Lecture Plan -1

Semester:-IV Course Code:- EE-202-F

Subject:- Analog Electronics SECTION A

S. No.	Topic :-Introduction of the Subject	Time Allotted:-
1.	**Introduction** Analog Electronics Engineering Subject deals with basic Electronics. In this subject we are going to study devices like ordinary diode, Zener diode, about transistors, transistor Action, biasing,FET,regulated power supplies etc.	10 Minutes
2	**Division of the Topic** -Mechanism of electron flow & holes flow in semiconductor. -Difference between Semiconductor, Conductor, & Insulator & advantages. -Energy band diagram of Semiconductor, Conductor, & Insulator & advantages.	30 Minutes
3.	**Conclusion** From discussion it is very easy to identify difference between Semiconductor, Conductor & Insulator. Advantages of semiconductor over conductor. Advantages based on energy band diagram.	5 Minutes
4	**Question / Answer** (1) What is the value of energy gap in case of Germanium & Silicon? Ans. Energy gap in case of Germanium & Silicon is 0.72eV & 1.1eV respectively. (2) What is the value of energy gap in case of conductor? Ans. The value of energy gap in case of conductor is 0.	5 Minutes

Assignment to be given: - To be given after completion of SECTION A.

Reference Readings:-

(1) Electronics Devices & circuits By J B Gupta
(2) Basic Electronics By V K Mehta

Lecture Plan -2

Semester:-IV Course Code:- EE-202-F

Subject:- Analog Electronics SECTION A

S. No.	Topic :-P-N Junction and its V-I characterstics	Time Allotted:-
1.	**Introduction** P-N junction is formed by joining p-type & n-type Semiconductor. This P-N junction is used as a rectifier. This P-N junction can be biased by connecting Battery to P & N terminals.The graph between voltage and current flowing through a diode is V-I characterstics.	10 Minutes
2	**Division of the Topic** -P-N junction. -P-N junction as a rectifier. -V-I characterstics of diode	30 Minutes
3.	**Conclusion** It can be noted that how P-N junction is formed and also how P-N junction can be Used as a rectifier. Moreover P-N junction can be biased and we can use this P-N junction as a rectifier	5 Minutes
4	**Question / Answer** (1) Name the region which is formed by joining p & n region? Ans.Depletion region is formed by joining p & n region (2) Is 'reverse recovery time' due to majority carriers or the minority carriers? Ans. Due to large number of minority carriers present in both of the P & N regions..	5 Minutes

Assignment to be given:-

Reference Readings:-

(1)Electronics Devices & circuits By J B Gupta
(2)Basic Electronics By V K Mehta

Doc. No.: DCE/0/15
Revision :00

Lecture Plan -3

Semester:-IV Course Code:- EE-202-F
Subject:- Analog Electronics SECTION A

S. No.	Topic :-Switching characterstics of diode	Time Allotted:-
1.	**Introduction-** A P-N junction diode may be used as an electric switch.The electric circuit can be made 'on' or 'off 'by forward biasing or reverse biasing the diode.in both cases,diode response is accompanied by transient response.	10-min
2	**Division of the Topic-** -Diode reverse recovery time(trr) -Minority – carrier density distribution -Storage times -Transition times -P-N Diode switching times	30 min
3.	**Conclusion-** On switching over from reverse bias condition to forward bias condition,diode takes certain time interval, known as recovery time.	5 min
4	**Question / Answer** What is forward recovery time? -time interval between the instant of 10% diode voltage and the instant when it reaches 90% What is reverse recovery time? -Maximum time for the device to switch from on to off.	5 min

Assignment to be given: -
Reference Readings:-

(3) Electronics Devices & circuits By J B Gupta
(4) Basic Electronics By V K Mehta

