frequency Modulation and Compare FM with AM. **05**

Q-6 **Attempt all questions** **(14)**

A. With the help of neat diagram, explain the transmitter and receiver of Pulse code Modulation. **07**

B. If $x(t) \overset{F}{\leftrightarrow} X(f)$ show that $x(t)cos\omega_c t \overset{F}{\leftrightarrow} \frac{1}{2} X(\omega - \omega_c) + \frac{1}{2} X(\omega + \omega_c)$ **07**

Q-7		**Attempt all questions**	**(14)**
	A.	Explain Delta modulation in detail with suitable diagram. Also explain ADM (Adaptive delta modulation) and compare its performance with DM (Delta modulation)?	**05**
	B.	Write a short note on Balanced Slop Detector.	**05**
	C.	Draw following waveforms: 1. DSB-FC 2. DSB-SC 3. SSB-SC 4. FM wave.	**04**
Q-8		**Attempt all questions**	**(14)**
	A.	Explain with neat diagram Armstrong method for FM generation.	**07**
	B.	What do you mean by "super heterodyne receiver"? Why is it called super Heterodyne receiver? Explain waveforms at various points of a super heterodyne Receiver.	**07**