AMIETE - ET (OLD SCHEME)

Code: AE15 **Time: 3 Hours** Subject: COMMUNICATION ENGINEER

Max. Marks: 1

JUNE 2011

NOTE: There are 9 Questions in all.

- StudentBounty.com Question 1 is compulsory and carries 20 marks. Answer to Q.1 must be written in the space provided for it in the answer book supplied and nowhere else.
- The answer sheet for the Q.1 will be collected by the invigilator after 45 Minutes of the commencement of the examination.
- Out of the remaining EIGHT Questions answer any FIVE Questions. Each question carries 16 marks.
- Any required data not explicitly given, may be suitably assumed and stated.

0.1 Choose the correct or the best alternative in the following:

 (2×10)

In a communication systems noise is most likely to affect the signal. a.

(A)	at the Transmitter	(B) at the receiver
(C)	at the Channel	(D) at the information source

b. Which type of noise is of great importance at high frequencies?

(A) Shot noise	(B) Random noise
(C) Solar noise	(D) Transit time noise

c. The modulation index of an AM wave is changed from 0 to 1. The transmitted power is

(A) unchanged.	(B) halved.
(C) increased by 50 per cent.	(D) doubled.

- d. The output stage of a television transmitter is most likely to be a
 - (A) Plate modulated class A amplifier. (B) Grid modulated class C amplifier. (C) Grid modulated class A amplifier. (D) Screen modulated class C amplifier.

e. The most commonly used filters in SSB generation are

(A) Mechanical.	(B) LC.
(C) RC.	(D) Low-pass.

f. In the FM system, AF voltage is 2.4 V, the deviation is 4.8 KHz. If the AF voltage is increased to 7.2 V, what is the new deviation?

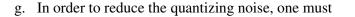
(A) 3 KHz	(B) 6.2 KHz
(C) 14.4 KHz	(D) 12.2 KHz

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(A) Increase the number of standard amplitudes. (B) Send pulses whose side are more nearly vertical. (C) Use an RF amplifier. (D) Increase the no of sample.

SugentBounty.com h. If the peak transmitted power in a radar system is increased by a factor of 16, the maximum range will be increased by a factor of

(A) 4.	(B)	2.
(C) 16.	(D)	8.

In hamming code, for detecting t errors, the hamming distance, d_{min} should i. satisfy

(A) $t \ge d \min$.	(B)	$d_{\min} \le \& \ge d_{\min} + 2.$
(C) $t \leq d \min .$	(D)	$2t \le d_{\min} \le 2t + 1.$

- The biggest disadvantage of CW Doppler radar is that j.
 - (A) It does not give the target velocity.
 - (B) It does not give the target range.
 - (C) A transponder is required at the target.
 - (D) It does not give target position.

Answer any FIVE Questions out of EIGHT Questions. Each question carries 16 marks.

Q 2.	a. Explain the need of modulation in Communication System.	
	b. List separately, the various sources of random noise external to a receiver. Explain in brief.	(8)
	c. Explain the concept of Noise temperature. How it is related to Noise Figure?	(4)
Q 3.	a. What is Amplitude Modulation? Derive the expression for AM Modulated Signal.	(10)
	b. The total powers content of an AM wave is 600W. Determine the percent modulation of signal, if each of the side band contains 75W.	(6)
Q 4.	a. Explain the filter method for the generation of SSB-AM generation.	(8)
	b. Explain the need of coding. Explain the block codes and their advantages.	(8)

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Q5.	a.	Explain the Armstrong method for generation of FM Signal.	En.	
	b.	In an FM system, a 7 KHz modulation (or base band) signal modulates 107.6 Find.	180	
		 (i) Carrier swing in the FM signal and modulating index m_f. (ii) The highest and lowest frequencies attained by the FM signal. 	енивоции (10) (8)	2
Q6.	a.	State and prove the Sampling theorem for the Low pass signals.	(8)	"IB
	b.	What is quantization Error? Explain the method to reduce quantization error.	(4)	
	c.	Explain the Shannon – Fano Coding with suitable example.	(4)	
Q7.	a.	Describe the working of Delta – Modulator and derive the condition to avoid the slope overload error for sinusoid of amplitude A and frequency f.	(10)	
	b.	A data of four bits 01 10 is send through the transmitter. Form the Hamming code to be sent with steps.	(6)	
Q8.	a.	Explain the Various Radar performance factors.	(8)	
	b.	Explain the concept of Horizontal and vertical scanning in TV transmission.	(8)	
Q9.		Write short notes on:		
		 (i) Antenna Tracking in Radar (ii) Entropy (iii) Adaptive Delta Modulation (iv) Pulse code Modulation 	(4 × 4)	