INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)
Dundigal, Hyderabad - 500 043

ELECTRONICS AND COMMUNICATION ENGINEERING

DEFINITIONS AND TERMINOLOGY QUESTION BANK

Course Title	**ANALOG AND PULSE CIRCUITS**				
Course Code	AECB11				
Programme	B.Tech				
Semester	IV	ECE			
Course Type	Core				
Regulation	IARE - R18				
Course Structure	**Theory**			**Practical**	
	Lectures	**Tutorials**	**Credits**	**Practicals**	**Credits**
	3	1	4	3	2
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OBJECTIVES:

I	Learn the concepts of high frequency analysis of transistors.
II	Understanding of various types of amplifier circuits such as small signal, cascaded, large signal and tuned amplifiers.
III	Familiarize the Concept of feedback in amplifiers so as to differentiate between negative and positive feedback.
IV	Construct various multivibrators using transistors.

DEFINITIONS AND TERMINOLOGY QUESTION BANK

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
MODULE-I						
1	Define common base amplifier	A single transistor BJT amplifier in which the input signal is applied to the emitter terminal, the output is taken from the collector terminal, and the base terminal is connected to a constant voltage.	Understand	CO 1	CLO 3	AECB11.03
2	Define common collector amplifier	A single transistor BJT amplifier in which the input signal is applied to the base terminal, the output is taken from the emitter terminal, and the collector terminal is connected to a constant voltage.	Understand	CO 1	CLO 1	AECB11.01
3	What is common emitter?	A basic transistor whose emitter is common to both input and output ports.	Understand	CO 1	CLO 1	AECB11.01

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
4	Define common emitter amplifier	A single transistor BJT amplifier in which the input signal is applied to the base terminal.	Understand	CO 1	CLO 1	AECB11.01
5	Define gain–bandwidth product	The product of gain-bandwidth of an amplifier.	Remember	CO 1	CLO 3	AECB11.03
6	Define Miller capacitance	Miller capacitance is an excess amount of capacitance that appears in parallel with the input of an inverting amplifier stage.	Remember	CO 1	CLO 1	AECB11.01
7	Define emitter capacitance.	Diffusion or emitter Capacitance is the capacitance due to transport of charge carriers between two terminals of a device, for example, the diffusion of carriers from anode to cathode in forward bias mode of a diode or from emitter to baseforward-biased junction for a transistor	Understand	CO 1	CLO 1	AECB11.01
8	Define Depletion capacitance	It is the capacitance developed across base and emitter terminals of the transistor under thermal equilibrium condition.	Understand	CO 1	CLO 1	AECB11.01
9	Define Diffusion Capacitance?	It is also called as base storage capacitance. It is due to the presence of minority charge in base region for some time.	Understand	CO 1	CLO 1	AECB11.01
10	Define forward base transit time?	It is defined as the average time a charge carrier spends in crossing the base. Typically its value ranges from 10ps to 100ps.	Understand	CO 1	CLO 1	AECB11.01
11	What is the effect of coupling and bypass capacitors at high frequency?	At high frequencies, these capacitors offer negligible reactance. So, they are replaced by short circuits at high frequencies.	Remember	CO 1	CLO 1	AECB11.01
12	What is beta cutoff frequency?	It is defined as the signal frequency at which short circuit current gain (h_{fe}) of the transistor drops by 3dB from its maximum value	Remember	CO 1	CLO 2	AECB11.02
13	What is transition frequency?	It is the signal frequency at which short circuit current gain of the transistor becomes 0dB. It is also as unity gain frequency or unity gain bandwidth.	Remember	CO 1	CLO 1	AECB11.01
14	Define bandwidth of an amplifier?	Bandwidth is defined as the range of frequencies allowed by an amplifier to produce undistorted amplified output.	Remember	CO 1	CLO 1	AECB11.01
15	What is voltage gain?	Voltage gain is term related to amplifier capacity, amplifier amplify the amplitude of signal it means convert Vin (low) to Vout(high) . It is ratio of this output to input is called voltage gain.	Understand	CO 1	CLO 1	AECB11.01
16	Define gain.	The amount of amplification accomplished by an amplifier circuit. For instance, a gain of 2 would mean the output is scaled to twice the amplitude of the input.	Understand	CO 1	CLO 1	AECB11.01

