CBCS SCHEME - Make-Up Exam

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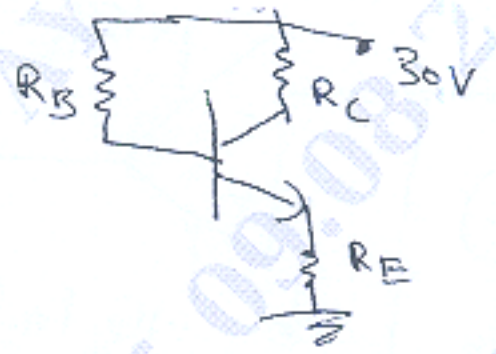
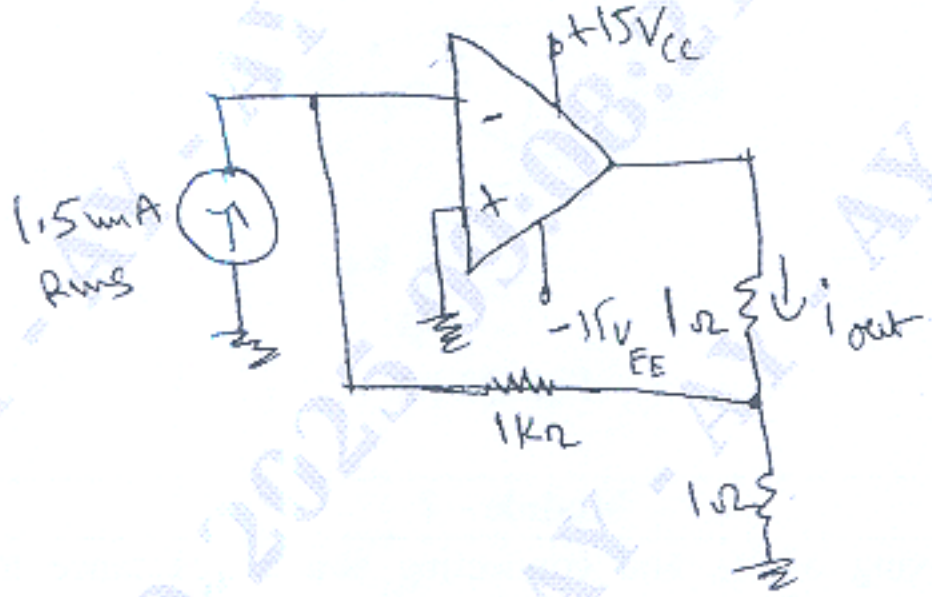
BEC303

Third Semester B.E/B.Tech. Degree Examination, June/July 2025
Electronic Principles and Circuits

Time: 3 hrs. Max. Marks:100

Note: *1. Answer any FIVE full questions, choosing ONE full question from each module.*
2. M : Marks , L: Bloom's level , C: Course outcomes.

		Module – 1	M	L	C
1	a.	Explain the Simplified Analysis of voltage divider biasing.	10	L3	CO1
	b.	For a CC Amplifier obtain r_e, Av, $Z_{in(base)}$, $Z_{in(stage)}$.	10	L3	CO1
		OR			
2	a.	Explain the importance of both T model and π model with necessary equations.	6	L2	CO1
	b.	What are H parameters? Mention the relationship between R and H parameters.	6	L2	CO1
	c.	For the emitter circuit shown in Fig. Q2 (c). Find the values of R_C, R_E and R_B using following specifications $I_{C(sat)}$ = 10 mA, $I_{CQ} = \frac{1}{2} I_{C(sat)}$, V_C = 20 V, β = 100.  Fig. Q2 (c)	8	L5	CO1
		Module – 2			
3	a.	Explain the fixing of V_G and connecting source resistance in MOSFET circuits.	8	L1 L2	CO2
	b.	Explain the CS amplifier with source resistance.	8	L1 L2	CO2
	c.	Write a note on Transconductance g_m.	4	L1 L2	CO2
		OR			
4	a.	Obtain the voltage gain of small signal MOSFET amplifier and write the small signal equivalent models with necessary equations (MOSFET).	10	L3 L4 L5	CO2
	b.	Determine the input resistance, voltage gain and output resistance of common source (CS) amplifier with neat circuit diagram and small signal model.	10	L3 L4 L5	CO2

		Module – 3			
5	a.	Design 4 bit R-2R Ladder D/A converter.	**10**	**L3 L4**	**CO3**
	b.	Explain the working of Wien Bridge oscillator with neat Lag, Lead circuits and oscillator circuit.	**10**	**L2 L4**	**CO3**
		OR			
6	a.	Design and explain the working of Monostable multivibrator for the pulse width 0.5 msec with neat circuit diagram and waveforms.	**10**	**L3 L4**	**CO3**
	b.	Explain the working of Schmitt Trigger and its Hysteresis response when it is in Inverting mode.	**10**	**L2 L4**	**CO3**
		Module – 4			
7	a.	Briefly explain the four basic feedback topologies with neat necessary block diagrams.	**8**	**L1 L2**	**CO4**
	b.	Design an Active high pass filter when the lower cut off frequency in 2 kHz. With neat circuit diagram and frequency response (*second order). Assume gain = 1.586	**8**	**L2 L4**	**CO4**
	c.	Explain the VCIS Amplifier with circuit diagram and equations.	**4**	**L1 L2**	**CO4**
		OR			
8	a.	What is a filter? Design an Active first order Low pass filter when cut off frequency is 5 kHz.	**6**	**L2 L4**	**CO4**
	b.	For an ICIS amplifier as shown below. Calculate current gain, load current and load power.  Fig. Q8 (b)	**6**	**L4 L5**	**CO4**
	c.	Explain the Baud Stop filter with neat circuit diagram and equations. Write the practical and theoretical frequency responses. (second order notch filter)	**8**	**L2 L4**	**CO4**
		Module – 5			
9	a.	Explain Class A operation with neat circuit diagram, obtain power gain, output power, Transistor power dissipation and efficiency equations.	**10**	**L2 L3**	**CO5**
	b.	Write a note on the Schockey diode.	**5**	**L1 L2**	**CO5**
	c.	Explain the concept of push pull operation with neat circuit diagram. Also mention advantages and disadvantages.	**5**	**L1 L2**	**CO5**

		OR			
10	a.	With neat circuit diagram, explain the operation of Class B push pull Emitter follower along with AC and DC analysis.	**8**	**L1 L2**	**CO5**
	b.	Explain SCR phase control.	**6**	**L1 L2**	**CO5**
	c.	Write a note on Diac and Triac.	**6**	**L1 L2**	**CO5**

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