

2023

**SUBJECT NAME: Principles of Electronic Communication***Full Marks : 100*

Time : Three hours

*The figures in the margin indicate full marks for the questions.**Answer any five questions.*

1.	a)	For a A.C signal if time period is 10us find out the frequency of the same signal in mega hertz unit.	2
	b)	For a 1khz A.C signal find out the time period in millisecond	2
	c)	$2\sin 2\pi ft$ is a ..... A.C signal	1
	d)	For $2\sin 2\pi t$ signal peak amplitude is .....volt And frquency is .....hz	2
	e)	Peak to peak voltate of $2\sin 2\pi t$ signal is .....	1
	f)	Plot the following signals in a single x-y axis	2x3=6
	i)	a) $\sin wt$ b) $-\sin wt$	
	ii)	a) 1khz sin signal b) 2khz sin sinal	
	iii)	a) $\sin wt$ b) $2\sin wt$	
	g)	Define the following असतो मा सत गमय	2x3=6
	i)	a) modulation b) amplitude modulation c) frequency modulation	
2.	a)	For a A.C signal if time period is 1us find out the frequency of the same signal in mega hertz unit.	2
	b)	For a 10khz A.C signal find out the time period in millisecond	2
	c)	$1\sin 2\pi ft$ is a ..... A.C signal	1
	d)	For $\sin 2\pi 50t$ signal peak amplitude is .....volt And frquency is .....hz	2
	e)	Peak to peak voltate of $\sin 2\pi t$ signal is .....	1
	f)	Plot the following signals in a single x-y axis	2x3=6
	i)	a) $\sin wt$ b) $\sin(wt+180^\circ)$	
	ii)	a) 1khz cos signal b) 0.5khz cos sinal	

	iii)	a) $\cos wt$ b) $2\cos wt$	
	g)	Derive amplitude modulated signal to plot spectrum of AM wave	6
3.	a)	For a A.C signal if time period is 1ms find out the frequency of the same signal in kilo hertz unit.	2
	b)	For a 10Mhz A.C signal find out the time period in microsecond	2
	c)	$3\sin 2\pi ft$ is a ..... A.C signal	1
	d)	Draw the circuit diagram of a balanced modulator and explain it's function	4+6=10
	c)	For a AM signal if modulation index is 0.5 , carrier power is 1 watt find out total power required to transmit the AM signal	3
	d)	$V_m=1V$ $V_c=2V$ find out modulation index	2
4.	a)	Plot the following	2X2 = 4
	i)	AM signal	
	ii)	FM signal	
	b)	Derive the total power relation of a AM signal as a function of modulation index ,carrier power	6
	c)	Write down the advantages of modulation	4
	d)	Compare AM and FM	6
5.	a)	What are the main advantages of DSB transmission	2
	b)	Draw the block diagram of a receiver and explain each block function	2+3=5
	c)	Draw the block diagram of a trasmitter and explain each block function	2+4=6
	d)	For a FM signal maximum frequency deviation is 1khz and modulating frequency is 100hz find out modulation index	3
	e)	Plot $\sin wt$ and $\cos wt$ on single x-y axis	2
	f)	Write down advantages of SSB trasmission	2
6.	a)	Draw the block diagram of phase shift method of SSB generation and explain	4+6 =10
	b)	Define the following	2x3=6
	i)	Modulation index of AM	
	ii)	Modulation index of FM	
	iii)	Phase modulation	
	c)	Plot $\cos wt$ and $\cos(wt+90^\circ)$ on single x-y axis	2
	d)	For a FM signal maximum frequency deviation is 10khz and modulating	2

	frequency is 100hz find out modulation index	
7.	Describe in detail	10x2=20
	a) FM generation	
	b) AM generation	