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
17	Define hybrid π model	The hybrid- π model is a popular circuit model used for analyzing the small signal behavior of bipolar junction and field effect transistors at high frequencies. Sometimes it is also called Giacoletto model because it was introduced by L.J. Giacoletto in 1969.	Understand	CO 1	CLO 1	AECB11.01
18	What is bypass capacitor	A bypass capacitor is a capacitor that shorts AC signals to ground, so that any AC noise that may be present on a DC signal is removed, producing a much cleaner and pure DC signal.	Understand	CO 1	CLO 1	AECB11.01
19	What is coupling capacitor	A coupling capacitor is a capacitor which is used to couple or link together only the AC signal from one circuit element to another. The capacitor blocks the DC signal from entering the second element and, thus, only passes the AC signal.	Remember	CO 1	CLO 1	AECB11.01
20	Define cutoff frequency	The cutoff frequency by definition is the halfpower frequency and is the frequency where the power gain is half at a mid-band frequency – i.e. between the lower and upper cutoff frequencies where frequency effects can be ignored.	Remember	CO 1	CLO 1	AECB11.01
21	Define Alpha cutoff frequency	Alpha cutoff frequency (f_α) is a particular frequency, that occurs when the common base DC current gain (α) drops to 0.707 of its low frequency value.	Understand	CO 1	CLO 1	AECB11.01
22	Define beta cutoff frequency	Beta cutoff frequency (f_β) is a particular frequency that occurs when the common emitter current gain (β) value drops to 0.707 of its low frequency value.	Understand	CO 1	CLO 1	AECB11.01
23	Define gain–bandwidth product	The gain–bandwidth product (designated as GBWP, GBW, GBP, or GB) for an amplifier is the product of the amplifier's bandwidth and the gain at which the bandwidth is measured	Understand	CO 1	CLO 1	AECB11.01
24	Define frequency fT	The frequency at which the magnitude short ckt. current gain of C_E amplifier reduces to unity is defined as frequency f_T.	Remember	CO 1	CLO 1	AECB11.01
25	Define AC coupling	AC coupling a method of connecting two circuits that allows displacement current to flow while preventing conductive currents. Reactive impedance devices..	Remember	CO 1	CLO 2	AECB11.02
26	Define active load.	Active load a transistor connected so as to replace a function that would conventionally be performed by a passive component such as a resistor, capacitor, or inductor	Understand	CO 1	CLO 3	AECB11.03
27	Define amplitude response	Amplitude response the magnitude of the steady-state response of a	Understand	CO 1	CLO 1	AECB11.01

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
		fixed, linear system to a unit-amplitude input sinusoid.				
28	Define DC input power	DC input power the total DC or bias power dissipated in a circuit, which is usually dependent on signal amplitudes, expressed in watts.	Remember	CO 1	CLO 1	AECB11.01
29	Define decibel	Decibel (dB)a unit of measure that de- scribes the ratio between two quantities in terms of a base 10 logarithm.	Remember	CO 1	CLO 1	AECB11.01
30	What is the effect of cascading?	The demand for additional gain and bandwidth at high frequency normally presents the need to cascade amplifying circuits. However cascading technique always has a drawback of shrinking bandwidth. Cascade-cascode amplifier is hereby modified to have an enhanced bandwidth through the application of negative feedback.	Understand	CO 1	CLO 1	AECB11.01
31	What is amplitude stabilization circuit?	A circuit used to obtain a precise oscillation amplitude of oscillators. These circuits are used in instrumentation when it is required to increase the purity of output signal and reduce the frequency depression of the main harmonic by higher harmonics.	Understand	CO 1	CLO 2	AECB11.02
32	Define open loop gain.	he gain of an operational amplifier with no feedback applied (with the negative feedback loop “open”).	Remember	CO 1	CLO 2	AECB11.02
33	Define closed loop gain.	he gain of an opera- tional amplifier circuit with negative feed- back applied (with the negative feedback loop “closed”).	Remember	CO 1	CLO 2	AECB11.02
34	What is multi stage amplifier?	An amplifier consisting of more than one internal amplifying stages is called multi-stage amplifier	Understand	CO 1	CLO 2	AECB11.02
35	What is RC Coupling?	If the connection is made between two adjacent stages in system is through an RC network then that kind of connection is called RC coupling	Understand	CO 1	CLO 3	AECB11.03
36	What is LC coupling?	If the connection is made between two adjacent stages in system is through an LC network then that kind of connection is called LC coupling	Remember	CO 1	CLO 3	AECB11.03
37	What is transformer coupling?	If the connection is made between two adjacent stages in system is through a transformer then that kind of connection is called Transformer coupling	Remember	CO 1	CLO 3	AECB11.03
38	What is direct coupling?	If the connection is made between two adjacent stages in system is directly through a wire then that kind of connection is called direct coupling	Understand	CO 1	CLO 3	AECB11.03

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
39	What is cascading?	The process of connecting two similar stages such that output of preceding stage is connected to input of succeeding stage is called cascading.	Understand	CO 1	CLO 3	AECB11.03
40	What is cascoding?	Cascading of CE and CB configurations respectively is called cascoding. This type of configuration is used in high gain and wide band applications.	Remember	CO 1	CLO 3	AECB11.03
41	What is Darlington Pair?	The multistage amplifier obtained by cascading two CC amplifiers is called Darlington Pair. It is used in impedance matching applications.	Remember	CO 1	CLO 3	AECB11.03
42	What is the effect of cascading on gain of the amplifier?	Cascading between two amplifiers increases the overall gain of the circuit.	Understand	CO 1	CLO 1	AECB11.01
43	What is the effect of cascading on bandwidth of the amplifier?	Cascading between two amplifiers decreases the overall bandwidth of the circuit by increasing lower cutoff frequency and decreasing higher cutoff frequency.	Understand	CO 1	CLO 2	AECB11.02
44	Define cascade amplifier.	A cascade amplifier is any two-port network constructed from a series of amplifiers, where each amplifier sends its output to the input of the next amplifier in a daisy chain. The complication in calculating the gain of cascaded stages is the non-ideal coupling between stages due to loading.	Remember	CO 1	CLO 2	AECB11.02
45	Define cascode amplifier.	The cascode is a two-stage amplifier that consists of a common-emitter stage feeding into a common-base stage.	Remember	CO 1	CLO 2	AECB11.02
46	What is RC Coupled Amplifier	A Resistance Capacitance (RC) Coupled Amplifier is basically a multi-stage amplifier circuit extensively used in electronic circuits. Here the individual stages of the amplifier are connected together using a resistor–capacitor combination due to which it bears its name as RC Coupled.	Understand	CO 1	CLO 2	AECB11.02
47	What is direct coupled amplifier?	A direct-coupled amplifier or DC amplifier is a type of amplifier in which the output of one stage of the amplifier is coupled to the input of the next stage in such a way as to permit signals with zero frequency, also referred to as direct current, to pass from input to output.	Understand	CO 1	CLO 3	AECB11.03
48	What is transformer coupled amplifier?	A transformer coupled amplifier is a type of amplifier in which the output of one stage of the amplifier is coupled to the input of the next stage in the low resistance of one stage or load can be reflected as a high load resistance	Understand	CO 1	CLO 1	AECB11.01

