Question Bank

UNIT-I

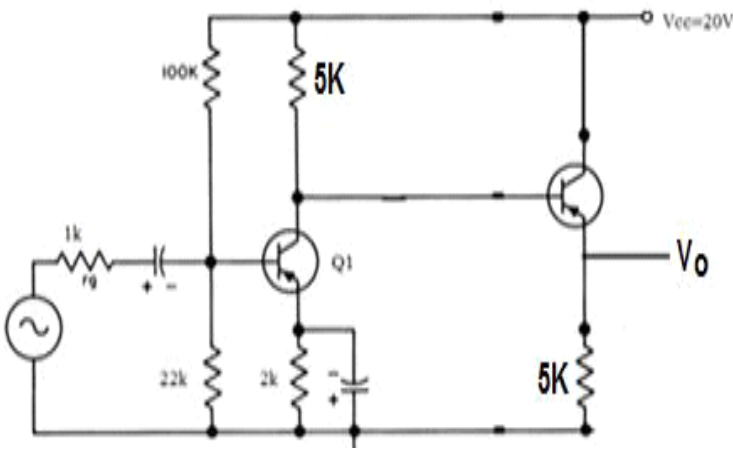
S.No		Questions	BT	CO	PO
Part – A (Short Answer Questions)					
1		What is bias? what is the need for biasing	2	1	1
2		What are the conditions for operating point?	3	1	1,2
3		Draw a small signal low frequency model of a transistor?	2	1	1,2
4		Mention important characteristics of CE amplifier?	2	1	1,2,3
5		Write the typical values of transistor configuration in h-parameter model.	3	1	1,2
Part – B (Long Answer Questions)					
6	a)	Draw the fixed bias circuit and derive the stability factor.	2	1	1
7	a)	Discuss the low frequency response of BJT amplifier and the effect of coupling and bypass capacitors.	2	1	1,2
	b)	What is transistor amplifying action?	3	1	1,2
8	a)	Explain AC and DC load line analysis in BJT	2	1	1,2,3

UNIT-III

S.No		Questions	BT	CO	PO
Part – A (Short Answer Questions)					
1		Write the Expression for basic current equation in MOSFET.	3	2	2,3
2		Compare the AC circuit characteristics of CS, CG,CD.	3	2	2,3
3		Distinguish between enhancement mode and depletion mode of MOSFET.	2	2	2,3
4		Draw the frequency response of FET Amplifier.	3	2	2,3
5		What the basic characteristics of JFET.	4	2	2,3
Part – B (Long Answer Questions)					
6	a)	Draw the fixed bias circuit and derive the stability factor.	3	2	2,3
7	a)	Discuss the low frequency response of BJT amplifier and the effect of coupling and bypass capacitors.	3	2	2,3
	b)	What is transistor amplifying action?	2	2	2,3
8	a)	Explain AC and DC load line analysis in BJT	3	2	2,3

UNIT-III

S.No	Questions	BT	CO	PO
Part – A (Short Answer Questions)				
1	List out different types of coupling used in multistage amplifiers.	2	3	1
2	What are the conditions for approximate h parameter model?	3	3	1,2
3	What is the use of a transformer in a multi stage amplifier?	2	3	1,2
4	Write the significance of gain bandwidth product of an amplifier	2	3	1,2,3
5	What is CE short circuit current gain	2	3	1,2
6	Three amplifiers of gain 20dB, 30dB and 40dB are connected together. Find the overall gain in dB and in normal units.	3	3	1,2

7		.Write short notes on Hybrid Π capacitances	2	3	1,2,3
8		What is thermal runaway	2	3	1
9		What is the concept of Miller's Theorem related to amplifiers	2	3	1,2
10		.What is Cas-code Amplifier?	1	3	1,2,3
11	a)	What is non-linear distortion? List the causes for this type of distortion in amplifiers.	2	3	1
	b)	Compare all the three types of coupling mechanisms	2	3	1,2
12	a)	What do you mean by Amplitude,Phase & Frequency distortions in transistor amplifiers.	2	3	1,2
	b)	How the amplifiers are classified?	2	3	1,2
13	a)	Draw the circuit diagram of Direct Coupled Amplifier and explain its operation in detail.	2	3	1,2,3
	b)	Draw the hybrid π equivalent circuit of a transistor in CE configuration and explain the various parameters in it.	4	3	1,2,3
14	a)	Explain the working of cascade amplifier with neat circuit diagram.	2	3	1,2
	b)	Prove that gm=Ic/V_T	3	3	1,2
15	a)	For the two stage amplifier of the figure 1, calculate the input and output impedance, and the individual and overall voltage gains. Assume hfe =50, hie=1.1kΩ, hre = hoe= 0. 	3	3	1,2,3
	b)	A transistor biased at 20mA, 20V, it has the h-parameters at room temperature hie =500Ω, hfe=100, hre =10-4, hoe =4×10-5℧. It has fT =50MHz and CC=3pF. Find all the values of hybrid π components.	3	3	1,2,3
16	a)	Derive the expression for the Short circuit current gain of CE amplifier	4	3	1,2,3
	b)	Draw the circuit diagram of Darlington emitter follower and derive the expression for input impedance.	4	3	1,2,3

