

CONTINUOUS INTERNAL EVALUATION- 2

Dept:EC	Sem / Div:IV A&B	Sub:Analog Circuits	S Code:18EC42
Date:24/06/2021	Time: 3:00-4:30 pm	Max Marks: 50	Elective:N
Note: Answer any 2 full questions, choosing one full question from each part.			

Q N	Questions	Marks	RBT	COs
PART A				
1	a With a neat circuit diagram and ac equivalent circuit derive the expressions for R_{in} , A_{vo} , A_v and R_o for source follower.	9	L2	CO1
	b A feedback Amplifier has a closed loop gain of 100V/V and is relatively intensive to change in basic amplifier gain. If a negative feedback provides a reduction in A_f to 99V/V for a reduction in A to one-tenth its nominal value, i) Find loop gain, nominal value of A, feedback factor B? ii) What will be the closed loop gain if A is increased ten fold? iii) What will be the closed loop gain if $A=\infty$	6	L2	CO3
	c Explain the Frequency Response of CS amplifier and Derive the expression for Low frequency response of a common source amplifier.	10	L2	CO2
OR				
2	a Explain the properties of negative feedback amplifiers	10	L2	CO3
	b Explain the Classification of output stages of power amplifiers	9	L2	CO3
	c It is desired to design a phase-shift oscillator (Self biased JEFT amplifier) using a JEFT having $g_m=5000\mu s$, $r_d =40k\Omega$, and feedback circuit resistance of $R=10k\Omega$. Select the value of 'C' for oscillator operation at 1 kHz and RD for a gain $A=40$ to ensure oscillator action.	6	L3	CO3
PART B				
3	a Explain series shunt feedback amplifier and obtain expression for R_{in} and R_o	10	L3	CO3
	b Explain the internal capacitances of a MOSFET and hence draw the high frequency small signal model of MOSFET	7	L2	CO1
	c Explain Transformer coupled class A Amplifier and show that Transformer coupled class A Amplifier has maximum efficiency of 50%	8	L2	CO3
OR				
4	a Explain series series feedback amplifier and obtain expression for R_{in} and R_o	10	L3	CO3
	b Explain the working of crystal oscillator. A crystal has $L=0.4H$, $C=0.085pF$ and $CM=1pF$ with $R=5K$. Find (I) Series Resonant Frequency. (ii) Parallel resonant Frequency and (iii) Find Q-factor of the crystal.	6	L3	CO3
	c Explain Class B output stage amplifier and derive the expression for power conversion efficiency	9	L3	CO3