Doc. No.: DCE/0/15
Revision: 00

Lecture Plan -4

Semester:-IV Course Code:- EE-202-F
Subject:- Analog Electronics SECTION A

S. No.	Topic:-Load Line Concept of Diode	Time Allotted:-
1.	**Introduction** .Load Line Concept of Diode gives the detail characteristic of ac & dc load line Characteristics of diode.	10 Minutes
2	**Division of the Topic** -Load Line concept of Diode -static transfer characterstics -dynamic transfer characterstics	30 Minutes
3.	**Conclusion** From the load line equation of diode it is very easy to analyze behavior of diode. Moreover it is easy to understand its working.	5 Minutes
4	**Question / Answer** What is load line? Line joining the two points on X-axis and Y-axis make the load line.	5 Minutes

Assignment to be given:-.

Reference Readings:-

(1) Electronics Devices & circuits By J B Gupta
(2)Basic Electronics By V K Mehta

Doc. No.: DCE/0/15
Revision: 00

Lecture Plan -5

Semester:-IV Course Code:- EE-202-F
Subject:- Analog Electronics SECTION A

S. No.	Topic :-Diode as a Rectifier	Time Allotted:-
1.	**Introduction** Diode which consists of P-N junction can be used as a rectifier. We have two types Of rectifier i.e. Half Wave rectifier & Full Wave Rectifier. Half wave rectifier consists Only one diode & minimum No. of diodes for full wave rectifier is two. Efficiency of Bridge rectifier is more compared to other rectifier	10 Minutes
2	**Division of the Topic** -Diode as a half wave rectifier -Efficiency of half wave rectifier -Full wave rectifier using centre tap transformer	30 Minutes
3.	**Conclusion** It can be concluded that we use diode as a rectifier. With the help of diode we are Able to design half wave & full wave rectifier. By calculations we can also derive the efficiency of half wave rectifier	5 Minutes
4	**Question / Answer** (1) What is the efficiency of half wave rectifier? Ans. The efficiency of half wave rectifier 40.6% (2) What is the minimum No. of diodes used for full wave rectifier? Ans. Minimum No. of diodes used for full wave rectifier is 2.	5 Minutes

Assignment to be given:-
Reference Readings:-

(1) Electronics Devices & circuits By J B Gupta
(2)Basic Electronics By V K Mehta

Lecture Plan-6

Semester:-IV Course Code:- EE-202-F
Subject:- Analog Electronics SECTION A

S. No.	Topic :-Diode as a Rectifier Contd.	Time Allotted:-
1.	**Introduction** After studying working of full wave rectifier using centre-tap transformer we can Derive the efficiency for the same. By proper connecting the 4 diodes we can design full wave rectifier which is also called bridge rectifier	10 Minutes
2	**Division of the Topic** -Efficiency of full wave rectifier using centre-tap transformer. -Bridge rectifier. -Efficiency of Bridge rectifier	30 Minutes
3.	**Conclusion** We are now able to distinguish between full wave rectifier using centre tap Transformer & Bridge rectifier. We can now design full wave rectifier using four Diodes. Efficiency is also known of full wave rectifier & can be concluded that Bridge Rectifier is most useful due to its efficiency.	5 Minutes
4	**Question / Answer** (1) What is the value of ripple factor for half & full wave rectifier? Ans. Half wave rectifier is γ=1.21 & Full wave rectifier is γ=0.482 (2) What is PIV of a diode in a rectifier circuit? Ans. PIV is the maximum possible voltage that can occurs across a diode when it is reversed biased.	5 Minutes

Assignment to be given:-

Reference Readings:-

(1) Electronics Devices & circuits By J B Gupta
(2)Basic Electronics By V K Mehta

