King Fahd University of Petroleum and Minerals

University Diploma Programs
Electronic Equipment Maintenance

EET 029, Introduction to Communication

FINAL EXAM

Date: 11th January 2004.

Instructor: M. Ajmal Khan, Lecturer, EE Dept.

Student's Name : _____ ID # : _____

Time Allowed: 90 minutes

QUESTION #	POINTS	SCORE
1	20	
2	10	
3	5	
4	5	
5	5	
6	10	
Total	**55**	

Question # 1: Circle the correct Answer for each of the following questions: (20 points)

i. Digital communication utilizes:

   a. Continuous signal.
   b. Discontinuous signal
   c. Analog signal
   d. None of the Above.

ii. The binary set of 10 bits has the following number of possible combinations:

   a. 1000
   b. 2048
   c. 20
   d. 100
   e. None of the Above.

iii. Any transmission system which conveys more than one signal simultaneously can experience:

   a. Distortion
   b. Echo
   c. Crosstalk
   d. Noise

iv. Phase delay distortion is reduced by using the following equipment:

   a. Equalizers.
   b. Echo suppressors
   c. Multiplexer
   d. Demultiplexer

v. When signals of one frequency are passed through the circuit at a different speed than other signals, it is known as:

   a. Echo
   b. Crosstalk
   c. Phase delay distortion
   d. Noise

vi. Which of the following are error detection codes: (Check all that apply)

a. Constant-Ratio codes.
b. Redundant codes
c. Parity-check codes.
d. 5-Bit baudot code.
e. ASCII code.

vii. How many number of 1's and 0's are present in every code group of 4-out-of-10 code.

a. Six 1's and Four 0's
b. Four 1's and Ten 0's
c. Ten 1's and Four 0's
d. Four 1's and Six 0's

viii. In which of the following codes, the message is transmitted twice for error checking:

a. Forward error correcting codes.
b. Constant-ratio codes
c. Parity-check codes
d. None of the above.

ix. In hagelbarger codes:

a. One parity bit is sent after each data bit.
b. One parity bit is sent at the beginning of each data bit.
c. One parity bit is sent after each character code block.
d. One parity bit is sent at the beginning of each character code block.

x. In bose-chaudhuri code, the redundancy is:

a. 50 percent.
b. 100 percent
c. 75 percent
d. 25 percent
e. 0 percent

xi. The process of Amplitude Modulation shifts the spectrum of the modulating signal to _____ by ω_C .

a. Either left or right.
b. The left only
c. The right only
d. The left and the right

xii. The modulation index is a number lying between:

a. 0 and 100
b. 1 and 100
c. 0 and 10
d. 0 and 1

xiii. Amplitude modulation is used for broadcasting because:

a. It is more noise immune than other modulation systems
b. Compared with other systems it requires less transmitting power
c. Its use avoids receiver complexity
d. No other modulation system can provide the necessary bandwidth for high fidelity.

xiv. In SSB modulation, the modulated signal spectrum is composed of :

a. Three parts; USB, LSB and Carrier
b. two parts; USB and LSB
c. three parts; USB, LSB and reduced carrier.
d. None of the above.

xv. The balanced modulator is used:

a. to add full carrier
b. to add a reduced carrier
c. to suppress LSB.
d. to suppress USB.
e. None of the above.

xvi. Which of the following is a disadvantage of FM over AM:

a. FM requires much narrower channel than AM.
b. FM requires much wider channel than FM.
c. FM equipments are less complex than AM.
d. Area of reception for FM is much broader than for AM.

xvii. FM reception is more immune to noise than AM reception because:

a. Area of reception for FM is much broader than for AM.
b. FM equipments are less complex than AM.
c. In FM frequency is variable.
d. FM receivers can be fitted with amplitude limiters.

xviii. A half-duplex modem provides transmission:

a. In only one direction.
b. In both directions at the same time.
c. None of the Above.

xix. The block code 1010111000 has the following parity bit:

a. 1
b. 0
c. 10
d. 11
e. 5

xx. Digital signals:

a. Provides a continuous set of values.
b. Represent values as discrete steps.
c. Can utilize sine wave.
d. All of the above.

