Lecture Plan -1

Semester:-IV Course Code:-EE-206-F

Subject:-Communication System Section-A

S. No.	Topic :-Communication system	Time Allotted:-
1.	**Introduction** Communication is the process of establishing connection b/w two points for information exchange.	5-10 min
2	**Division of the Topic** -Elements of comm.. system -Classification of communication -Modulation -Types of modulation , need of modulation -Demodulation	25-30 min
3.	**Conclusion** Depending on the type of communication the basic process go ahead with the help of various equipments used in the communication system.	5 min
4	**Question / Answer** Q.Name the process of transmitting two or more information signals simultaneously over the same channel? A. Multiplexing Q.What are the fundamental limitations of the communication system? A. Noise limitation , bandwidth limitation , equipment limitation	5 min

Assignment to be given:-Nil

Reference Readings:- Sanjay Sharma , Singh & Sapre

Lecture Plan -2

Semester:-IV Course Code:-EE-206-F

Subject:-Communication System Section-A

S. No.	Topic :-Modes &medias of communication	Time Allotted:-
1.	**Introduction** Communication is the process of establishing connection b/w two points for information exchange. There are many modes of communication and various media for establishing the communication between the two points	5-10 min
2	**Division of the Topic** - Modes of communication - Practical examples of different modes of communication - Media of communication - Practical examples of different media of communication	25-30 min
3.	**Conclusion** Depending on the mode of communication and medium of communication, we have to choose the type of modulation, frequency of transmission and type of communication eqpt for given system.	5 min
4	**Question / Answer** Q.Name the process of transmitting two or more information signals simultaneously over the same channel? A. Multiplexing Q.What are the fundamental limitations of the communication system? A. Noise limitation , bandwidth limitation , equipment limitation	5 min

Assignment to be given:-Nil

Reference Readings:- Sanjay Sharma , Singh & Sapre

Lecture Plan-3

Semester:-IV Course Code:-EE-206-F

Subject:-Communication System Section-A

S. No.	Topic :-Types of signals	Time Allotted:-
1.	**Introduction** Signal is defined as a function of one or more independent variables which contains some information & may be function of time, temperature, position, pressure, distance & is generally given in time domain.	5-10 min
2	**Division of the Topic** -Continuous time/discrete time signals -real/complex siganls -deterministic/random signals -periodic/nonperiodic signals -even/odd signals -energy/power signals Analog/digital signals	25-30 min
3.	**Conclusion** Therefore for transmission purpose we need an electrical signal because all the signal processing are electrical.	5 min
4	**Question / Answer** Q .Explain real & complex signals? A. a signal is a real signal if its value is a real no & a signal is complex if its value is a complex no. Q. Define fundamental period? A. the smallest value of period T which satisfies any equation is called fundamental time period To.	5 min

Assignment to be given:-Nil

Reference Readings:- Sanjay Sharma , Singh & Sapre

Lecture Plan -4

Semester:-IV Course Code:-EE-206-F

Subject:-Communication System Section-A

S. No.	Topic :-Types of functions , Representation of signals	Time Allotted:-
1.	**Introduction** Singularity functions serve as basic building blocks for the construction of more complex signals.	5-10 min
2	**Division of the Topic** -unit step function -Unit impulse function -Ramp function -Time domain representation -Frequency domain representation.	25-30 min
3.	**Conclusion** To get the frequency domain information Fourier series & Fourier transform are used.& singularity functions play vital role in the study of communication system.	5 min
4	**Question / Answer** Q.Give the properties of unit impulse function? A. Height of pulse goes to infinity , area under pulse curve is 0 , width of the pulse is 0. Q.Give the uses of unit impulse function? A. point mass , point charge , point source.	5 min

