

Department of ECE

II B. Tech. Mid Question Bank(R22 Regulations)

Academic Year: 2024-25

Semester: III

Subject: Electronic Devices And Circuits (22EC301PC)

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PART-A

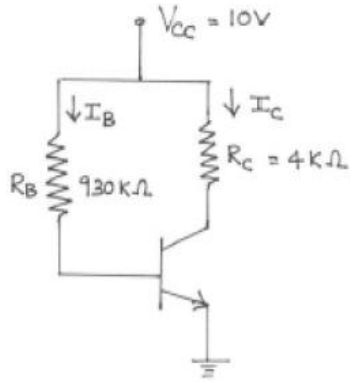
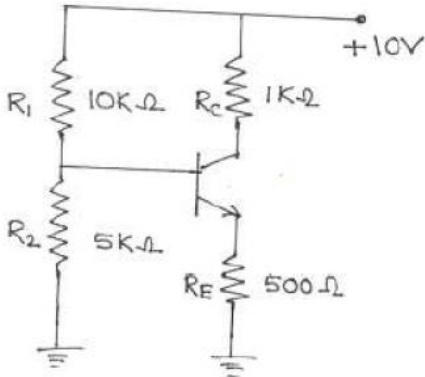
MID-I-QUESTIONS				
Q. No.	Short Answer Questions	Marks	BL	CO
1	Sketch the symbol of photo diode	2 M	L3	CO1
2	Sketch the symbol of varactor diode	2 M	L3	CO1
3	Sketch the symbol of LED	2 M	L3	CO1
4	Sketch the symbol of SCR	2 M	L3	CO1
5	Sketch the symbol of UJT	2 M	L3	CO1
6	Sketch the symbol of Tunnel diode	2 M	L3	CO1
7	Define Transistor Biasing?	2 M	L1	CO2
8	Define Stabilization?			
9	State the Load Line?	2 M	L1	CO2
10	Describe thermal runaway?	2 M	L2	CO2
11	Write the different stability factors formulas of S, S' and S''.	2 M	L2	CO2
12	Define thermal stability	2 M	L1	CO2
13	Tabulate the typical values of h-parameters in CE, CB and CC Configurations?	2 M	L1	CO3
14	Write the general h-parameter formulas of A_i , R_i , A_v and R_o for CE Amplifier.	2 M	L1	CO3
15	Draw the general h-parameter equivalent circuit diagram	2 M	L4	CO3
MID-II QUESTIONS				
16	Draw the h-parameter equivalent circuit diagram of CE Amplifier	2 M	L4	CO3

17	Draw the h-parameter equivalent circuit diagram of CB Amplifier	2 M	L4	CO3
18	Draw the h-parameter equivalent circuit diagram of CC Amplifier	2 M	L4	CO3
19	Define what you meant by a multistage amplifier?	2 M	L1	CO4
20	A two stage amplifier with Input stage gain 20 and output stage gain is 40. Find out overall two stage gain of multistage amplifier?	2 M	L3	CO4
21	Name the different distortions arises in amplifiers?	2 M	L1	CO4
22	Classify the different coupling schemes in amplifiers?	2 M	L2	CO4
23	Write the final expression of Gain Bandwidth Product for voltage.	2 M	L4	CO4
24	Write the final expression of f_{α} and f_{β} .	2 M	L4	CO4
25	Sketch the small signal Model for FET?	2 M	L1	CO5
26	Define pinch off voltage. Give its expression.	2 M	L1	CO5
27	Sketch the symbols of MOSFET in Enhancement and depletion Mode?	2 M	L3	CO5
28	List the Expression of the Gain, R_i & R_o of CD Amplifier	2 M	L1	CO5
29	A Common Gate amplifier with $R_d=2K\Omega$, $r_d=35K\Omega$, $g_m=1.43*10^{-3}mho$. Evaluate Voltage Gain.	2 M	L3	CO5
30	Compare Enhancement and Depletion MOSFET.	2 M	L2	CO5

GROUP OF INSTITUTIONS
EXPLORE TO INVENT

PART-B

MID-I QUESTIONS				
Q. No.	Long Answer Questions	Marks	BL	CO
1	Explain the principle operation and characteristics of SCR	4M	L2	CO1
2	Explain the principle operation and characteristics of Varactor Diode	4M	L2	CO1
3	Explain the principle operation and characteristics of LED	4M	L2	CO1
4	Explain the principle operation and characteristics of UJT	4M	L2	CO1
5	Explain how UJT works as Relaxation Oscillator	4M	L2	CO1