Question # 2: In Frequency Division Multiplexing, One basic group consists of: (10 points)

(a) No. of Adjacent Channels: _____

(b) Frequency band of each channel: _____

(c) Frequency range: _____ to _____

(d) Pilot Frequency: _____

One super group consists of:

(e) No. of Basic groups: _____

(f) Frequency range: _____ to _____

(g) Pilot Frequency: _____

Question # 3: A 24-channel system has sampling rate of 8000 samples per second, 8 bits per sample and pulse width of 0.625 μs. Write the answers of the following questions: (5 points)

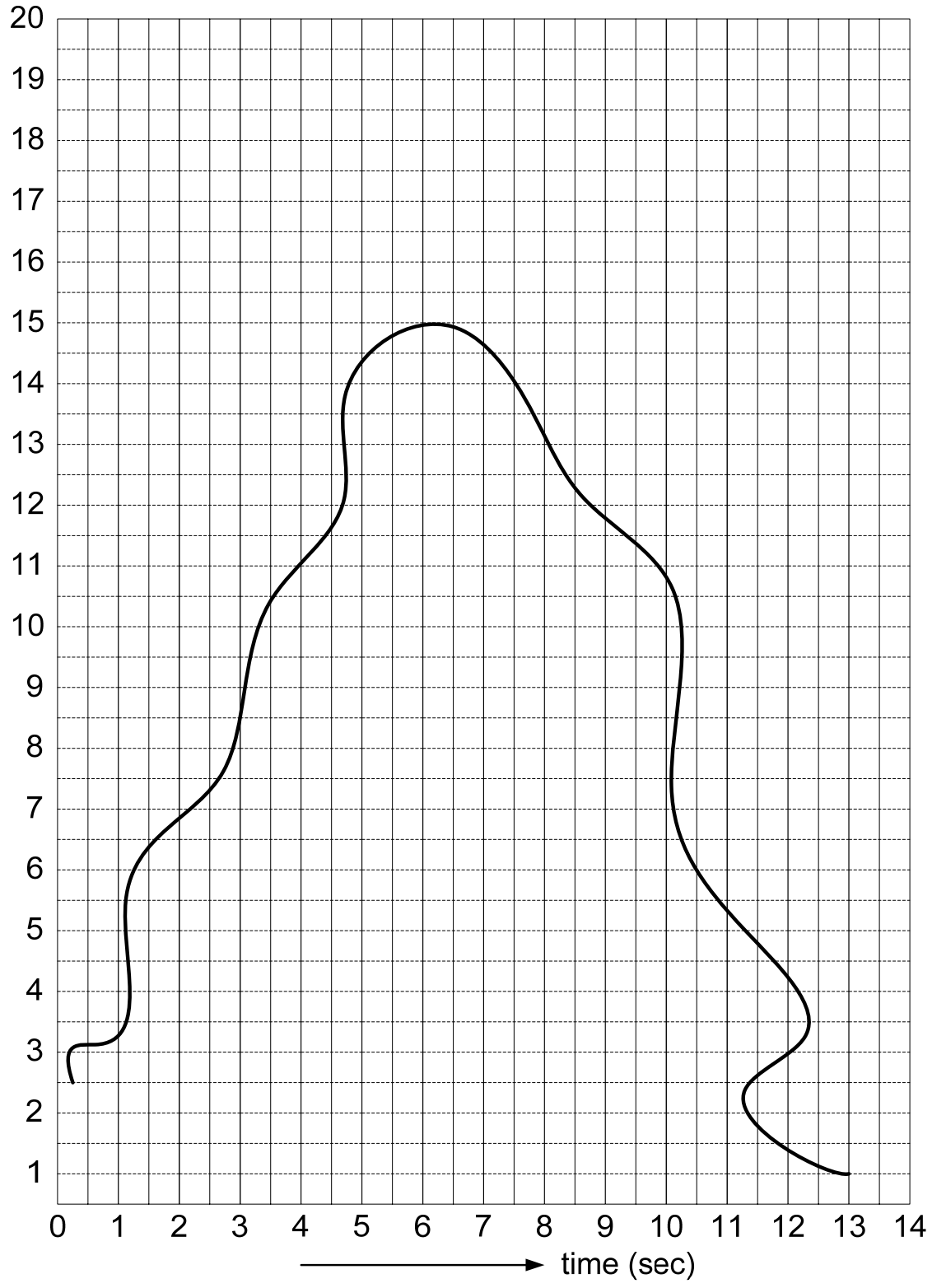
Sampling Interval: _____

Period for each pulse group: _____

Question # 4: write the principle of Automatic Repeat Request (ARQ) system. (5 points)

Question # 5: Calculate the transmission efficiency of a system transmitting 200 information bits and 100 redundant bits for error detection. (5 points)

Question # 6: Apply PCM in the signal given in the following figure. Find the samples of the signal with a time interval of 1 second and calculate the quantized values and write its binary code. (10 points)



TIME	Sample Value	Quantized Value	Binary Code
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			