Lecture Plan -7

Semester:-IV Course Code:- EE-202-F
Subject:- Analog Electronics SECTION A

S. No.	Topic: Clipping circuits	Time Allotted:-
1.	**Introduction** Clippers are the circuit use to clip(remove) the part of the Input signal. Positive Clippers is one which removes the positive half cycles of the input signal.	10 Minutes
2	**Division of the Topic** -Introduction to Clippers. -Positive & negative clippers. -Combination clippers	30 Minutes
3.	**Conclusion** Clippers are used in TV Receivers. They are used to protect digital circuits against Transient.	5 Minutes
4	**Question / Answer** (1)Name at least components for Clipper circuit? Ans.Ideal Diode and Resistor. (2)Name the two general categories of Clippers? Ans. Series & Parallel Clippers.	5 Minutes

Assignment to be given:-.
Reference Readings:-

(1) Electronics Devices & circuits By J B Gupta
(2)Basic Electronics By V K Mehta

Lecture Plan -8

Semester:-IV Course Code:- EE-202-F
Subject:- Analog Electronics SECTION A

S. No.	Topic :-Clamper	Time Allotted:-
1.	**Introduction** A circuit that places either +ve or –ve peak of a signal at a desired level is known as a Clamping circuit. It simply adds or subtracts a dc component to the input signal.	10 Minutes
2	**Division of the Topic** Introduction to Clampers. -Negative clamper -Positive clamper	30 Minutes
3.	**Conclusion** A clamping circuit adds dc component (positive or negative) to the input signal so as To push it either on positive side, or on the negative side. Clampers can be classified As Negative or Positive Clamper and also biased Positive & Negative Clamper.	5 Minutes
4	**Question / Answer** (1) How does a Clamper circuit affect the peak and average values of the waveform? Ans. The peak and average values of the waveform are changed. (2) How does a Clamper circuit affect the peak-to-peak and rms values of waveforms? Ans. No change.	5 Minutes

Assignment to be given:-

Reference Readings:-

(1) Electronics Devices & circuits By J B Gupta
(2)Basic Electronics By V K Mehta

Lecture Plan-9

Semester:-IV Course Code:- EE-202-F
Subject:- Analog Electronics SECTION A

S. No.	Topic :-Filter circuits,peak to peak detector	Time Allotted:-
1.	**Introduction-** A filter circuit is a device that converts pulsating output of a rectifier into a steady level.,peak to peak detector is used to show all the peaks in a given waveform.	10 min
2	**Division of the Topic-** -Series inductor filter -Half wave rectifier with shunt capacitor filter -Full wave rectifier with shunt capacitor filter -Choke input filter -CLC filter -Peak to peak detector	30 min
3.	**Conclusion-** Filter circuits are used to remove the ac components and allows only the dc component to reach the load and peak to peak detector is used to mark only the peaks.	5 min
4	**Question / Answer** What are drawbacks of pi filter? -Larger cost,more weight,bigger size. What is value of discharging time constant? -100 times more than charging time constant	5 min

Assignment to be given:-
Reference Readings:-

(1) Electronics Devices & circuits By J B Gupta

(2)Basic Electronics By V K

Lecture Plan -10

Semester:-IV Course Code:- EE-202-F
Subject:- Analog Electronics SECTION A

S. No.	**Topic :-Voltage Multipliers**	**Time Allotted:-**
1.	**Introduction-** Voltage multiplier is a circuit that delivers a dc voltage twice or more of input ac voltage.	5 min
2	**Division of the Topic** -half wave voltage doubler -full wave voltage doubler -voltage tripler -voltage quadrupler	30 min
3.	**Conclusion-** Such circuits are used when both the supply voltage and load are maintained constant.	5 min
4	**Question / Answer** What is drawbackof full-wave voltage doubler? -common ground between input and output is not available. What is advantage of full wave voltage doubler? -output ripple frequency is twice the supply frequency.	5 min

