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BEC303

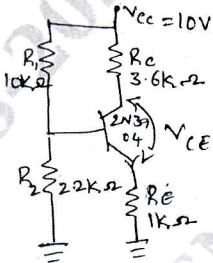# Third Semester B.E./B.Tech. Degree Examination, June/July 2024
Electronic Principles and Circuits

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
Q.1	a.	With a neat circuit diagram, explain the voltage divider biasing circuit and also derive the expression.	10	L3	CO1
	b.	What is the collector-emitter voltage in Fig.Q1(b) Fig.Q1(b)	10	L3	CO1
		OR			
Q.2	a.	With diagram explain the two transistors model. Also derive Z_{in}(base).	10	L3	CO1
	b.	Explain the base biased amplifier circuit. Also explain AC equivalent circuit.	10	L3	CO1
		Module – 2			
Q.3	a.	With diagram explain the enhancement model MOSFET. Draw Drain and Transconductance curve.	10	L3	CO2
	b.	Derive an expression of $i_D – V_{DS}$ relationship of NMOS transistor.	10	L3	CO2
		OR			
Q.4	a.	Derive an expression of DC bias point and voltage gain of small signal operation of MOSFET.	10	L3	CO2
	b.	With a neat diagram explain the MOSFET T-equivalent circuit.	10	L3	CO2
		Module – 3			
Q.5	a.	With diagram explain the R-2R ADC converter derive V_{out}.	10	L3	CO3
	b.	Derive V_{ref} and f_c of comparators with non zero reference to linear Amplifier.	10	L3	CO3
		OR			
Q.6	a.	With neat diagram explain the operational amplifier base wein bridge oscillator circuit.	10	L3	CO3
	b.	Explain the operation of RC phase shift oscillator.	10	L3	CO3
		Module – 4			
Q.7	a.	Briefly explain the four types of negative feedback.	10	L3	CO4
	b.	With diagram explain the ICVS amplifier circuit.	10	L3	CO4
		OR			
Q.8	a.	With diagram explain the passband and stopband attenuation.	10	L3	CO4
	b.	Explain with circuit diagram of VCVS High pass filter.	10	L3	CO4
		Module – 5			
Q.9	a.	With neat diagram explain the DC and AC two load line of VDB amplifier.	10	L3	CO5
	b.	Derive an expression of A_p of Class A power amplifier.	10	L3	CO5
		OR			
Q.10	a.	With circuit and waveform explain the 1-ϕ RC triggering circuit.	10	L3	CO5
	b.	With neat diagram explain the Triac – Diac based bidirectional phase control circuit using SCR.	10	L3	CO5

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