King Fahd University of Petroleum and Minerals

University Diploma Programs
Electronic Equipment Maintenance

EET 029, Introduction to Communication

MAJOR EXAM # **2**

Date: 27th December 2003.

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

Student's Name : _____ ID # : _____

Time Allowed: 1 Hour 30 minutes.

QUESTION #	POINTS	SCORE
1	20	
2	18	
3	3	
4	2	
5	8	
6	4	
Total	**55**	

Question # 1: Circle the correct Answer for each of the following questions:

i. If either the capacitance or inductance of an LC oscillator tank is varied, then which of the following modulation will result:

   a. Amplitude Modulation
   b. Frequency Modulation
   c. FM-AM modulation
   d. Pulse modulation.

ii. The direct modulators have the following disadvantage of being based on an LC oscillator.

   a. It is stable enough for communications.
   b. It is not stable enough for communications.
   c. None of the above.

iii. A crystal oscillator is used to generate FM through phase modulation. This method is called:

   a. Direct Method
   b. Varactor Diode modulator
   c. Reactance Modulator
   d. Armstrong System.

iv. Which of the following is a Direct way of generating FM. (Check all that apply).

   a. Reactance FET modulator
   b. Varactor diode modulator
   c. Reactance bipolar transistor modulator
   d. Armstrong modulator

v. Some power is absorbed and the rest is reflected, if:

   a. Load impedance is not equal to characteristic impedance.
   b. Load impedance is equal to characteristic impedance.
   c. None of the above.

vi. The minimum directive gain is known as:

a. Directivity
b. Power Gain
c. Power density
d. None of the above.

vii. The length of basic Marconi antenna is:

a. λ/4
b. λ
c. 4λ
d. None of the above.

viii. The effect of top loading in antenna is _____ at the base of the antenna.

a. To increase the voltage.
b. To decrease the voltage
c. To increase the current
d. To decrease the current.

ix. Which of the following works if synchronization between transmitter and receiver fails.

a. PPM
b. PWM
c. PAM
d. None of the above.

x. Which of the following requires powerful transmitter.

a. PPM
b. PWM
c. PAM
d. None of the above.

xi. Which one is correct:

a. The trailing edges of PWM are position modulated.
b. The leading edges of PWM are position modulated.
c. The center point of the pulse are position modulated.
d. None of the above.

xii. Which one of the following has low noise immunity:

a. PWM.
b. PPM.
c. PCM
d. PAM

xiii. In delta modulation, how many bits are sent per sample?

a. 1
b. 2
c. 4
d. 8

xiv. To permit the selection of 1 out of 16 equiprobable events, the number of bits required is:

a. 2
b. $\log_{10} 16$
c. 4
d. 8

xv. Indicate the false statement. In order to combat noise:

a. Redundancy may be used.
b. The channel bandwidth may be increased.
c. The transmitted power may be increased
d. The signaling rate may be reduced.

xvi. Quantizing noise occurs in:

a. FM
b. PWM
c. PPM.
d. PCM

xvii. In order to reduce quantizing noise, one must:

a. Increase the number of standard amplitudes.
b. Send pulses whose sides are more nearly vertical.
c. Use an RF amplifier in the receiver.
d. Increase the number of samples per second.

xviii. Companding is used:

a. To overcome quantizing noise in PCM
b. In PCM transmitters, to allow amplitude limiting in the receivers.
c. In PCM receivers, to overcome impulse noise.
d. To protect small signals in PCM from quantizing distortion.

xix. The biggest disadvantage of PCM is:

a. The large bandwidths that are required for it.
b. Its inability to handle analog signals.
c. The high error rate which its quantizing noise introduces.
d. Its incompatibility with TDM.

xx. Digital signals:

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.

Question # 2: Define the following terms: (18 points)

(a) Half-wave Dipole:

(b) Elementary Doublet

(c) Non-Resonant Antenna

(d) Directive Gain

(e) Radiation Resistance

(f) Information.

Question # 3: Write the name of three electronic devices whose reactance can be varied by the application of voltage. (3 points)

Question # 4: What is the main application of Loop Antenna? (2 points)

Question # 5: A system has a bandwidth of 4 kHz and a signal-to-noise ratio of 28 dB at the input to the receiver. Calculate its information-carrying capacity. (8 points)

Question # 6: How many number of bits of information are required to enable the correct selection of one event from a set of 256 equiprobable events.
(4 points)