Assignment to be given:-Nil

Reference Readings:- Sanjay Sharma , Singh & Sapre

Lecture Plan -5

Semester:-IV Course Code:-EE-206-F

Subject:-Communication System Section-A

S. No.	Topic :-Fourier series	Time Allotted:-
1.	**Introduction** Fourier series is used to get the frequency domain representation.	5-10 min
2	**Division of the Topic** -Trigonometric Fourier series -Symmetry conditions -polar form , complex form -Concept of –ve frequency.	25-30 min
3.	**Conclusion** In the end we can say that these signals are not physical signals they are only concept to provide a real signal by a combination of complex exponentials of +ve & -ve frequencies.	5 min
4	**Question / Answer** Q.Explain Dirichlet's conditions? A.x(t) is single valued functions , must posses only a finite no. of discontinuities in the period T , must have finite no. of +ve & -ve maxima in the period T.	5 min

Assignment to be given:- Evaluate the trigonometric Fourier series expansion of a full wave rectified cosine function?

Reference Readings:- Sanjay Sharma , Singh & Sapre

Lecture Plan -6

Semester:-IV Course Code:-EE-206-F

Subject:-Communication System Section-A

S. No.	Topic :-Fourier transform , functions of Fourier transform	Time Allotted:-
1.	**Introduction** This approach is to develop the frequency domain representation of a non periodic signal over an entire interval.	5-10 min
2	**Division of the Topic** -Fourier transform pair -Gate function -Sampling function -Unit impulse function -Shifting property of impulse function -Rectangular pulse -Gaussian pulse -Signum function	25-30 min
3.	**Conclusion** Thus each function has its own application in the communication system.	5 min
4	**Question / Answer** Q.What is the another name given to the sampling function? A. Interpolation function or sinc function. Q.Give the derivation of rectangular pulse , Gaussian pulse?	5 min

Assignment to be given:-Find fourier transform of single sided exponential function (e)to the power of –btu(t)?

Reference Readings:- Sanjay Sharma , Singh & Sapre

Lecture Plan -7

Semester:-IV Course Code:-EE-206-F

Subject:-Communication System Section-A

S. No.	Topic :-Properties of Fourier transform , Convolution	Time Allotted:-
1.	**Introduction** As Fourier transform is used for frequency representation but for non periodic signals. It possess some of the properties.	5-10 min
2	**Division of the Topic** -time scaling property -Linearity property -duality property -Time shifting property -Frequency shifting property -time differentiation property Convolution	25-30 min
3.	**Conclusion** Fourier transform can also be utilized for periodic functions by the use of impulse function.	5 min
4	**Question / Answer** Q.What are the two convolution theorems? A. Time convolution , frequency convolution.	5 min

Assignment to be given:-Nil

Reference Readings:- Sanjay Sharma , Singh & Sapre

Lecture Plan-8

Semester:-IV Course Code:-EE-206-F

Subject:-Communication System Section-B

S. No.	Topic :-Amplitude modulation	Time Allotted:-
1.	**Introduction** Modulation is achieved by varying one of the properties of the carrier in accordance with the property of the message signal. In AM the amplitude of the carrier is varied according to the amplitude of the message signal.	5-10 min
2	**Division of the Topic** -Time domain representation -Frequency domain representation -Modulation index , Power contents , Transmission efficiency , Current calculation.	25-30 min
3.	**Conclusion** Thus in AM for calculating the given parameters they can be solved accordingly. and comes under the category of continuous wave.	5 min
4	**Question / Answer** Q.Define term modulation index for AM? A. Measure of extent of amplitude variation about an unmodulated maximum carrier. Q.Derive the power calculations for amplitude modulated wave?	5 min

Assignment to be given:-Nil

Reference Readings:- Kennedy , Sanjay Sharma

Lecture Plan-9

Semester:-IV Course Code:-EE-206-F

Subject:-Communication System Section-B

S. No.	Topic :-Generation of amplitude modulation	Time Allotted:-
1.	**Introduction** The device which are used to generate the AM modulated wave is called the Modulator . various modulators are being employed for this generation	5-10 min
2	**Division of the Topic** -Low level amplitude modulation -High level amplitude modulation -Non linear circuits -Square law diode modulation -Collector modulation method	25-30 min
3.	**Conclusion** Thus we can conclude that when two voltages of different frequencies are passed through a non linear resistance or a transistor, amplitude modulation takes place.	5 min
4	**Question / Answer** Q.What is the diffefee between the low level & high level AM modulation methods ? A.In low level modulation, the modulation of carrier is carried out at low power and then further power amplified before transmission.. In high level modulation , the modulation is done at high power and then transmitted through an antenna. Q.Give the mathematical analysis in the collector method used for generation? A.v0=Vcc(1+mcosWmt)cosWct Q.which method is suited for low voltage level? A. square law diode.	5 min

