Duration: 3hrs **[Max Marks:80]**

N.B. : (1) Question No 1 is Compulsory.
(2) Attempt any three questions out of the remaining five.
(3) All questions carry equal marks.
(4) Assume suitable data, if required and state it clearly.

1		Attempt **any FOUR**	**[20]**
	a	Draw the block diagram of analog communication system and explain its working in brief.	
	b	Compare DSBFC, DSBSC and SSB types of amplitude modulation.	
	c	Explain the concept of pre-emphasis and de-emphasis in FM.	
	d	What are the different types of analog pulse modulation techniques? State its applications.	
	e	What are the various factors considered in selection of IF in super heterodyne receivers?	
2	**a**	An AM signal produced by modulating a carrier signal of 20 MHz frequency and with a modulating signal of 10 KHz. Compute sideband frequencies, bandwidth and plot the frequency domain representation by assuming the 50% modulation and peak amplitudes of message and carrier signal as 5V and 10V respectively.	**[10]**
	b	Explain the generation and detection of PWM signal?	**[10]**
3	**a**	Explain the working of Foster seeley FM demodulator with the relevant diagrams. Specify its shortcomings.	**[10]**
	b	What is the need of multiplexing? Explain the Time division multiplexing in detail along with its applications.	**[10]**
4	**a**	Explain the working of indirect FM transmitter. State its advantages	**[10]**
	b	State different types of noise in communication system. Compute thermal noise voltage and thermal noise power across a resistor of value 10 KΩ and bandwidth of 25 MHz at room temperature (27°c)	**[10]**
5	**a**	Explain the working of diode detector as AM demodulator. How is practical diode detector different from diode detector?	**[10]**
	b	What are the various methods of generating FM? Explain the working of FET reactance modulator with required diagrams.	**[10]**
6	**a**	Explain the working of superheterodyne receiver in detail.	**[10]**
	b	State and prove sampling theorem. State the consequences of not satisfying Nyquist criteria in sampling	**[10]**