U.S.N.										

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

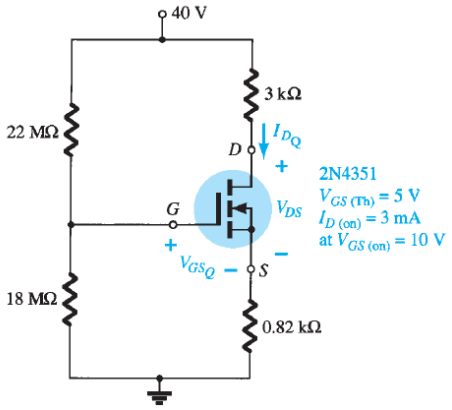
Autonomous Institute Affiliated to VTU

August 2024 Semester End Main Examinations

Programme: B.E. **Semester: IV**
Branch: Electrical and Electronics Engineering **Duration: 3 hrs.**
Course Code: 23EE4PCAEL **Max Marks: 100**
Course: Analog Electronics and Linear Integrated Circuits

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)	Explain the input and output characteristics of a transistor in CE configuration.	CO1	PO1	**08**
	b)	Define α_{dc} and β_{dc} of a transistor. For a transistor, the base current is 100μA and the collector current is 2.9μA. Find α_{dc} and β_{dc}.	CO3	PO2	**06**
	c)	Define the three voltage stability factors.	CO1	PO1	**06**
		OR			
2	a)	Analyse the Common Emitter transistor circuit using a simplified hybrid model.	CO1	PO1	**10**
	b)	Explain the Voltage Divider Bias configuration of a transistor.	CO1	PO1	**10**
		UNIT - II			
3	a)	With the help of a neat diagram explain the operation and characteristics of *p*-channel depletion type MOSFET.	CO1	PO1	**12**
	b)	Determine I_{DQ}, V_{GSQ}, and V_{DS} for the network of Figure 3b  Figure 3b	CO2	PO1	**08**

			UNIT - III			
	4	a)	Draw the AC equivalent circuit using an approximate hybrid equivalent model for the BJT voltage divider bias configuration. Write the expressions for input impedance, output impedance, voltage gain, and current gain.	*CO1*	*PO2*	**08**
		b)	Explain class B- Push-Pull Amplifier.	*CO1*	*PO1*	**12**
			UNIT - IV			
	5	a)	Define Input Offset current, Input Resistance, CMRR, Slew Rate, and Voltage Gain of op-amp.	*CO3*	*PO2*	**10**
		b)	Explain op-amp as inverting and non-inverting amplifiers.	*CO2*	*PO1*	**10**
			OR			
	6	a)	What are the characteristics of an ideal op-amp?	*CO1*	*PO1*	**07**
		b)	Explain inverting summing and averaging amplifiers.	*CO1*	*PO1*	**06**
		c)	Explain op-amp as a differentiator amplifier	*CO1*	*PO1*	**07**
			UNIT - V			
	7	a)	Briefly explain the operation of the second-order high-pass Butterworth filter.	*CO3*	*CO2*	**06**
		b)	With the help of a neat circuit diagram, explain the operation of the triangular generator op-amp application. Derive an equation for the frequency of oscillations.	*CO2*	*CO2*	**08**
		c)	Explain with a neat circuit diagram & waveform the operation of inverting the Schmitt trigger circuit.	*CO2*	*CO2*	**06**

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