Assignment to be given:-

Reference Readings:-

(1) Electronics Devices & circuits By J B Gupta
(2)Basic Electronics By V K

Lecture Plan -11

Semester:-IV Course Code:- EE-202-F
Subject:- Analog Electronics SECTION C

S. No.	Topic :-Transistor	Time Allotted:-
1.	**Introduction** Transistor is a solid state device, whose operation depends upon flow of electric Charge carriers within the solid. Transistor is a current control device. Transistor has Three terminals(Emitter, Base & Collector)	10 Minutes
2	**Division of the Topic** -Introduction to Transistor -Types of transistor terminals	30 Minutes
3.	**Conclusion** We are now able to distinguish transistor terminals. Transistor is like Two P-N Junction diodes connected back to back. The two junctions give rise to three regions Provided with three terminals called emitter, base & collector.	5 Minutes
4	**Question / Answer** (1) Give two advantages of transistor over vacuum tube diode? Ans. Compact size & light weight. (2) Name 3 terminals of transistor? Ans. Emitter, Base & Collector.	5 Minutes

Assignment to be given:-

Reference Readings:-

(1) Electronics Devices & circuits By J B Gupta
(2)Basic Electronics By V K Mehta

Lecture Plan -13

Semester:-IV Course Code:- EE-202-F
Subject:- Analog Electronics SECTION C

S. No.	Topic :-CB & CE configuration	Time Allotted:-
1.	**Introduction** Transistor has 3 configuration's CE, CC & CB. CE configuration is used most commonly because it has high current gain.	10 Minutes
2	**Division of the Topic** -CB configuration. -Input & Output characteristics of CB configuration. -CE configuration. -Input & Output characteristics of CE configuration.	30 Minutes
3.	**Conclusion** Detailed study of Common Base configuration is done with input & Output Characteristics. Common Emitter configuration was also studied which is the most Common configuration used in Electronics due to High Voltage & Current gain.	5 Minutes
4	**Question / Answer** (1) Which configuration is used most commonly? Ans. Common Emitter configuration. (2) Which configuration is called Emitter Follower? Ans. Common Collector configuration.	5 Minutes

Assignment to be given:-

Reference Readings:-

(1) Electronics Devices & circuits By J B Gupta
(2)Basic Electronics By V K Mehta

Lecture Plan -14

Semester:-IV Course Code:- EE-202-F
Subject:- Analog Electronics SECTION C

S. No.	Topic :-Commonly used Transistor, Relation (α & β)	Time Allotted:-
1.	**Introduction** CE configuration is used most commonly Because it has high Power, Current gain. After knowing the detail of Common base & Common Emitter configuration we can derive the relation between α & β.	10 Minutes
2	**Division of the Topic** -Commonly used Transistor configuration. -Relation between α & β	30 Minutes
3.	**Conclusion** By studying the detail study of transistor in Common base & Common Emitter Configuration We are able to derive the relation between α & β which is given by $\alpha = \beta/1+\beta$.	5 Minutes
4	**Question / Answer** (1) Give one application of common base? Ans. For high frequency applications. (2) Give one application of common Collector? Ans. For impedance matching.	5 Minutes

Assignment to be given:-

Reference Readings:-

(1) Electronics Devices & circuits By J B Gupta
(2)Basic Electronics By V K Mehta

Lecture Plan-15

Semester:-IV Course Code:- EE-202-F
Subject:- Analog Electronics SECTION C

S. No.	Topic :-Hybrid model,h-parameters	Time Allotted:-
1.	**Introduction** – In two port circuit analysis hybrid parameters or mixed parameters help in analysis of transistor.	10 min
2	**Division of the Topic** -Meaning of h-parameters -Hybrid model -Transistor hybrid model -Analysis of transistor	30 min
3.	**Conclusion-** h-parameter equivalent circuit help in analysis of low frequency small signal CE model.	5 min
4	**Question / Answer** What is forward transfer current gain? h21=i2/i1 What is reverse transfer voltage ratio? h12=i1/v2	5 min

Assignment to be given:-

Reference Readings:-

(1) Electronics Devices & circuits By J B Gupta
(2)Basic Electronics By V K Mehta

