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Paper Id: 120505 Roll No:

# BTECH (SEM V) THEORY EXAMINATION 2019-20 PRINCIPLES OF COMMUNICATION

Time: 3 Hours Total Marks: 70

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

### **SECTION A**

## 1. Attempt all questions in brief.

 $2 \times 7 = 14$ 

a.	Define modulation. Why it is needed?						
b.	Compare baseband and passband signal.						
c.	What do you mean by modulation index?						
d.	List Comparison between Narrowband & Wideband FM.						
e.	How to avoid aliasing effect in a sampled signal?						
f.	Define White Noise. Also draw its Spectral Density Curve.						
g.	List the disadvantages of SSB modulation scheme.						

#### **SECTION B**

## 2. Attempt any *three* of the following:

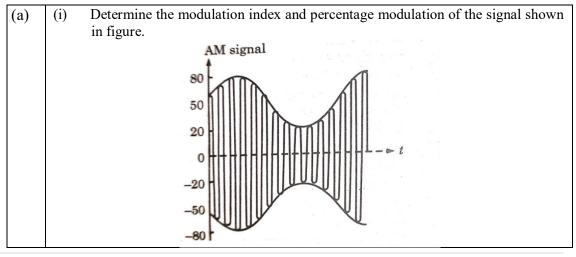
 $7 \times 3 = 21$ 

a.	Draw the block diagram of communication system and explain the function of each block.								
b.	Describe indirect method (Armstrong method) of FM generation with mathematical analysis and suitable diagrams.								
c.	What do you mean by nyquist rate? Find the nyquist rate and nyquist interval for the signal $x(t) = \frac{1}{2\pi} \cos(4000\pi t) \cos(1000\pi t)$								
d.	Discuss the classification, working, advantages and one application of each type of vocoder.								
e.	Explain TDM and FDM using Pulse Amplitude Modulation.								

### **SECTION C**

# 3. Attempt any *one* part of the following:

 $7 \times 1 = 7$ 



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			ut it increases to 8.									•		_	
			dal wave. Determing current if the percent		-		_	-					ıma	tne	
	(b)												lain	the	-
		With the support of mathematical expressions and suitable diagram explain the working of balanced modulator.										tiic			
4.	Atte	empt any <i>one</i> part of the following:									7 x 1 = 7				
	(a)	Differentiate b	etween FM and AM												
	(b)	Derive the ma	hematical expressio	n for	sin	gle t	one	fre	quency	y mo	dula	atio	n.		
5.	Atte	mpt any <i>one</i> pa	rt of the following:								7	7 x 1	= 7	7	_
	(a)	Explain T1 Di	-												
	(b)	State and prove sampling theorem. Also determine the nyquist rate for the signal													
			$x(t) = 3\cos 50\pi t$	+ 10	) sir	n 30	$0\pi t$	t — (	cos10	Oπt					
6.	Attempt any one part of the following:				7 x 1 =								1 = 7	7	_
	(a)	What is noise? What are various forms of noise? Discuss the importance of S/N ratio in the radio receiver.													
	(b) Describe adaptive delta modulation in detail with its block diagram.														
7.	Atte	tempt any one part of the following:							7	$7 \times 1 = 7$					
	(a)		hort note on Pre-em be the functional b m.							оор	with	n su	ıitab	ole	
	(b)	•	mean by figure of ting on single tone A		it?	Eval	uat	e fiş	gure o	f me	erit	of a	an A	ΑM	