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
		to the previous stage. Transformer coupling is normally used when the load is small. It is mostly used for power amplification.				
49	what is Darlington amplifier	A Darlington pair is two transistors that act as a single transistor but with a much higher current gain. This mean that a tiny amount of current from a sensor, micro-controller or similar can be used to drive a larger load	Understand	CO 1	CLO 2	AECB11.02
50	What is the effect of cascading?	The demand for additional gain and bandwidth at high frequency normally presents the need to cascade amplifying circuits. However cascading technique always has a drawback of shrinking bandwidth. Cascade-cascode amplifier is hereby modified to have an enhanced bandwidth through the application of negative feedback.	Remember	CO 1	CLO 2	AECB11.02
		UNIT-II				
1	What is Current series feedback?	A fraction of the output voltage is applied in series with the input voltage through the feedback circuit. This is also known as series-driven series-fed feedback.	Understand	CO 2	CLO 4	AECB11.04
2	What is Current shunt feedback.	A fraction of the output voltage is applied in series with the input voltage through the feedback circuit. This is also known as series-driven shunt-fed feedback	Remember	CO 2	CLO 4	AECB11.04
3	What is negative resistance?	It is defined as the resistance of a device which offers when operated in the negative resistance region.	Remember	CO 2	CLO 4	AECB11.04
4	Define phase Margin?	It is defined as 180^{o} minus the Magnitude of angle of Aβ at the frequency at which /Aβ/ is unity.	Remember	CO 2	CLO 4	AECB11.04
5	Define gain Margin?	It is defined as the value of /Aβ/ in decibels at the frequency at which the phase angle of Aβ is 180o.	Understand	CO 2	CLO 4	AECB11.04
6	What is a Feedback?	Feedback is basically the concept of taking output and using it as input, either to further drive the system or produce a desired output.	Understand	CO 2	CLO 4	AECB11.04
7	What is Positive feedback?	The feedback in which the feedback energy i.e., either voltage or current is in phase with the input signal and thus aids it is called as Positive feedback.	Understand	CO 2	CLO 4	AECB11.04
8	What is Negative feedback?	The feedback in which the feedback energy i.e., either voltage or current is out of phase with the input and thus opposes it, is called as Negative feedback	Understand	CO 2	CLO 4	AECB11.04

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
9	What is Voltage series feedback?.	A fraction of the output voltage is applied in series with the input voltage through the feedback circuit. This is also known as shunt driven series-fed feedback.	Understand	CO 2	CLO 4	AECB11.04
10	Define degenerative feedback.	An amplifier with positive feedback produces its output to be in phase with the input and increases the strength of the signal. Positive feedback is also called as degenerative feedback or direct feedback. This kind of feedback makes a feedback amplifier, an oscillator.	Understand	CO 2	CLO 4	AECB11.04
11	Define sensitivity.	Sensitivity is defined as the ratio of percentage change in voltage gain with feedback to the percentage change in voltage gain without feedback.	Understand	CO 2	CLO 4	AECB11.04
12	What is transfer gain?	It is the ratio of the output signal to the input signal. It is denoted by A A=Xo/Xi	Understand	CO 2	CLO 4	AECB11.04
13	Define the feedback factor β.	It is the ratio between the feedback voltages to the output voltage of the amplifier. β = Vf/ Vo	Understand	CO 2	CLO 4	AECB11.04
14	What is Barkhausan criterion?	The conditions for oscillator to produce oscillation are given by Barkhausan criterion. They are: (i). the total phase shift produced by the circuit should be 360^{o} or 0^{o} . (ii).The Magnitude of loop gain must be greater than or equal to 1.	Understand	CO 2	CLO 4	AECB11.04
15	What is piezo electric effect?	The piezo electric Crystals exhibit a property that if a mechanical stress is applied across one face the electric potential is developed across opposite face. The inverse is also live. This phenomenon is called piezo electric effect.	Remember	CO 2	CLO 4	AECB11.04
16	Define Tuned amplifiers.	Tuned amplifiers are the amplifiers that are employed for the purpose of tuning.	Understand	CO 2	CLO 4	AECB11.04
17	What is Selection?	Tuning means selecting. Among a set of frequencies available, if there occurs a need to select a particular frequency, while rejecting all other frequencies, such a process is called Selection.	Understand	CO 2	CLO 5	AECB11.05
18	What is resonant circuit?	The tuner circuit is nothing but a LC circuit	Understand	CO 2	CLO 5	AECB11.05
19	What is resonant frequency?	When the reactance of the inductor balances the reactance of the capacitor, in the tuned circuit at some frequency, such a frequency can be called as resonant frequency	Understand	CO 2	CLO 5	AECB11.05