Lecture Plan -16

Semester:-IV Course Code:- EE-202-F
Subject:- Analog Electronics SECTION C

S. No.	Topic :- Millers theorem, Ebers moll model, emitter follower	Time Allotted:-
1.	**Introduction –** In miller's teorem voltage calculation at N distinct nodes is simple.In Ebers-Moll model two diodes are placed back to back with reverse saturation currents. In emitter follower,output voltage follows the input voltage.	10 min
2	**Division of the Topic** -Miller's theorem -Eber's moll model presentation -Small signal AC model for emitter follower -Determination of thevenin's equivalent	30 min
3.	**Conclusion-** Due to high input impedance and low output impedance emitter follower is used for impedance matching.	5 min
4	**Question / Answer** Name the feedback circuit in emitter follower? -negative current feedback circuit why is the name follower? -Since output voltage just follows the input voltage.	5 min

Assignment to be given:-

1.Discuss switching characterstics of a transistor.
2.Define beta of a transistor.
3.Draw a simple circuit of a common collector configuration and explain it.

Reference Readings:-

(1) Electronics Devices & circuits By J B Gupta

(2)Basic Electronics By V K Mehta

Lecture Plan-17

Semester:-IV Course Code:- EE-202-F
Subject:- Analog Electronics SECTION C

S. No.	Topic :-Transistor biasing	Time Allotted:-
1.	**Introduction** The basic function of a transistor is amplification. The process of raising the strength of a weak signal without any change in its general shape is referred to as faithful amplification. For faithful amplification , fulfillment of the following basic conditions is essential & they are (1) Proper zero signal collector current. (2) Minimum proper base-emitter voltage at any instant. (3) Minimum proper collector-emitter voltage at any instant.	10 Minutes
2	**Division of the Topic** -Biasing for faithful amplification. -Conditions of biasing. -Selection of operating point.	30 Minutes
3.	**Conclusion** Proper transistor biasing must be done for proper amplification due to reasons that Proper zero signal collector current, minimum proper base-emitter voltage at any Instant & minimum proper collector-emitter voltage at any instant.	5 Minutes
4	**Question / Answer** (1) Which biasing of transistor is used most commonly? Ans. Voltage divider biasing is used most commonly. (2) State the condition for thermal stability of operating point of transistor? Ans. The operating point should not shift with temperature variations.	5 Minutes

Assignment to be given:-

Reference Readings:-

(1) Electronics Devices & circuits By J B Gupta
(2)Basic Electronics By V K Mehta

Lecture Plan -18

Semester:-IV Course Code:- EE-202-F
Subject:- Analog Electronics SECTION C

S. No.	Topic :-Types of Transistor Biasing	Time Allotted:-
1.	**Introduction** There are a large number of circuits for biasing of a transistor. Circuits differ so as to their ability to keep Quiescent point fixed in spite of variations in transistor characteristics and also effects of temperature variations and ageing.	10 Minutes
2	**Division of the Topic** -Requirements of Biasing circuits -Simplest biasing circuit -Fixed Bias circuit -Self bias or Emitter bias -Collector-To-Base bias -Voltage divider bias	30 Minutes
3.	**Conclusion** Proper selection of operating point i.e. at the middle of the active region of the Characteristics, so that on applying the input signal the instantaneous operating point Does not move. Stabilize the Collector current I_C against temperature variations. Make The operating point independent of transistor parameters.	5 Minutes
4	**Question / Answer** (1)What is the value of R_E taken generally? Ans. The value of R_E is 0.5 to 1 KΩ (2) Where is Zero signal collector current chosen? Ans. Zero signal collector current chosen so that operating point lies at the middle of the dc load line.	5 Minutes

Assignment to be given:-

Reference Readings:-

(1) Electronics Devices & circuits By J B Gupta
(2)Basic Electronics By V K Mehta