Assignment to be given:-Nil

Reference Readings:- Kennedy , Sanjay Sharma

Lecture Plan 10

Semester:-IV Course Code:-EE-206-F

Subject:-Communication System Section-B

S. No.	Topic :-Demodulation of AM waves	Time Allotted:-
1.	**Introduction** The process of extracting a base band signal from the modulated signal is called detection. Various detectors are being used.	5-10 min
2	**Division of the Topic** -Square law detector -envelope detector	25-30 min
3.	**Conclusion** Hence in this way by the proper use of the detectors the base band signals can be recovered easily at the receiver section.	5 min
4	**Question / Answer** Q.What is the distortion in the linear diode detector? A. which is due to improper selection of time constant RC & the 2nd is due to curvatures of the diode characteristics.	5 min

Assignment to be given:-Nil

Reference Readings:- Kennedy , Sanjay Sharma

Lecture Plan 11

Semester:-IV Course Code:-EE-206-F

Subject:-Communication System Section-B

S. No.	Topic :-Double Side Band Suppressed Carrier	Time Allotted:-
1.	**Introduction** The modulated signal which contain no carrier but two sidebands is called DSB-SC.thus saving of two third power may be achieved.	5-10 min
2	**Division of the Topic** -Transmission BW -Generation Balanced modulator Ring modulator	25-30 min
3.	**Conclusion** Thus if two non linear devices are connected in balanced modes so as to suppress the carrier of each other then only sidebands are left. similar is the condition used in ring modulator but with 4 diodes.	5 min
4	**Question / Answer** Q.What is the BW of DSB-SC? A.2Wm Q.what happens to the bandwidth of DSB-SC ? A. it remains same as that of AM.	5 min

Assignment to be given:-Nil
Reference Readings:- Kennedy , Sanjay Sharma

Lecture Plan -12

Semester:-IV Course Code:-EE-206-F

Subject:-Communication System Section-B

S. No.	Topic :-Demodulation of DSB-SC	Time Allotted:-
1.	**Introduction** At the receiver end the original modulating signal is recovered from the modulated signal this retranslation is called demodulation.	5-10 min
2	**Division of the Topic** -synchronous detection method -using envelope detector after carrier re insertion. -effect of phase & frequency errors in synchronous detection.	25-30 min
3.	**Conclusion** By the use of coherent detection phase & frequency errors are resulted. & this is due to the Discrepancy generated at the receiver end	5 min
4	**Question / Answer** Q.What is quadrature null effect? A. When angle is 90 degrees & detected output is zero. Q.What are the components used in synchronous detection method? A. Multiplier , low pass filter	5 min

Assignment to be given:-Nil

Reference Readings:- Kennedy , Sanjay Sharma

Lecture Plan 13

Semester:-IV Course Code:-EE-206-F

Subject:-Communication System Section-B

S. No.	Topic :-Single side band suppressed carrier	Time Allotted:-
1.	**Introduction** Modulation of this type which provides single sideband with suppressed carrier & by the use of this it reduces the transmission bandwidth by half.	5-10 min
2	**Division of the Topic** -Hilbert transform -Generation of SSB -Detection of SSB	25-30 min
3.	**Conclusion** Thus no. of methods are devised for both the processes and according to the application these are utilized in the communication system.	5 min
4	**Question / Answer** Q.Give the limitations of frequency discrimination method? A. not suitable for video communication Design of band pass filter is difficult Q.What are the applications of Hilbert transform? A. for generation of SSB signals , for designing minimum phase type filters , for representation of band pass signals.	5 min