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
20	What is resonant circuit?	The quality factor or Q factor is a dimensionless parameter that describes how under damped an oscillator or resonator is, and characterizes a resonator's bandwidth relative to its centre frequency.	Understand	CO 2	CLO 5	AECB11.05
21	What is impedance of the tuned circuit?	The ratio of supply voltage to the line current is the impedance of the tuned circuit.	Understand	CO 2	CL0 5	AECB11.05
22	What is a Feedback?	Feedback is basically the concept of taking output and using it as input, either to further drive the system or produce a desired output.	Understand	CO 2	CLO 5	AECB11.05
23	What is Positive feedback?	The feedback in which the feedback energy i.e., either voltage or current is in phase with the input signal and thus aids it is called as Positive feedback.	Understand	CO 2	CLO 5	AECB11.05
24	What is Negative feedback?	The feedback in which the feedback energy i.e., either voltage or current is out of phase with the input and thus opposes it, is called as Negative feedback.	Understand	CO 2	CLO 5	AECB11.05
25	What is Voltage series feedback?	A fraction of the output voltage is applied in series with the input voltage through the feedback circuit. This is also known as shunt-driven series-fed feedback.	Understand	CO 2	CLO 5	AECB11.05
26	What is Voltage shunt feedback?	A fraction of the output voltage is applied in parallel with the input voltage through the feedback network. This is also known as shunt-driven shunt-fed feedback.	Understand	CO 2	CLO 5	AECB11.05
27	What is Current series feedback?	A fraction of the output voltage is applied in series with the input voltage through the feedback circuit. This is also known as series-driven series-fed feedback.	Remember	CO 2	CLO 5	AECB11.05
28	What is Current shunt feedback?	A fraction of the output voltage is applied in series with the input voltage through the feedback circuit. This is also known as series-driven shunt-fed feedback	Understand	CO 2	CLO 5	AECB11.05
29	What is Positive feedback?	The feedback in which the feedback energy i.e., either voltage or current is in phase with the input signal and thus aids it is called as Positive feedback.	Understand	CO 2	CLO 5	AECB11.05
30	What is transfer gain?	It is the ratio of the output signal to the input signal. It is denoted by A A=Xo/Xi	Understand	CO 2	CLO 5	AECB11.05
31	Define phase Margin?	It is defined as 180o minus the Magnitude of angle of Aβ at the	Remember	CO 2	CLO 6	AECB11.06

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
		frequency at which /Aβ/ is unity.				
32	What is resonant circuit?	The tuner circuit is nothing but a LC circuit	Understand	CO 2	CLO 5	AECB11.06
33	What is a Feedback?	Feedback is basically the concept of taking output and using it as input, either to further drive the system or produce a desired output.	Understand	CO 2	CLO 5	AECB11.05
34	Define sensitivity.	Sensitivity is defined as the ratio of percentage change in voltage gain with feedback to the percentage change in voltage gain without feedback.	Understand	CO 2	CLO 4	AECB11.04
35	What is negative resistance?	It is defined as the resistance of a device which offers when operated in the negative resistance region.	Remember	CO 2	CLO 4	AECB11.04
36	What is resonant circuit?	The tuner circuit is nothing but a LC circuit	Understand	CO 2	CLO 4	AECB11.04
37	What is Barkhausan criterion?	The conditions for oscillator to produce oscillation are given by Barkhausan criterion. They are: (i). the total phase shift produced by the circuit should be 360^{o} or 0^{o} . (ii).The Magnitude of loop gain must be greater than or equal to 1.	Understand	CO 2	CLO 5	AECB11.05
38	What is impedance of the tuned circuit?	The ratio of supply voltage to the line current is the impedance of the tuned circuit.	Remember	CO 2	CLO 5	AECB11.05
39	What is resonant circuit?	The tuner circuit is nothing but a LC circuit	Understand	CO 2	CLO 5	AECB11.05
40	What is Current shunt feedback.	A fraction of the output voltage is applied in series with the input voltage through the feedback circuit. This is also known as series-driven shunt-fed feedback	Understand	CO 2	CLO 5	AECB11.05
UNIT-III						
1	What is a Power transistor?	A transistor that is manufactured to suit the purpose of power amplification is called as a Power transistor.	Remember	CO 3	CLO 6	AECB11.6
2	Define Voltage Amplifier.	Voltage amplifier is to raise the voltage level of the signal. A voltage amplifier is designed to achieve maximum voltage amplification.	Understand	CO 3	CLO 6	AECB11.6
3	Define Power Amplifier.	Power amplifier is to raise the power level of input signal. It is required to deliver a large amount of power and has to handle large current.	Remember	CO 3	CLO 6	AECB11.6
4	What is Audio Power Amplifiers?	The audio power amplifiers raise the power level of signals that have audio frequency range (20 Hz to 20 KHz). They are also known as Small signal power	Understand	CO 3	CLO 6	AECB11.6

