C.U.SHAH UNIVERSITY
Summer Examination-2017

Subject Name : Analog and Digital Communication

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

Semester : 6   **Date : 13/04/2017**   **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) Amplitude modulation is the process of _____.
a) superimposing a low frequency on a high frequency.
b) superimposing a high frequency on a low frequency.   01
c) carrier interruption
d) frequency shift

b) Repeaters function in the _____ layer.
a) Data Link   b) Session   c) Network   d) Physical   01

c) Which of the following is the most reliable measurement for comparing amplifier noise characteristics?   01
a) signal-to-noise ratio   b) noise factor   c) shot noise   d) thermal noise agitation

d) The absorption of radio waves by the atmosphere depends on
a) their frequency   b) their distance from the transmitter   01
c) the polarization of the waves   d) the polarization of the atmosphere

e) The data transmission rate of a modem is measured in
a) bytes per second   b) baud rate   c) bits per second   d) megahertz   01

f) Which of the following types of noise becomes of great importance at high frequencies.   01
a) shot noise   b) random noise   c) impulse noise   d) transit-time noise

g) A pre-emphasis circuit provides extra noise immunity by _____.
a) boosting the bass frequencies
b) amplifying the higher audio frequencies   01
c) pre amplifying the whole audio band
d) converting the phase modulation to FM

h) In a broadcast super heterodyne receiver, the _____.
a) local oscillator operates below the signal frequency
b) mixer input must be tuned to the signal frequency   01
c) local oscillator frequency is normally double the IF
d) RF amplifier normally works at 455 kHz above the carrier frequency.

i) _____ layer is not present in the TCP/IP interface reference compared to OSI layers.

a) Transport   b) Session   c) Internet   d) Application

01

j) The super heterodyne receiver replaced the TRF receiver because the latter suffered from _____.

a) gain variation over the frequency coverage range
b) insufficient gain and sensitivity
c) inadequate selectivity at high frequencies
d) instability

01

k) Diffraction of electromagnetic waves
a) is caused by reflections from the ground
b) arises only with spherical wavefront
c) will occur when the waves pass through a large slot
d) may occur around the edge of a sharp obstacle

01

l) Which of the following is/are true for digital signal.
a) do not provide a continuous set of values   b) represent values as discrete steps
c) can utilize decimal or binary systems   d) all of the above

01

m) Indicate which of the following system is digital.
a) Pulse-position modulation   b) Pulse-code modulation
c) Pulse-width modulation   d) Pulse-frequency modulation

01

n) The terms single mode and multimode are best describes as _____.
a) the number of fibers placed into a fiber-optic cable
b) the number of voice channels each fiber can support
c) the number of wavelengths each fiber can support
d) the index number

01

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

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

a) Briefly explain the OSI model architecture.   05

b) Draw and explain the block diagram of basic communication system in detail.   05

c) Explain the need of modulation.   04

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

a) Define Noise. Classify the various types and sources of noise.   05

b) Explain the various methods of error detection in data communications.   05

c) State and explain sampling theorem.   04

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

a) Explain different data formats with waveform.   05

b) Explain briefly communication based on RS-232.   05

	c)	Enlist the criteria to be followed for selection of Intermediate Frequency.	04

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

	a)	Explain amplitude modulation with its mathematical expression.	05
	b)	Draw and explain the block diagram of super heterodyne receiver.	05
	c)	Elaborate upon the advantages of the RF amplifier stage in radio receivers.	04

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

	a)	Write a short note on various network topologies.	07
	b)	Compare: PAM, PWM and PPM.	07

Q-7   **Attempt all questions**   **(14)**

	a)	Write a short note on TRF receiver.	07
	b)	Enlist and explain direct methods of FM generation.	07

Q-8   **Attempt all questions**   **(14)**

	a)	Classify various pulse modulation techniques and explain each of them in brief.	07
	b)	Define Tracking. Enlist and explain different types of tracking.	07