Total No. of Questions: 6 *Total No. of Printed Pages:2*

Enrollment No.....

Faculty of Engineering

End Sem (Even) Examination May-2018

EI3CO04 Communication System

Programme: B.Tech. Branch/Specialisation: EI

Duration: 3 Hrs. **Maximum Marks: 60**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d.

Q.1 i. Demodulation is done in... **1**
(a) Transmitter (b) Transmitting Antenna
(c) Radio Receiver (d) Receiving Antenna

ii. The modulation techniques used to convert analog signal into digital signal are **1**
(a) Pulse code modulation (b) Delta modulation
(c) Adaptive delta modulation (d) All of these

iii. The modulation technique that uses the minimum channel bandwidth and transmitted power is **1**
(a) FM (b) DSB-SC (c) VSB (d) SSB

iv. FDM is an analog multiplexing technique used to combines **1**
(a) Analog signals
(b) Digital signals
(c) Both (a) and (b)
(d) Alternatively passes analog and digital signals

v. White noise has _____ power spectral density. **1**
(a) Constant (b) Variable
(c) Constant & Variable (d) None of these

vi. Pre emphasis is done before **1**
(a) Before modulation (b) Before transmission
(c) Before detection at receiver (d) After detection at receiver

vii. In PWM signal reception, the Schmitt trigger circuit is used **1**
(a) To remove noise (b) To produce ramp signal
(c) For synchronization (d) None of these

P.T.O.

viii. The techniques used for sampling are **1**
(a) Instantaneous sampling (b) Natural sampling
(c) Flat top sampling (d) All of these

ix. FSK reception uses **1**
(a) Correlation receiver
(b) PLL
(c) Correlation receiver and PLL
(d) None of these

x. Which has same probability of error? **1**
(a) BPSK and QPSK (b) BPSK and ASK
(c) BPSK and PAM (d) BPSK and QAM

Q.2 i. Define Amplitude modulation. **2**
ii. Explain Elements of a Communication System. **3**
iii. What are the types of modulation? **5**
OR iv. Describe need of modulation. **5**

Q.3 i. What are the advantages of DSB-SC and SSB-SC? **2**
ii. Explain the detection of AM signals using envelope detector. **8**
OR iii. Explain the VSB modulation with frequency response characteristics **8**

Q.4 i. Define Atmospheric noise and industrial noise? **3**
ii. Discuss briefly the characteristics of various noises present in a communication system. **7**
OR iii. Explain pre-emphasis and de-emphasis in FM. **7**

Q.5 i. What is Nyquist rate? **4**
ii. Explain delta modulation and adaptive delta modulation. **6**
OR iii. Differentiate between PAM, PWM & PPM. **6**

Q.6 Attempt any two:
i. Expain differential phase-shift keying. **5**
ii. What is bandwidth efficiency? **5**
iii. Describe Gram-Schmidt Orthogonalization procedure **5**

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Marking Scheme
EI3CO04 Communication System

Q.1	i.	Demodulation is done in... (c) Radio Receiver	**1**
	ii.	The modulation techniques used to convert analog signal into digital signal are (d) All of these	**1**
	iii.	The modulation technique that uses the minimum channel bandwidth and transmitted power is (d) SSB	**1**
	iv.	FDM is an analog multiplexing technique used to combines (a) Analog Signals	**1**
	v.	White noise has _____ power spectral density. (a) Constant	**1**
	vi.	Pre emphasis is done before (a) Before modulation.	**1**
	vii.	In PWM signal reception, the Schmitt trigger circuit is used (a) To remove noise.	**1**
	viii.	The techniques used for sampling are (d) All of these	**1**
	ix.	FSK reception uses (c) Correlation receiver & PLL	**1**
	x.	Which has same probability of error? (c) BPSK and PAM	**1**
Q.2	i.	Define Amplitude modulation. Any 4 points : each point of 0.5 mark (0.5 mark * 4)	**2**
	ii.	Explain Elements of a Communication System. Any 3 points : each point of 1 mark (1 mark * 3)	**3**
	iii.	What are the types of modulation? Any 5 points : each point of 1 mark (1 mark * 5)	**5**
OR	iv.	Describe need of modulation. Any 5 points : each point of 1 mark (1 mark * 5)	**5**
Q.3	i.	What are the advantages of DSB-SC and SSB-SC? Any 4 points : each point of 0.5 mark (0.5 mark * 4)	**2**
	ii.	Explain the detection of AM signals using envelope detector. Introduction 2 marks Circuit 2 marks Working 2 marks Waveform 2 marks	**8**
OR	iii.	VSB modulation with frequency response characteristics Introduction 2 marks Circuit 2 marks Waveform 4 marks	**8**
Q.4	i.	Define Atmospheric noise and industrial noise? Any 3 points : each point of 1 mark (1 mark * 3)	**3**
	ii.	Discuss briefly the characteristics of various noises present in a communication system Any 7 points : each point of 1 mark (1 mark * 7)	**7**
OR	iii.	Explain pre-emphasis and de-emphasis in FM. Introduction 2 marks Circuit 1.5 marks each (1.5 marks *2) 3 marks Working 2 marks	**7**
Q.5	i.	What is Nyquist rate? Statement 2 marks Explanation 2 marks	**4**
	ii.	Explain delta modulation and adaptive delta modulation. Introduction & Bloch Diagram 2 marks each 4 marks Waveform 1 mark each 2 marks	**6**
OR	iii.	Differentiate between PAM, PWM & PPM. Any 6 points : each point of 1 mark (1 mark * 6)	**6**
Q.6		Attempt any two:	
	i.	Explain differential phase-shift keying. Introduction 2 marks Block diagram 2 marks Waveform 1 mark	**5**
	ii.	What is bandwidth efficiency? Definition 2 marks Expression 2 marks Example OR description 1 mark	**5**
	iii.	Describe Gram-Schmidt Orthogonalization procedure Theory 2 marks Derivation 2 marks Conclusion 1 mark	**5**

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