Assignment to be given:-Nil

Reference Readings:- Kennedy , Sanjay Sharma

Lecture Plan -14

Semester:-IV Course Code:-EE-206-F

Subject:-Communication System Section-B

S. No.	Topic :-Vestigial sideband modulation systems	Time Allotted:-
1.	**Introduction** It is actually a compromise b/w DSB-SC & SSB-SC & takes optimum advantages of both the systems.	5-10 min
2	**Division of the Topic** -Introduction of the process -Frequency characteristics of the system	25-30 min
3.	**Conclusion** Thus in this technique instead of rejecting one sideband completely a gradual cut off of one side band is allowed this gradual cut is compensated by a portion of the other side band.	5 min
4	**Question / Answer** Q.What is the BW of VSB? A.BW of message signal + width of the VSB Q.What is CSSB? A. An SSB signal may be generated in which the carrier is suppressed even than it can be detected with an envelope detector & is compatible for reception using AM radio receiver.	5 min

Assignment to be given:-Nil
Reference Readings:- Kennedy , Sanjay Sharma

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Lecture Plan-15

Semester:-IV Course Code:-EE-206-F

Subject:-Communication System Section-B

S. No.	Topic :-Angle Modulation, Frequency modulation , Phase modulation	Time Allotted:-
1.	**Introduction** It is that type of modulation in which the instantaneous frequency is varied linearly with a message or base band signal about an unmodulated carrier frequency.	5-10 min
2	**Division of the Topic** -Angle Modulation -Phase modulation -Frequency Modulation -Narrowband FM -Wideband FM -Transmission bandwidth of FM signal -Effect of variation of modulation index on the spectrum of FM signal	25-30 min
3.	**Conclusion** Thus FM reception makes a good deal more immune to noise than AM reception & is possible to reduce noise further by increasing the frequency deviation.	5 min 5 min
4	**Question / Answer** Q. What is Carson's rule? A.BW=2(delta w +Wm) Q. What is the effect of BW on PM & FM? A. Bandwidth of the PM wave varies fastly with the variation in the modulating frequency on the other hand FM bandwidth varies slowly with modulating frequency.	

Assignment to be given:-Nil
Reference Readings:- Sanjay Sharma , Kennedy

Lecture Plan-16

Semester:-IV Course Code:-EE-206-F

Subject:-Communication System Section-B

S. No.	Topic :-Narrow Band and Wide Band FM generation	Time Allotted:-
1.	**Introduction** FM modulator circuits used for generating FM signals may be put in to different categories.	5-10 min
2	**Division of the Topic** -Narrowband FM -Wideband FM -Parameter variation method(Direct method) -Armstrong method(Indirect method)	25-30 min
3.	**Conclusion** For low modulation index, the FM is called the Narrow band and for High modulation index the FM is Wide band as the No of side bands increase with increase in modulation index. In direct method carrier generation cannot be of high stability which is a necessary requirement & this is overcome by indirect method.	5 min
4	**Question / Answer** Q .What is Narrow band FM? A. If the modulation index is low and between 1 to 6 it is narrow band FM. the main advantage of using Q .What is Wide band FM? A. If the modulation index is more than 6 it is Wide band FM.	5 min

Assignment to be given:-Nil

Reference Readings:- Sanjay Sharma , Kennedy

Lecture Plan-17

Semester:-IV Course Code:-EE-206-F

Subject:-Communication System Section-B

S. No.	Topic :-Noise triangle in FM, Pre Emphasis & De-emphasis	Time Allotted:-
1.	**Introduction** Noise amplitude modulates and phase modulates the carrier while signal is frequency modulating the carrier. This varies the Noise-signal ratio and creates a noise triangle for different frequencies of noise and varies the S-N ratio for different mod index	5-10 min
2	**Division of the Topic** -Modulation of Carrier by Signal -Modulation of Carrier by Noise -Effect of Noise and Signal due to Change in Modulation index -Noise Triangle -Pre Emphasis -De Emphasis	25-30 min
3.	**Conclusion** The FM wave has much better noise immunity compared to AM and hence preferred. The S/N ratio for FM is not constant for all frequencies, but varies in a triangular fashion. To improve the signal to noise ratio, some frequencies are pre emphasised before transmission and are deemphasised at receiver end to reduce the noise.	5 min
4	**Question / Answer** Q.What is the advantage of FM over AM? A.FM reception is more immune to noise , it reduces noise by reducing frequency deviation. Q.How do you improve the reception for bass frequencies in FM ? A By employing pre emphasis and de emphasis circuits.	5 min