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
		amplifiers.				
5	What is Radio Power Amplifiers?	Radio Power Amplifiers or tuned power amplifiers raise the power level of signals that have radio frequency range (3 KHz to 300 GHz). They are also known as large signal power amplifiers.	Remember	CO 3	CLO 6	AECB11.6
6	What is Class A Power amplifier?	When the collector current flows at all times during the full cycle of signal, the power amplifier is known as class A power amplifier.	Understand	CO 3	CLO 6	AECB11.6
7	What is Class B Power amplifier?	When the collector current flows only during the positive half cycle of the input signal, the power amplifier is known as class B power amplifier.	Remember	CO 3	CLO 6	AECB11.6
8	What is Class C Power amplifier?	When the collector current flows for less than half cycle of the input signal, the power amplifier is known as class C power amplifier.	Understand	CO 3	CLO 6	AECB11.6
9	Define Power dissipation capability.	Power dissipation capability can be defined as the ability of a power transistor to dissipate the heat developed in it. Metal cases called heat sinks are used in order to dissipate the heat produced in power transistors.	Remember	CO 3	CLO 6	AECB11.6
10	Define collector efficiency.	When the DC supply is given by the battery but no AC signal input is given, the collector output at such a condition is observed as collector efficiency.	Understand	CO 3	CLO 7	AECB11.7
11	Define Dead band.	t the zero voltage point, the transition period of switching over the transistors from one to the other, has its effect which leads to the instances where both the transistors are OFF at a time. Such instances can be called as Flat spot or Dead band on the output wave shape.	Remember	CO 3	CLO 7	AECB11.7
12	Define distortion.	Distortion is defined as the change of output wave shape from the input wave shape of the amplifier. An amplifier that has lesser distortion, produces a better output and hence considered efficient.	Understand	CO 3	CLO 7	AECB11.7
13	Define Push-Pull configuration.	the Class A amplifier by using a combinational transistor pair	Remember	CO 3	CLO 7	AECB11.7

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
		called as Push-Pull configuration.				
14	Define heat sink.	A heat sink is a passive heat exchanger that transfers the heat generated by an electronic or a mechanical device to a fluid medium	Understand	CO 3	CLO 7	AECB11.7
15	Define efficiency.	The efficiency of a power amplifier is defined as ratio of average signal power delivered to load to thr average power drawn dc source.	Remember	CO 3	CLO 7	AECB11.7
16	What is Bandwidth?	The range of frequencies at which the voltage gain of the tuned amplifier falls to 70.7% of the maximum gain is called its Bandwidth.	Understand	CO 3	CLO 7	AECB11.7
17	What is crossover distortion?	These are two transistors of the class B push pull amplifier. Now the base input voltage being given to the transistor is sinusoidal, i.e., base drive is sinusoidal. So because of the cut in voltage, even though input voltage is present, output will not be transmitted or there is distortion in the output current of the transistor. This is known as crossover distortion.	Remember	CO 3	CLO 7	AECB11.7
18	What is Stagger Tuned Amplifier?	Stagger Tuned Amplifiers are used to improve the overall frequency response of tuned Amplifiers.	Understand	CO 3	CLO 7	AECB11.7
19	What is a Power transistor?	A transistor that is manufactured to suit the purpose of power amplification is called as a Power transistor.	Remember	CO 3	CLO 7	AECB11.7
20	Define Voltage Amplifier.	Voltage amplifier is to raise the voltage level of the signal. A voltage amplifier is designed to achieve maximum voltage amplification.	Remember	CO 3	CLO 7	AECB11.7
21	Define Amplifier.	An amplifier is an electronic device that increases the voltage, current, or power of a signal. Amplifiers are used in wireless communications and broadcasting,	Understand	CO 3	CLO 8	AECB11.8
22	Define single stage Amplifier?	When in an amplifier circuit only one transistor is used for amplifying a weak signal, the circuit is known as single stage amplifier	Understand	CO 3	CLO 8	AECB11.8
23	Define multi stage Amplifier.	In Multi-stage amplifiers, the output of first stage is coupled to	Understand	CO 3	CLO 8	AECB11.8

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
		the input of next stage using a coupling device. These coupling devices can usually be a capacitor or a transformer. This process of joining two amplifier stages using a coupling device can be called as Cascading.				
24	Define RC coupling.	It is the most Commonly used Coupling Between the two stages of a cascaded or multistage amplifier	Understand	CO 3	CLO 8	AECB11.8
25	Define common collector amplifier.	A common collector amplifier (also known as an emitter follower) is one of three basic single-stage bipolar junction transistor (BJT) amplifier topologies, typically used as a voltage buffer. In this circuit the base terminal of the transistor serves as the input, the emitter is the output.	Understand	CO 3	CLO 8	AECB11.8
26	What is the total phase shift provided by each RC section of feedback network in RC Phase shift oscillator?	60 degrees	Understand	CO 3	CLO 8	AECB11.8
27	Define Non-Sinusoidal Oscillator	The oscillators that produce an output having a square, rectangular or saw-tooth waveform are called non-sinusoidal or relaxation oscillators.	Remember	CO 3	CLO 8	AECB11.8
28	Define Sinusoidal Oscillator	The oscillators that produce an output having a sine waveform are called sinusoidal or harmonic oscillators.	Understand	CO 3	CLO 8	AECB11.8
29	What is the total phase shift provided by the feedback network in RC Phase shift oscillator?	180 degrees	Remember	CO 3	CLO 8	AECB11.8
30	Define Oscillator.	An oscillator generates output without any ac input signal. An electronic oscillator is a circuit which converts dc energy into ac at a very high frequency. An amplifier with a positive feedback can be understood as an oscillator.	Remember	CO 3	CLO 8	AECB11.8
31	Define Sinusoidal Oscillator.	The oscillators that produce an output having a sine waveform are called sinusoidal or harmonic oscillators. Such oscillators can provide output at frequencies ranging from 20 Hz to 1 GHz.	Understand	CO 3	CLO 9	AECB11.9

