Enrollment No: _____ Exam Seat No:_____

C.U.SHAH UNIVERSITY

Summer Examination-2016

Subject Name: Analog and Digital Communication

Subject Code: 4TE06ADC1 Branch: B.Tech(IC)

Semester :6 Date :09/05/2016 Time : 02:30 To 05:30 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) ASK, PSK, FSK are examples of _____ encoding.
a) Digital to Digital b) Digital to Analog
c) Analog to Analog d) Analog to Digital

b) Thermal noise is also known as
a) Johnson Noise b) Partition Noise
c) Flicker Noise d) Shot Noise

c) Noise is added to a signal in a communication system
a) At the receiving end b) At transmitting antenna
c) In the channel d) During regeneration of the information

d) FM signal is better than AM signal because
a) More immune to noise b) Less adjacent channel interference
c) Amplitude limiters are used to avoid amplitude variations d) All of the above

e) The modulation index of FM is given by
a) μ = modulating frequency/ carrier frequency
b) μ = modulating frequency /frequency deviation
c) μ = frequency deviation/ modulating frequency
d) μ = carrier frequency / modulating frequency

f) Pre emphasis is done
a) Before modulation b) Before transmission
c) Before detection at receiver d) After detection at receiver

g) Which layer is immediately below the data link layer?
a) Physical b) Network
c) Transport d) Application

h) _____ is a technique which transforms an analogue telephone circuit into a digital signal, and involves three consecutive processes: sampling, quantization and encoding.
a) PAM b) PCM
c) FSK d) PSK

i) What is the full form of TCP in terms of data communications?
a) Traffic Control Protocol
b) Test Control Protocol
c) Transmission Control Protocol
d) Transmission Control Program

j) Sensitivity is defined as
a) Ability of receiver to amplify weak signals
b) Ability to reject unwanted signals
c) Ability to convert incoming signal into Image Frequency
d) Ability to reject noise

k) Modulation Index m= 1.10 corresponds to:
a) Under Modulation b) Over Modulation
c) Ideal Modulation d) None of the above

l) Communication over Walky-Talky is which form of Communication?
a) Simplex b) Baseband
c) Full Duplex d) Half Duplex

m) The formula for calculating modulation index(m) for AM is:
a) e_m/e_c b) f_c/f_m
c) E_m/E_c d) f_m/f_c

n) The functions of radio receiver are
a) Receive the Incoming modulated carrier by antenna
b) Select the wanted signal and reject the unwanted signals and noise
c) Detection and amplification of the information signal from the carrier
d) All of the above

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

Q-2 **Attempt all questions**

(a) Write short notes on: 1. Classification of communication systems **(8)**
2. Various types of internal noise

(b) Differentiate among ASK, FSK and PSK. **(6)**

Q-3 **Attempt all questions**

(a) Explain Amplitude Modulation with its mathematical expression **(7)**

(b) Draw and explain the block diagram of High Level AM Transmitter **(7)**

Q-4 **Attempt all questions**

(a) Enlist and explain the components of a Data Communication System. **(7)**

(b) Explain the principle and working of the Phase Shift Method for generation of Upper Side Band. **(7)**

Q-5 **Attempt all questions**

(a) Write short notes on: **(8)**

1. Need of Modulation
2. Data link layer protocols

(b) The AM transmitter develops an unmodulated power output of 400 watts across a 50Ω resistive load. The carrier is modulated by a sinusoidal signal with a modulation index of 0.7. Assuming fm = 6kHz and fc = 2MHz. **(6)**

i) Obtain the expression for AM signal
ii) Calculate total average power of modulator output
iii) Evaluate the power efficiency of the modulator.

Q-6 **Attempt all questions**

(a) Draw and explain the block diagram of Superheterodyne receiver. **(7)**

(b) What is the significance of using AGC in radio receivers? Compare various types of AGC with no AGC situation. **(7)**

Q-7 **Attempt all questions**

(a) Compare: PAM, PWM and PPM. **(7)**

(b) Explain the OSI model architecture. **(7)**

Q-8 **Attempt all questions**

(a) Write a note on various network topologies. **(7)**

(b) State and explain Shanon's Sampling Theorem **(7)**