Assignment to be given:-Nil

Reference Readings:- Sanjay Sharma , Kennedy

Lecture Plan -18

Semester:-IV Course Code:-EE-206-F

Subject:-Communication System Section-B

S. No.	Topic :-FM Generation	Time Allotted:-
1.	**Introduction** The process of getting FM signal is known as FM generation.	5-10 min
2	**Division of the Topic** -Varactor metod -Armstrong method	25-30 min
3.	**Conclusion** The FM is generated by varying the frequency by the tuned circuit parameters.	5 min
4	**Question / Answer** Q.What are frequency discriminators? A.A device that converts FM signal into corresponding AM signal with the help of frequency dependent circuits. Q.What is FM A. It is Frequenc Modulation in which the frequency of the carrier is varied in accordance with the modulating signal.	5 min

Assignment to be given:-Nil

Reference Readings:- Sanjay Sharma , Kennedy

Lecture Plan -19

Semester:-IV Course Code:-EE-206-F

Subject:-Communication System Section-B

S. No.	Topic :-FM demodulators	Time Allotted:-
1.	**Introduction** The process of getting a base band signal from a frequency modulated signal is called detection.	5-10 min
2	**Division of the Topic** -Slope detector -Balanced slope detector -Foster Seely detector -Ratio detector -Phase Locked Loop	25-30 min
3.	**Conclusion** Thus according to the application & utility any of the detector system can be utilized in the FM receiver section.	5 min
4	**Question / Answer** Q.What are frequency discriminators? A.A device that converts FM signal into corresponding AM signal with the help of frequency dependent circuits. Q.What are the drawbacks of slope detector system? A. harmonic distortions are produced , can't eliminate amplitude variations.	5 min

Assignment to be given:-Nil

Reference Readings:- Sanjay Sharma , Kennedy

Lecture Plan -20

Semester:-IV Course Code:-EE-206-F

Subject:-Communication System Section-C

S. No.	Topic :-Sampling	Time Allotted:-
1.	**Introduction** Sampling is the process of converting the analog signals into the discrete signals.	5-10 min
2	**Division of the Topic** -Sampling theorem -Proof of the theorem -Nyquist rate, Aliasing effect	25-30 min
3.	**Conclusion** A continuous time signal may be completely represented in its samples and recovered back if the sampling frequency is Fs>=2Fm.	5 min
4	**Question / Answer** Q.What is Nyquist rate & interval? A. It is known as minimum sampling rate & is given by Fs=2Fm & Nyquist interval is given by Ts=1/2Fm Q.What is aliasing & how it is reduced? A.Fs<2Fm; reduced by using Prelias filter	5 min

Assignment to be given:-Nil

Reference Readings:- Singh & Sapre , Sanjay Sharma

Lecture Plan-21

Semester:-IV Course Code:-EE-206-F

Subject:-Communication System Section-C

S. No.	Topic :-Multiplexing	Time Allotted:-
1.	**Introduction** Multiplexing is the process of sharing the one channel by a number of users operating same or similar frequency band of signals . For this we can use any of the two techniques i.e.TDM , FDM.	5-10 min
2	**Division of the Topic** -Definition -TDM -FDM	25-30 min
3.	**Conclusion** Whenever no. of the signals are to be processed simultaneously then either of the process is used.	5 min
4	**Question / Answer** Q.What are the type of problem can occur in the use of Multiplexing? A. Crosstalk in FDM & Intersymbol Interference in TDM. Q.Differentiate b/w TDM & FDM? A. In FDM fixed frequency band is given but in TDM complete channel BW is allotted.	5 min