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
32	Define Non-Sinusoidal Oscillator.	The oscillators that produce an output having a square, rectangular or saw- tooth waveform are called non-sinusoidal or relaxation oscillators. Such oscillators can provide output at frequencies ranging from 0 Hz to 20 MHz.	Remember	CO 3	CLO 9	AECB11.9
33	Define Tuned Circuit Oscillators.	These oscillators use a tuned-circuit consisting of inductors (L) and capacitors (C) and are used to generate high-frequency signals. Thus they are also known as radio frequency R.F. oscillators. Such oscillators are Hartley, Colpitts, Clapp-oscillators etc.	Understand	CO 3	CLO 9	AECB11.9
34	Define RC Oscillators.	There oscillators use resistors and capacitors and are used to generate low or audio-frequency signals. Thus they are also known as audio-frequency (A.F.) oscillators. Such oscillators are Phase –shift and Wein-bridge oscillators.	Remember	CO 3	CLO 9	AECB11.9
35	Define Crystal Oscillators.	These oscillators use quartz crystals and are used to generate highly stabilized output signal with frequencies up to 10 MHz. The Piezo oscillator is an example of a crystal oscillator.	Understand	CO 3	CLO 9	AECB11.9
36	Define Negative-resistance Oscillator.	These oscillators use negative-resistance characteristic of the devices such as tunnel devices. A tuned diode oscillator is an example of a negative-resistance oscillator.	Understand	CO 3	CLO 9	AECB11.9
37	What is Thermal runaway?	The self destruction of an unstabilised transistor is known as thermal runaway.	Remember	CO 3	CLO 9	AECB11.9
38	Define distortion?	Distortion is defined as the change of output wave shape from the input wave shape of the amplifier.	Remember	CO 3	CLO 9	AECB11.9
39	Define heat sink?	A heat sink is a passive heat exchanger that transfers the heat generated by an electronic or a mechanical device to a fluid medium	Understand	CO 3	CLO 9	AECB11.9
40	What is cross over distortion?	This is caused by the nonlinear input characteristics of the transistor. In the region of small input current, the output ismuch smaller. This effect is called cross over distortion.	Remember	CO 3	CLO 9	AECB11.9
UNIT-IV						
1	Define linear network.	A network comprising of linear elements is called linear network.	Remember	CO 4	CLO 10	AECB11.10

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
2	Define linear wave shaping.	A nonsinusoidal signal is transmitted through a linear network, the wave form of the output voltage bears no resemblance to the wave form of the input signal.	Remember	CO 4	CLO 10	AECB11.10
3	Define time constant of RC circuit.	Time constant of the RC circuit is the time required for the output voltage across the capacitor to attain 63.2% of the final steady value.	Understand	CO 4	CLO 10	AECB11.10
4	What is cut-off frequency?	The cut-off frequency is the frequency at which the gain is 0.707 of its maximum gain.	Remember	CO 4	CLO 10	AECB11.10
5	What is RC Differentiator?	RC Differentiator is a circuit the output is proportional to the time derivative of the input.	Remember	CO 4	CLO 10	AECB11.10
6	Define circuit.	A circuit is a path between two or more points along which an electrical current can be carried.	Remember	CO 4	CLO 10	AECB11.10
7	Define fall time.	The time required for output (IC) to fall from 90% to 10% of maximum value(IC(sat)) is termed as fall time.	Understand	CO 4	CLO 10	AECB11.10
8	Define pulse width.	The time duration of the output pulse measured between two 50% levels of rising and falling waveform is defined as Pulse Width.	Remember	CO 4	CLO 10	AECB11.10
9	Define %tilt of RC circuit.	The decay in the amplitude of the output voltage wave due to the input voltage maintaining a constant level.	Remember	CO 4	CLO 10	AECB11.10
10	What is High Pass RC?	A high-pass RC is an electronic circuit that passes signals with a frequency higher than cutoff region and attenuates signals with frequencies lower than the cutoff region.	Remember	CO 4	CLO 10	AECB11.10
11	Define wave shaping	The process of altering the signal transmitting through an electronic network is called as wave shaping.	Understand	CO 4	CLO 10	AECB11.10
12	What is RC Integrator?	The output of the RC circuit is proportional to the time integral of the input.	Remember	CO 4	CLO 10	AECB11.10
13	What is wave shaping ?	A wave shaping circuit is the one which can be used to change the shape of a waveform from alternating current or direct current.	Remember	CO 4	CLO 10	AECB11.10
14	Define transient response.	A transient response is the response of a system to a change from equilibrium or a steady state.	Remember	CO 4	CLO 10	AECB11.10
15	Define Steady state response.	A steady-state response is the behavior of a circuit after a long time when steady conditions have been reached after an external excitation.	Understand	CO 4	CLO 11	AECB11.11
16	Define time constant of RC circuit	Time constant of the RC circuit is the time required for the output voltage across the capacitor to attain 63.2% of the final steady value.	Remember	CO 4	CLO 11	AECB11.11
17	Define filtering.	Filtering is the process of attenuating the unwanted signal or to reproduce the selected portions of the frequency components of a particular signal.	Understand	CO 4	CLO 11	AECB11.11

