U.S.N.										

B.M.S. College of Engineering, Bengaluru-560019

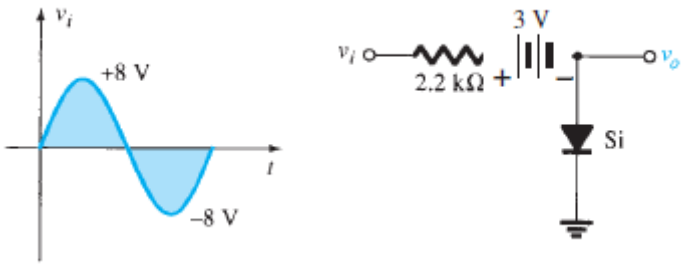
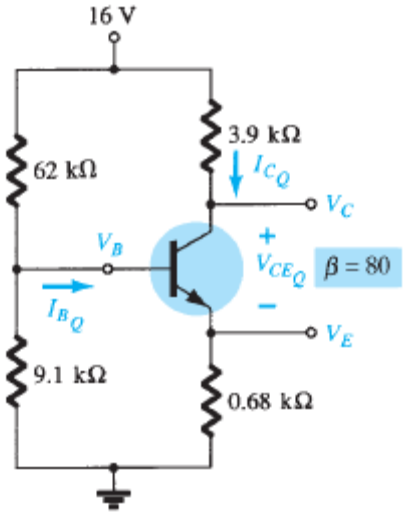
Autonomous Institute Affiliated to VTU

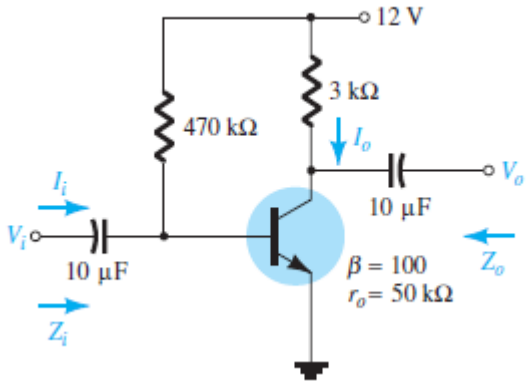
April 2024 Semester End Main Examinations

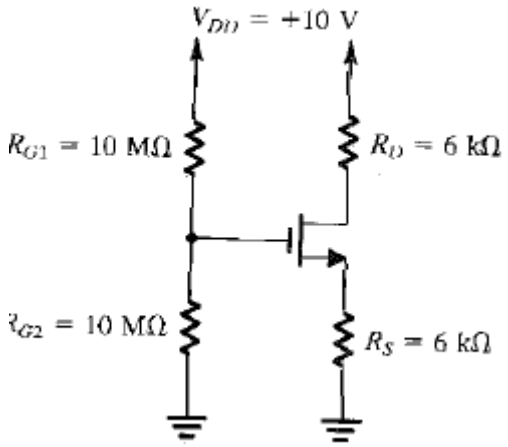
Programme: B.E. **Semester: III**
Branch: Cluster (EIE/MD) **Duration: 3 hrs.**
Course Code: 22ES3PCAME **Max Marks: 100**
Course: Analog Microelectronics

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

		UNIT - I	CO	PO	Marks
1	a)	Determine Vo for the network shown in figure 1a  figure 1a	CO1		06
	b)	Estimate I_C,V_E,V_B,R_1 for the network shown in figure 1b  figure 1b	CO2	PO1	06
	c)	Obtain the AC equivalent model of a CE voltage divider bias network and derive Z_i, Z_o, A_v, A_I using re model	CO2	PO1	08

			OR			
	2	a)	Sketch vo for the positive clamping circuit and explain the operation with negative reference voltage	*CO2*	*PO1*	**06**
		b)	Determine re, Z_i, Z_o and A_v for the network shown in figure 	*CO2*	*PO1*	**06**
		c)	Derive expression for I_c & V_{ce} for voltage divider bias using exact method of analysis.	*CO2*	*PO1*	**08**
			UNIT - II			
	3	a)	Demonstrate the low frequency response of a RC coupled amplifier	*CO2*	*PO1*	**08**
		b)	Illustrate the significant of negative feedback on bandwidth	*CO2*	*PO1*	**04**
		c)	Derive an expression for gain and input impedance and output impedance of a voltage shunt feedback amplifier	*CO2*	*PO1*	**08**
			UNIT - III			
	4	a)	Explain the operation of a series fed class A power amplifier and obtain the efficiency.	*CO2*	*PO1*	**08**
		b)	calculate the input power, output power, and power handled by each output transistor of a class B power amplifier and the circuit efficiency for an input of 12 V rms with Vcc=25v, and a load 4Ω	*CO2*	*PO1*	**06**
		c)	What is harmonic distortion? Explain the causes of distortion.	*CO2*	*PO1*	**06**
			UNIT - IV			
	5	a)	Illustrate the operation of a MOSFET as V_{DS} *is* Increased	*CO2*	*PO1*	**08**
		b)	Analyze the circuit shown in figure 5.b having Vt=1v, Kn'(W/L)=1mA/V2, λ = 0. determine I_D, Vs, V_{GS}, V_D.	*CO2*	*PO1*	**06**

			 Figure 5b			
		c)	Using the transfer characteristics of a MOSFET , obtain the analytical expression of drain-to-source resistance r_{ds} in the triode region	*CO2*	*PO1*	**06**
			UNIT - V			
	6	a)	Obtain the signal current of MOSFET in the drain terminal	*CO2*	*PO1*	**08**
		b)	Construct the small signal model of a CS amplifier and derive an expression for gain	*CO2*	*PO1*	**08**
		c)	Compare CG and CS amplifier	*CO2*	*PO1*	**04**
			OR			
	7	a)	Construct the high frequency model of a CS amplifier and derive the expression	*CO2*	*PO1*	**10**
		b)	Develop the overall gain of a source follower using small, signal model	*CO2*	*PO1*	**10**

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