Assignment to be given:-Nil

Reference Readings:- Sanjay Sharma & Singh Sapre

Lecture Plan -22

Semester:-IV Course Code:-EE-206-F

Subject:-Communication System Section-C

S. No.	Topic :- Pulse Amplitude Modulation	Time Allotted:-
1.	**Introduction** In this the amplitude of the pulses of the carrier pulse train is varied in accordance with the modulating signal.	5- 10 min
2	**Division of the Topic** -Working principle -Modulation -Demodulation	30 min
3.	**Conclusion** Although it is used in many applications but still the BW required is very large & noise cannot be removed easily.	5 min
4	**Question / Answer** Q.What is aperture effect? A. Higher frequencies are attenuated due to roll off characteristics.	5 min

Assignment to be given:- nil

Reference Readings:- Sanjay Sharma , Singh & Sapre

Lecture Plan -23

Semester:-IV Course Code:-EE-206-F

Subject:-Communication System Section-C

S. No.	Topic :-Pulse Width Modulation	Time Allotted:-
1.	Introduction In pulse width modulation width of the pulses is varied but amplitude of the pulse is kept constant.	5-10 min
2	Division of the Topic -Generation -Modulation -demodulation	25-30 min
3.	Conclusion This particular scheme is simple to implement & also noise , interference is minimum.	5 min
4	Question / Answer Q.For PWM transmission of voice signal with Fm = 3khz.Find the BW if Fs=8khz & tau =.1Ts? A. BW>=1/2 tau Tau =.1/8*(10)3	5 min

Assignment to be given:-Nil

Reference Readings:- Sanjay Sharma

Lecture Plan -24

Semester:-IV Course Code:-EE-206-F

Subject:-Communication System Section-C

S. No.	Topic :-Pulse Position Modulation	Time Allotted:-
1.	**Introduction** In this type of modulation position of the pulses is varied keeping the amplitude constant.	5-10 min
2	**Division of the Topic** -Generation -Modulation -Demodulation	25-30 min
3.	**Conclusion** It is simple to implement & BW of transmission channel depends on the rising time of the pulse.	5 min
4	**Question / Answer** Q.This particular modulation is related what other type of the scheme? A. phase modulation. Q.What happen to the power of the transmitter? A. It remains constant.	5 min

Assignment to be given:-Nil

Reference Readings:- Sanjay Sharma

Lecture Plan -25

Semester:-IV Course Code:-EE-206-F

Subject:-Communication System Section-C

S. No.	Topic :-Pulse Code Modulation	Time Allotted:-
1.	**Introduction** In PCM system information doesn't lie in any property of the pulse but it lies in the presence or absence of the pulse.	5-10 min
2	**Division of the Topic** -Quantization -PCM system -BW -Noise in PCM -Companding	25-30 min
3.	**Conclusion** Thus the PAM signals are used to get a complete digital system & they're first quantized then coded thus giving rise to PCM system.	5 min
4	**Question / Answer** Q.What are the elements of transmitter in the PCM system? A. Sampler , Quantizer , Encoder. Q.What are the two major sources of noise in the PCM system? A. transmission noise & quantization noise.	5 min

Assignment to be given:-Nil

Reference Readings:- Singh & Sapre

Lecture Plan-26

Semester:-IV Course Code:-EE-206-F

Subject:-Communication System Section-C

S. No.	Topic :-Differential Pulse Code Modulation, Delta & Adaptive Delta modulation	Time Allotted:-
1.	**Introduction** What are the various schemes over PCM?Also these are the techniques in which an analog signal can be encoded into bits.	5-10 min
2	**Division of the Topic** -DM system -Various limitations in the DM system -ADM -DPCM	25-30 min
3.	**Conclusion** Hence in this given system slope overloaded & granular noise are the major limitation.& is overcome by the adaptive delta modulation. In DPCM no. of bits per code is reduced.	5 min
4	**Question / Answer** Q.What is granular noise? A. In which waveform recovered as dc but original signal is not dc. Q.What is DPCM? A. In which difference b/w two successive samples is quantized,encoded,transmitted as in PCM.	5 min