Lecture Plan -19

Semester:-IV Course Code:- EE-202-F
Subject:- Analog Electronics SECTION C

S. No.	Topic :- Fixed bias ,Self bias ,collector to base bias	Time Allotted:-
1.	Introduction – The fixed bias circuit is the simplest way to bias a transistor. Self bias is the most commonly used to bias. While in collector to base bias base resistor is returned to collector.	10 min
2	Division of the Topic -Stability factor of fixed bias -advantages & disadvantages of fixed bias -Stability factor of self bias -advantages & disadvantages of self bias	30 min
3.	Conclusion- The simplest biasing can be done by forward biasing the base emitter and reverse biasing of collector emitter.	5 min
4	Question / Answer What is disadvantage of fixed bias? -poor stability What is stability factor ? -Rate of change of collector current w.r.t. Ico keeping Vbe and beta const.	5 min

Assignment to be given:- To be given after completion of SECTION C.

Reference Readings:-

(1) Electronics Devices & circuits By J B Gupta
(2)Basic Electronics By V K Mehta

Lecture Plan -20

Semester:-IV Course Code:- EE-202-F
Subject:- Analog Electronics SECTION C

S. No.	Topic :-Bias compensation,thermistor & sensistor compensation	Time Allotted:-
1.	**Introduction** – Compensation techniques provide better operating point. In compensation techniques temperature sensitive devices such as diodes,transistors,thermistors,sensitors etc.to used for bias stabilization.	10 min
2	**Division of the Topic** -bias ciompensation -diode compensation for variation in Ico. -thermistor compensation -sensistor compensation	30 min
3.	**Conclusion-** The base resistor Rb not only provides a dc feedback for the stabilization of the operating point,but it also cause an ac feedback.	5 min
4	**Question / Answer** Why bias compensation is required? Theser help to reduce the drift of operating point. What is bias stabilization? Maintainence of quiescent point stable.	5 min

Assignment to be given:- To be given after completion of SECTION B.

Reference Readings:-

(1) Electronics Devices & circuits By J B Gupta
(2)Basic Electronics By V K Mehta

Lecture Plan -21

Semester:-IV Course Code:- EE-202-F
Subject:- Analog Electronics Unit:- SECTION C

S. No.	Topic :-Hybrid pi model	Time Allotted:-
1.	**Introduction –** At high frequencies transistors does not respond instantly to variations in input signal .because mechanism of transport from input to output is diffusion	10 min
2	**Division of the Topic-** -Hybrid pi Model -Explanation of parameters -transition capacitance	30 min
3.	**Conclusion-** EARLY EFFECT indicates that the varying voltage across the collector to emitter junction results in base width modulation.	5 min
4	**Question / Answer** What is base width modulation? - Varying voltage across the collector to emitter junction results in base width modulation . Which effect comes into high frequency ? -Capacitance effect	5 min

Assignment to be given:- To be given after completion of SECTION B.

Reference Readings:-

(1) Electronics Devices & circuits By J B Gupta
(2)Basic Electronics By V K Mehta

Lecture Plan-22

Semester:-IV Course Code:- EE-202-F
Subject:- Analog Electronics Unit:- SECTION C

S. No.	Topic :-CE short circuit current gain, frequency response,	Time Allotted:-
1.	**Introduction –** To obtain the frequency response of the transistor amplifier,hybrid pi model is considered.	10 min
2	**Division of the Topic** -Equivalent circuit with resistive load -Approximate equivalent circuit -parameter fT. -variation of fT with collector current -short circuit CE current gain vs. frequency	30 min
3.	**Conclusion-** The experimentally determined value of fT is used to calculate the value of Ce in the hybrid pi model Ce=gm/2fT*pi	5 min
4	**Question / Answer** What is meant by phase reversal? -phase difference of 180 degrees between output and input voltage. What is an ac emitter resistance? -dynamic resistance of emitter base junction	5 min

Assignment to be given:- To be given after completion of SECTION C.