6	Explain the principle operation and characteristics of Photo Diode	4M	L2	CO1
7	<p>a. Explain the principle operation and characteristics of Varactor Diode</p> <p>b. List the applications of Varactor Diode and UJT</p>	8M	L2	CO1
8	<p>a. Explain the principle operation and characteristics of SCR</p> <p>b. List the applications of SCR and LED</p>	8M	L2	CO1
9	<p>a. Explain the principle operation and characteristics of Varactor Diode</p> <p>b. List the applications of Varactor Diode and LED</p>	8M	L2	CO1
10	Define what is biasing and Explain what is the need for biasing	4M	L1	CO2
11	Define what is stabilization and derive the generalized stability factor expression.	4M	L1	CO2
12	With neat sketches explain fixed bias and derive the expression for its stability factor.	4M	L2	CO2
13	With the neat sketches explain the collector to base bias method and also derive the expression for stability factor S.	4M	L2	CO2
14	<p>Calculate the operating point for below transistor circuit with $\beta=100$ and biased by fixed bias.</p> 	4M	L2	CO2
15	Explain briefly about thermal runaway and thermal stability	4M	L2	CO2
16	<p>a. With the neat sketches explain voltage divider bias and also derive the expression for stability factor S.</p> <p>b. For the circuit shown below, determine the value of I_C and V_{CE}. Assume $V_{BE}=0.7V$ and $\beta=100$</p> 	8M	L2	CO2

17	<p>a. With the neat sketches explain self bias and also derive the expression for stability factor S.</p> <p>b.</p>	8M	L2	CO2
18	<p>a. Briefly Explain about biasing compensation techniques.</p> <p>b. Describe about thermal runaway</p>	8M	L2	CO2
19	Draw transistor hybrid model and derive the expressions for the Current gain, input Impedance.	4 M	L4	CO3
20	Draw the h-parameter equivalent circuit of CE amplifier and derive the expressions for the Current gain, output admittance, voltage gain and output admittance.	4 M	L4	CO3
21	Draw the h-parameter equivalent circuit of CB amplifier and derive the expressions for the Current gain, input Impedance, voltage gain and output admittance.	4 M	L4	CO3
MID-II QUESTIONS				
22	Explain how transistor works an amplifier and List the applications of CB, CE and CC Amplifiers.	4 M	L3	CO3
23	A CE amplifier having $R_s=1000\Omega$, $R_L=1000\Omega$, $h_{ie}= 1K\Omega$, $h_{re}=10*10^{-4}$, $h_{fe}=-50$ and $h_{oe}=25*10^{-6}\mu A/v$. Calculate A_i , Z_i , A_v , Y_o .	4 M	L3	CO3
24	With neat sketches low frequency response of CE Amplifier- effect of coupling and bypass capacitors.	4 M	L3	CO3
25	Sketch the general structure of Multistage Amplifier and explain its frequency response?	4 M	L3	CO4
26	Sketch the neat diagram of two stage RC coupled Amplifier and explain its frequency response?	4 M	L3	CO4

27	Sketch the necessary diagrams and perform the analysis of Cascode Amplifier?	4 M	L3	CO4
28	Explain in details about different coupling schemes in amplifiers?	4 M	L3	CO4
29	Write the expressions of overall voltage gain and phase angle of multistage amplifiers	4 M	L3	CO4
30	CE short circuit current gain ($f\alpha$), CE short circuit current gain with load($f\beta$)	4 M	L5	CO4
31	Sketch the necessary diagrams and perform the Analysis of Darlington Pair Amplifier?	8 M	L5	CO4
32	Sketch the necessary diagrams and derive Hybrid π -model CE transistor model resistive parameters?	8 M	L5	CO4
33	Define what is Gain Bandwidth Product , and write expression with necessary derivations.	8 M	L5	CO4
34	With neat sketches explain the construction, operation and drain characteristics of N-Channel JFET.	4M	L3	CO5
35	(a) Summarize JFET Parameters and derive the relation among them. (b) An N-channel JFET has $I_{DSS}=8\text{mA}$ and $V_p=-5\text{V}$, $V_{GS}=-2\text{V}$ then find the drain current(I_D)	4M	L4	CO5
36	Explain how FET can be used as voltage variable resistor	4 M	L4	CO5
37	Explain the construction and operation of Enhancement MOSFET and also draw its VI Characteristics.	4M	L2	CO5
38	Explain the construction and operation of Depletion MOSFET with VI characteristic graph.	4M	L2	CO5
39	(a) Explain the basic concepts of MOS Amplifiers. (b) Compare JFET and MOSFET.	4M	L2	CO5
40	(a) Analyse the small signal model CS FET amplifier and derive the expressions for A_v , R_i and R_o . (b) In the CS amplifier $R_d=500\text{K}\Omega$, $R_g=5\text{M}\Omega$, $r_d=100\text{K}\Omega$, $g_m=0.8\text{mA/V}$. Determine voltage gain, input impedance and output impedance?	8M	L4	CO5
41	(a). Analyse the small signal model CD FET amplifier and derive the expressions for A_v , R_i and R_o (b) In the CD amplifier $R_s=4\text{K}\Omega$, $R_g=10\text{M}\Omega$, $\mu=50$, $r_d=35\text{K}\Omega$. Determine voltage gain, input impedance and output impedance?	8M	L4	CO5
42	Analyse the small signal model CG FET amplifier and derive the expressions for A_v , R_i and R_o .	8M	L4	CO5