Assignment to be given:-Nil

Reference Readings:- Singh & Sapre

Lecture Plan-27

Semester:-IV Course Code:-EE-206-F

Subject:-Communication System Section-D

S. No.	Topic :-ASK , PSK , FSK	Time Allotted:-
1.	**Introduction** The output of the PCM system is a string of 1's & 0's.As the modulating signal consist of only two levels the modulation techniques are known as ASK,FSK,PSK.	5-10 min
2	**Division of the Topic** ASK -Waveform -Generation -Signal space diagram FSK -Waveform -Detection PSK -Waveform -PSK system	25-30 min 5 min
3.	**Conclusion** Thus the digital modulation techniques are being employed according to the availability.	5 min
4	**Question / Answer** Q.What other name is given to the ASK? A. On-Off keying. Q. Give the comparison of DPSK & PSK? A. In this no synchronous carrier is necessary at the receiver & the disadvantage is that the error rate is more.	

Assignment to be given:-Nil

Reference Readings:- Singh & Sapre , Sanjay Sharma , simon haykins

Lecture Plan-28

Semester:-IV Course Code:-EE-206-F

Subject:-Communication System Section-D

S. No.	Topic :-BPSK , QPSK , M-ary technique	Time Allotted:-
1.	**Introduction** In this binary symbol 1 & 0 modulate the phase of the carrier & also in next phase of carrier is changed to 45 & so on.	5-10 min
2	**Division of the Topic** BPSK -Generation of BPSK -Reception of BPSK QPSK -Symbol -generation -Reception	25-30 min
3.	**Conclusion** Thus according to the application various digital techniques can be employed.	5 min
4	**Question / Answer** Q.What is the phase shift utilized by the QPSK? A.45 degrees. Q.What is the disadvantage of using BPSK? A. In the received signal it is difficult to analyze that whether the signal is for +ve or –ve.	5 min

Assignment to be given:-Nil

Reference Readings:- Singh & Sapre , Sanjay Sharma , simon haykins

Lecture Plan-29

Semester:-IV Course Code:-EE-206-F

Subject:-Communication System Section-D

S. No.	Topic :-Noise	Time Allotted:-
1.	**Introduction** What is Noise? What are the various types of noise? Also give the remedies for this factor?	5-10 min
2	**Division of the Topic** -Internal noise -External noise -Types of Internal Noise	25-30 min
3.	**Conclusion** Noise limitation is the one of the most important limitation of a communication system as noise limits the performance of a communication system.	5 min
4	**Question / Answer** Q.What is meant by noise? A. Noise is the unwanted incoherent signals introduced by the medium and by he communication equipment in use which interferes with the main intelligence and information of a message reducing the reliability of faithful reproduction of original signal by the receiver and reduces the capability of the receiver.. Q.Give the various internal noises? A. shot noise , partition noise , flicker noise , transit time noise , Thermal noise.	5 min

Assignment to be given:-Explain in detail the various type of generated in the communication system?

Reference Readings:- Singh & Sapre , Sanjay Sharma , simon haykins

Lecture Plan-30

Semester:-IV Course Code:-EE-206-F

Subject:-Communication System Section-D

S. No.	Topic :-Noise	Time Allotted:-
1.	**Introduction** External noises are noises produced in the medium external to the communication eqpt	5-10 min
2	**Division of the Topic** -External noise -Types of External Noise -Signal to Noise Ratio -Noise Figure	25-30 min
3.	**Conclusion** Signal to Noise ratio and Noise figure are measures of interference in the signal by noise	5 min
4	**Question / Answer** Q.What are various types of external noise? A. Atmosphericnoise, man made noises Q.What is meant by atmospheric noise? A.This is produced by lightning discharges in thunderstorm which occur in the atmosphere.	5 min

Assignment to be given:-Explain in detail the various type of generated in the communication system?

Reference Readings:- Singh & Sapre , Sanjay Sharma , simon haykins