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
18	What is filter.	A Filter is a circuit that can remove unwanted portions of a signal at its input.	Remember	CO 4	CLO 11	AECB11.11
19	Define attenuation.	The process of reduction in the strength of the signal is also termed as Attenuation.	Understand	CO 4	CLO 11	AECB11.11
20	What is low pass filter.	A Filter circuit which allows a set of frequencies that are below a specified value can be termed as a Low pass filter.	Remember	CO 4	CLO 11	AECB11.11
21	Define unidirectional sampling gate.	If the input signal consists essentially of a uni directional pulse, the sampling gate is respond to a signal of only one polarity is called as unidirectional gate.	Understand	CO 4	CLO 11	AECB11.11
22	Define control voltage.	Voltage required to keep both the diodes OFF when no sampling takes place.	Remember	CO 4	CLO 11	AECB11.11
23	What is high pass filter.	A Filter circuit which allows a set of frequencies that are above a specified value can be termed as a High pass filter.	Remember	CO 4	CLO 11	AECB11.11
24	What is sampling gate?	It is a basically transmission circuit which allows an input signal to pass it during a selected interval and blocks its passage outside this time interval.	Understand	CO 4	CLO 11	AECB11.11
25	What is gating signal?	The interval of time is selected by means of an externally applied signal termed as gating signal.	Remember	CO 4	CLO 11	AECB11.11
26	Define transmission Period.	During a selected time interval the output must be equal to the input signal is called as transmission period.	Understand	CO 4	CLO 11	AECB11.11
27	What is bidirectional sampling gate?	A sampling gate is required to handle the excursions of the signals of both polarities, it is termed as bidirectional gate.	Remember	CO 4	CLO 12	AECB11.12
28	Define gain of sampling gate.	The gain of sampling gate is defined as the ratio of output voltage to the input voltage.	Remember	CO 4	CLO 12	AECB11.12
29	Define pedestal of sampling gate.	Difference between the outputs when the output is under at non transmission period and output is under at transmission period at vs=0	Remember	CO 4	CLO 12	AECB11.12
30	Define transmission Period.	During a selected time interval the output must be equal to the input signal is called as transmission period.	Understand	CO 4	CLO 12	AECB11.12
31	Define rise Time.	It is defined as the time taken by the output voltage waveform of a low pass circuit excited by a step input to the rise from 10% to 90% of its final value.	Understand	CO 4	CLO 12	AECB11.12
32	What is a peaking circuit?	The process of converting pulse into pips by means of a circuit of very short time constant is called peaking.	Understand	CO 4	CLO 12	AECB11.12
33	What is a ringing circuit?	A ringing circuit is a circuit which can proved as nearly and un-damped oscillations as possible.	Remember	CO 4	CLO 12	AECB11.12
34	What is the principle of sampling gate.	It is transmission circuit which allows an input signal to pass through it during a selected time interval and blocks its passage outside of this time interval.	Remember	CO 4	CLO 12	AECB11.12

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
		The interval of time selected by gate signal. It is generally a rectangular pulse. It uses either series switch or parallel switch.				
35	What are the other names of sampling gates.	Sampling gates can also called as time selection gates, linear gate and transmission gate.	Understand	CO 4	CLO 12	AECB11.12
36	What are the different types of sampling gates.	There two types sampling gates 1. Unidirectional sampling gates 2. Bi-directional sampling gates We can design by using diode or transistor.	Understand	CO 4	CLO 12	AECB11.12
37	Define storage time	It is the time interval between the instant at input IB=0and the instant when output IC has fallen to 90% of its max value.	Remember	CO 4	CLO 12	AECB11.12
38	Define delay time	It is the time required for the output current(IC) to rise from 0 to 10% of the steady state output(IC(sat)).	Remember	CO 4	CLO 12	AECB11.12
39	What do you mean by differentiator?	In electronics, a differentiator is a circuit that is designed such that the output of the circuit is approximately directly proportional to the rate of change (the time derivative) of the input.	Understand	CO 4	CLO 12	AECB11.12
40	What is an integrator circuit?	In an integrating circuit, the output is the integration of the input voltage with respect to time.	Understand	CO 4	CLO 12	AECB11.12
		UNIT-V				
1	What is the self biased Multivibrator?	The emitter resistance provides the necessary bias to the transistor to make ON or OFF.	Remember	CO 5	CLO 13	AECB11.13
2	What is Fixed bias binary?	The circuit uses fixed bias voltage to make the transistor ON or OFF.	Understand	CO 5	CLO 13	AECB11.13
3	Define transistor.	It transfers the low resistance device to the high resistance device.	Remember	CO 5	CLO 13	AECB11.13
4	Define bistable circuit.	A circuit consists of two stable states.	Understand	CO 5	CLO 13	AECB11.13
5	Define DC coupling.	DC coupling means resistive coupling and DC coupling allows both AC and DC signals.	Remember	CO 5	CLO 13	AECB11.13
6	What is AC coupling?	AC coupling means capacitive coupling for multivibrators.	Remember	CO 5	CLO 13	AECB11.13
7	Define loop gain.	The loop gain is the gain associated with the path making that loop when a signal is transmitted through it.	Understand	CO 5	CLO 13	AECB11.13
8	What is output swing?	The output swing means the change in collector voltage resulting from a transition from one state to other.	Remember	CO 5	CLO 13	AECB11.13
9	What is active region?	Active region is one in which Base emitter junction is forward biased and Base Collector junction will be reverse biased in a transistor	Remember	CO 5	CLO 13	AECB11.13
10	Define open circuit.	An electrical circuit in which the continuity is broken so that current does not flow.	Understand	CO 5	CLO 13	AECB11.13
11	Define monostable multivibrator.	When a trigger pulse is applied to the input circuit, the circuit state is changed	Remember	CO 5	CLO 13	AECB11.13