Reference Readings:-

(1) Electronics Devices & circuits By J B Gupta
(2)Basic Electronics By V K Mehta

Lecture Plan -23

Semester:-IV Course Code:- EE-202-F
Subject:- Analog Electronics Unit:- SECTION C

S. No.	Topic :-Gain bandwidth product,emitter follower at high frequencies	Time Allotted:-
1.	**Introduction –** At high frequency voltage gain B.W.increases with increasing Rl and decreases with increasing Rs.	10 min
2	**Division of the Topic** -Hybrid pi Model -Explanation of parameters -transition capacitance	30 min
3.	**Conclusion-** At the high frequency a capacitance Cl is included across the load because emitter follower at high freq. is used to drive the capacitve loads.	5 min
4	**Question / Answer** What is upper 3 dB cut off frequency? Fb=fT/hfe What is effect of removal of bypass capacitor? -Excessive degeneration in the amplifier circuit	5 min

Assignment to be given:-

1.What is meant by thermal run away?
2.Explain transistor biasing.
3.Discuss hybrid pi model of a transistor.

Reference Readings:-

(1) Electronics Devices & circuits By J B Gupta
(2)Basic Electronics By V K Mehta

Lecture Plan -24

Semester:-IV Course Code:- EE-202-F
Subject:- Analog Electronics Unit:- SECTION B

S. No.	Topic :-Field Effect Transistor,pinch off voltage,V-I characterstics	Time Allotted:-
1.	**Introduction –** A field effect transistor is a semiconductor device in which current conduction is by only one type of majority carriers.Unlike BJT a FET is a device that gives high input resistance. Pinch-off voltage is the minimum voltage after which FET enters into constant current region.	10 min
2	**Division of the Topic** -Junction field effect transistor -N channel JFET -P channel JFET -pinch off voltage -Characterstics of JFET	30 min
3.	**Conclusion-** JFET depends upon the flow of majority carriers. It carries very small current because of reverse biased gate. FET mainly works into constant current region.	5 min
4	**Question / Answer** What are advantages of FET? -FET is simpler to fabricate, smaller in size, rugged in construction, longer life, and higher efficiency. What are disadvantages of FET? -It is having relative small gain-bandwidth product.	5 min

Assignment to be given:- To be given after completion of SECTION B.

Reference Readings:-

(1) Electronics Devices & circuits By J B Gupta
(2)Basic Electronics By V K Mehta

Lecture Plan-26

Semester:-IV Course Code:- EE-202-F
Subject:- Analog Electronics Unit:- SECTION B

S. No.	Topic :-Enhancement & Depletion MOSFET,VMOSFET,FET as VVR	Time Allotted:-
1.	**Introduction –** MOSFET is a device in which gate terminal is insulated from the channel.It has lower capacitance and input impedance much more than JFET.	10 MIN
2	**Division of the Topic** -Construction of n-channel depletion type MOSFET -Construction of p-channel depletion type MOSFET -working of depletion type MOSFET -enhancement type MOSFET -transfer characterstics -VMOSFET	30 MIN
3.	**Conclusion-** In depletion type a channel is constructed and current flows between drain source terminals.while the enhancement MOSFET structure has no channel formed during its construction.	5 MIN
4	**Question / Answer** What is meant by gate to source threshold in E-MOSFET? -the minimum value of gate to source voltage that is required to form inversion layer is termed gate to source threshold. What is full form of MOSFET? -Metal oxide semiconductor field effect transistor	5 MIN

Assignment to be given:-

Reference Readings:-

Reference Readings:-

(1) Electronics Devices & circuits By J B Gupta
(2)Basic Electronics By V K Mehta

Lecture Plan -27

Semester:-IV Course Code:- EE-202-F
Subject:- Analog Electronics Unit:- SECTION B

S. No.	Topic :- FET as VVR	Time Allotted:-
1.	**Introduction –** FET is operated on the region prior to pinch off, then FET behave as voltage variable resistor.	10 min
2	**Division of the Topic** -Low level drain characterstics -voltage variable resistor -Applications of FET as VVR	30 min
3.	**Conclusion-** When FET is used as VVR,it does not require a dc drain voltage from the supply.Thus JFET can be employed as a VVR for small ac signal.	5 min
4	**Question / Answer** Where FET behaves as VVR? -before pinch off voltage What is pinch off voltage? -Value of drain to source voltage at which channel is pinched off.	5 min

Assignment to be given:- To be given after completion of SECTION B.