UNIT–IV

S.No	Questions	BT	CO	PO
Part – A (Short Answer Questions)				
1	What is the concept of Positive and Negative Feedback	2	4	1

2		What is effect of negative feedback on amplifier gain?	2	4	1,2
3		.Explain different Classification of Feedback Amplifiers.	2	4	1,2
4		Draw the four topologies of feedback amplifiers	3	4	1,2
5		List out the advantages of negative feedback amplifiers	2	4	1,2
6		Distinguish between regenerative and degenerative feedback in amplifiers	2	4	1,2
7		Draw the equivalent circuit of current amplifier and what are its ideal values of Ri and RO	3	4	1,2,3
8		If negative feedback with a feedback factor, β of 0.01 is introduced into an amplifier with a a gain of 200 and bandwidth of 6 MHz, obtain the resulting bandwidth of the feedback amp	3	4	1,2,3
9		A voltage amplifier is characterized by an open loop voltage gain of 100. Input resistance of 50KΩ and output resistance of 2KΩ, Negative feedback of 10% of output voltage is introduced in series with the input to bring the distortion below acceptable level. Find the modified values of these parameters.	3	4	1,2
10		Draw the equivalent circuit of Transresistance amplifier and what are its ideal values of Ri and RO	3	4	1,2,3
Part – B (Long Answer Questions)					
11	a)	Draw the equivalent circuit of current amplifier and what are its ideal values of Ri and RO	4	4	1,2,3
	b)	Draw a feedback amplifiers in block diagram form and explain each block giving its function	2	4	1,2
12	a)	List the advantages of negative feedback in amplifiers	2	4	1,2
	b)	An amplifier has a gain of 50 with negative feedback. For a specified output voltage, if the input required is 0.1V without feedback and 0.8V with feedback, Compute β and open loop gain	3	4	1,2,3
13	a)	Compare the characteristics of feedback amplifiers in all the four configurations	2	4	1,2
	b)	Show that current–series negative feedback increases the input impedance and increases the output impedance	4	4	1,2,3
14	a)	Draw the equivalent circuit of Voltage amplifier and what are its ideal values of Ri and RO	4	4	1,2,3
	b)	Draw the equivalent circuit of Transconductance amplifier and what are its ideal values of Ri and RO	4	4	1,2,3
15	a)	Show that voltage–series negative feedback increases the input impedance and decreases the output impedance	4	4	1,2,3
	b)	Draw the voltage series feedback circuit diagram derive its parameters	4	4	1,2,3
16	a)	How does negative feedback effects the bandwidth of amplifier	3	4	1,2
	b)	Draw the current series feedback circuit diagram derive its parameters	4	4	1,2,3

UNIT–V

S.No	Questions	BT	CO	PO

Part – A (Short Answer Questions)					
1		Define Oscillator	2	4	1
2		State Barkhausen criterion of oscillator	1	4	1,2
3		Define Piezo Electric effect	2	4	1,2
4		What are types of feedback oscillators	2	4	1,2
5		Distinguish between RC oscillator and Wien Bridge oscillator	2	4	1,2
6		Compare RC oscillator and LC oscillator	2	4	1,2
7		Mention any two factors that affect the frequency stability of oscillator	2	4	1,2
8		Name the substances that exhibit Piezo electric effect	1	4	1,2
9		What do you mean by crystal oscillator	2	4	1,2
10		Define positive feedback	1	4	1,2
Part – B (Long Answer Questions)					
11	a)	Derive an expression for frequency of oscillations of a RC phase shift oscillator using transistor	4	4	1,2,3
	b)	A colpitts oscillator is designed with C1 = 100pF and C2=7500pF. Find the range of inductance values if the frequency of oscillations vary between 950KHz and 2050KHz.	3	4	1,2,3
12	a)	Derive an expression for frequency of oscillations of an op-amp wien bridge oscillator	4	4	1,23,
	b)	Derive the expression for the frequency of Hartely oscillator.	4	4	1,2,3
13	a)	Derive the expression for the frequency of colpitts oscillator.	4	4	1,2,3,4
	b)	Classify oscillators	2	4	1,2
14	a)	Derive the expression for the Generalised oscillator oscillator	4	4	1,2,3
	b)	In a colpitts oscillatorC1=0.2uf and C2=0.01uf If the frequency of oscillation is 10Khz find the value of inductor Also find the required gain for oscillation	3	4	1,2,3
15	a)	State the factors that affect the frequency stability of oscillators	2	4	1,2
	b)	Derive an expression for frequency of oscillations of a RC phase shift oscillator using FET	4	4	1,2,3,4
16	a)	Explain about crystal oscillators	2	4	1,2
	b)	Derive an expression for frequency of oscillations of a transistorised wien bridge oscillator	4	4	1,2,3,4