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
		abruptly to unstable state for a predetermined time after which the circuit returned to its original stable state automatically.				
12	Define Astable multivibrator.	Astable multivibrator is a multivibrator in which neither state is stable. There are two temporary states.	Understand	CO 5	CLO 13	AECB11.13
13	Define resolving time.	It is the minimum time interval between two consecutive trigger pulses and equals to transition time plus the settling time.	Understand	CO 5	CLO 13	AECB11.13
14	What is Schmitt trigger?	In a circuit which converts sine wave into a square wave.	Remember	CO 5	CLO 14	AECB11.14
15	What is resolution time?	Resolution time means the sum of the transition time and settling time.	Understand	CO 5	CLO 14	AECB11.14
16	What is meant by unsymmetrical triggering?	If two signals from two separate trigger source are used, one signal to cause the change in one direction. i.e. from ON to OFF and the other signal cause change from OFF to ON.	Remember	CO 5	CLO 14	AECB11.14
17	What is delay time?	The time required for the current to rise to 10% of its maximum steady state value.	Understand	CO 5	CLO 14	AECB11.14
18	Define Upper trigger point (UTP).	UTP is the point at which the transistor enters into conduction. i.e. OFF to ON state.	Remember	CO 5	CLO 14	AECB11.14
19	Define Lower trigger point (LTP).	LTP is the point at which the transistor enters from ON to OFF state.	Remember	CO 5	CLO 14	AECB11.14
20	Define hysteresis.	The input voltage difference between UTP and LTP is known as hysteresis.	Understand	CO 5	CLO 14	AECB11.14
21	What is cut off region?	In this region both junctions of the transistor are reverse biased.	Understand	CO 5	CLO 14	AECB11.14
22	Define short circuit.	A connection of comparatively low resistance accidentally or intentionally made between points on a circuit between which the resistance is normally much greater.	Understand	CO 5	CLO 14	AECB11.14
23	Define voltage.	It is a quantitative expression of the potential difference in charge between two points in an electrical field.	Understand	CO 5	CLO 14	AECB11.14
24	What is saturation region?	In a transistor, both emitter base and collector base junctions are forward biased.	Understand	CO 5	CLO 14	AECB11.14
25	Define loading of a binary.	Connecting external resistor at the collectors of the binary and drawing currents from them is called loading the binary.	Understand	CO 5	CLO 14	AECB11.14
26	What is commutating capacitor?	It can be used to reduce the transition time in a low to high level and vice versa.	Remember	CO 5	CLO 14	AECB11.14
27	Define coupling in electronics.	Coupling is the desirable or undesirable transfer of energy from one medium to another medium.	Remember	CO 5	CLO 15	AECB11.15
28	Define unilateral circuit.	In unilateral circuits, the property of circuit changes with the change of direction of supply voltage or current.	Understand	CO 5	CLO 15	AECB11.15
29	Define one shot.	When triggering is applied, the device returns to its original state after a time T.	Remember	CO 5	CLO 15	AECB11.15

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
30	Define regenerative circuit.	A regenerative circuit is an amplifier and it uses positive feedback.	Remember	CO 5	CLO 15	AECB11.15
31	What is multivibrator?	Multivibrators are basically regenerative circuits comprising two cross coupled devices like BJTs.	Understand	CO 5	CLO 15	AECB11.15
32	Define stable state.	It is the state in which the device can stay permanently and only when a proper external triggering signal is applied, it will change its state.	Remember	CO 5	CLO 15	AECB11.15
33	Define quasi-stable state.	It is a temporarily stable state. The device will automatically come out of quasi stable state after a pre defined time period.	Remember	CO 5	CLO 15	AECB11.15
34	What is Bistable Multivibrator?	It can remain indefinitely in any one of the two stable states.	Understand	CO 5	CLO 15	AECB11.15
35	Define transition time.	The time interval during which the conduction transfer from one transistor to another transistor is defined as transition time.	Remember	CO 5	CLO 15	AECB11.15
36	Define Settling time.	It is defined as the time required for recharging of commutating capacitors after transfer of conduction.	Remember	CO 5	CLO 15	AECB11.15
37	Define Symmetrical triggering.	A single source, triggering can be effected in both directions is called as symmetrical triggering.	Understand	CO 5	CLO 15	AECB11.15
38	Define hysteresis voltage.	The voltage difference between UTP and LTP, represented by the loop width is called as hysteresis voltage.	Remember	CO 5	CLO 15	AECB11.15
39	Define triggering.	It is the process of changing the state of multivibrator by applying an external pulse is termed as triggering.	Remember	CO 5	CLO 15	AECB11.15
40	Define biasing.	Biasing is the process of application of external voltage in order to operate the device in a desired way.	Understand	CO 5	CLO 15	AECB11.15

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