Reference Readings:-

(1) Electronics Devices & circuits By J B Gupta
(2)Basic Electronics By V K Mehta

Lecture Plan -28

Semester:-IV Course Code:- EE-202-F
Subject:- Analog Electronics Unit:- SECTION B

S. No.	Topic :- Common source amplifier, Source follower	Time Allotted:-
1.	**Introduction –** In common source amplifier configuration,source terminal is common to both input and output configuration.Soucrce follower is used as output follows the input.	10 min
2	**Division of the Topic** -Common source amplifier circuit -input resistance -output resistance -voltage gain -Source follower	30 min
3.	**Conclusion-** Output voltage is 180 degree out of phase in common source amplifier.common drain circuit is called as source follower because of no phase difference.	5 min
4	**Question / Answer** What is input resistance in common source amplifier -ideally infinite What is voltage gain in source follower? -almost unity	5 min

Assignment to be given:- To be given after completion of Section B.

Reference Readings:-

(1) Electronics Devices & circuits By J B Gupta
(2)Basic Electronics By V K Mehta

Lecture Plan-29

Semester:-IV Course Code:- EE-202-F
Subject:- Analog Electronics Unit:- SECTION D

S. No.	Topic :-Regulated Power Supplies	Time Allotted:-
1.	**Introduction** Almost all electronic devices used in electronic circuits need a dc source of power to Operate. The source of DC power is used to establish the dc operating points(Q-Points) for the passive & active electronic devices incorporated in the system. For Portable low-power systems batteries may be used.	10 Minutes
2	**Division of the Topic** -Regulated power supplies -Power supply characteristics -Stabilization -Voltage regulators. -Series voltage regulators -Shunt voltage regulators.	30 Minutes
3.	**Conclusion** Thus regulated power supply is an electronic circuit that is designed to provide a constant dc voltage across load variations irrespective of main fluctuations.	5 Minutes
4	**Question / Answer** (1) What is ordinary power supply? Ans. The combination of transformer, rectifier & filter constitutes to ordinary power supply. (2) What is voltage regulator? Ans. A voltage regulator is a circuit that supplies a constant voltage regardless of variations in load current and ac mains voltage.	5 Minutes

Assignment to be given:- Assignment given on next page.

Reference Readings:-

(1) Electronics Devices & circuits By J B Gupta
(2)Basic Electronics By V K Mehta

Lecture Plan -30

Semester:-IV Course Code:- EE-202-F
Subject:- Analog Electronics Unit:- SECTION D

S. No.	Topic :-Three terminal IC regulators	Time Allotted:-
1.	**Introduction –** IC regulators are relatively inexpensive and provide the programmable output.The regulators can be selected for operation with load currents from hundreds of milliamperes to tens of amperes.	10 min
2	**Division of the Topic** -Fixed output voltage regulators -Adjustable output voltage regulators -Switching regulators -Special regulators	30 min
3.	**Conclusion-** Except for the switching regulators,all other types of regulators are linear regulators.In linear regulator,impedance of active element is varied to provide desired current.	5 min
4	**Question / Answer** How switching regulator work? -a switch is used to on and off. What are drawbacks of linear regulators? -these regulators require step-down transformer and large sized capacitors.	5 min

Assignment to be given:-

1.Draw a simple FET amplifier and explain its working.
2.Explain MOSFET.
3.What is regulated supply?

Reference Readings:-

(1) Electronics Devices & circuits By J B Gupta
(2)Basic Electronics By V K Mehta