Reg. No.: 21BEC1514

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Continuous Assessment Test 2 – October 2022

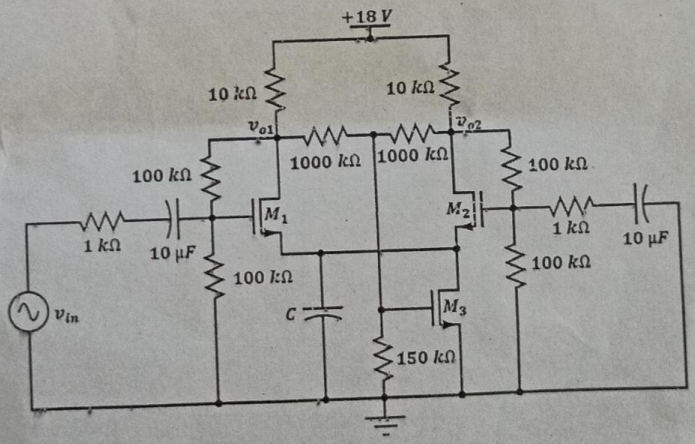
Programme	:	B.Tech (ECE & ECM)	Semester	:	FS 2022-23
Course	:	Analog Circuits	Code	:	BECE206L
			Class Nbr	:	CH2022231001118
			Slot	:	C2+TC2
Faculty	:	Dr. Sangeetha R G	Max. Marks	:	50
Time	:	90 Minutes			

General Instructions (if any): **Answer All Questions**

Use the following data unless otherwise stated

$k_{n(1-4)} = 1\ \frac{mA}{V^2}, \lambda_{n(1-4)} = 0.0\ V^{-1}, V_{THN\,(1-4)} = 1\ V, C_{gs(1-4)} = 5\ pF, C_{gd(1-4)} = 1\ pF,$ *Op – Amp supply voltage* $= \pm 15\ V$, and $\pm V_{SAT} = \pm 14\ V$

If any data is missing assume and justify

Q. No.	Sub-division	Question Text	Marks
1		Consider the circuit shown in Figure.1. (a) Calculate the small-signal voltage gain with and without C (b) Find the unity gain frequency with and without C (c) Find the CMRR with and without C	15
		 Figure 1	
2		Consider the circuit shown in Figure 2. (a) Determine the DC current flow through the MOSFETs M_{1-4} for R =0, 6 kΩ and 12 kΩ (b) Determine the small-signal voltage gains $A_o = \frac{v_o}{v_{in}}$	15

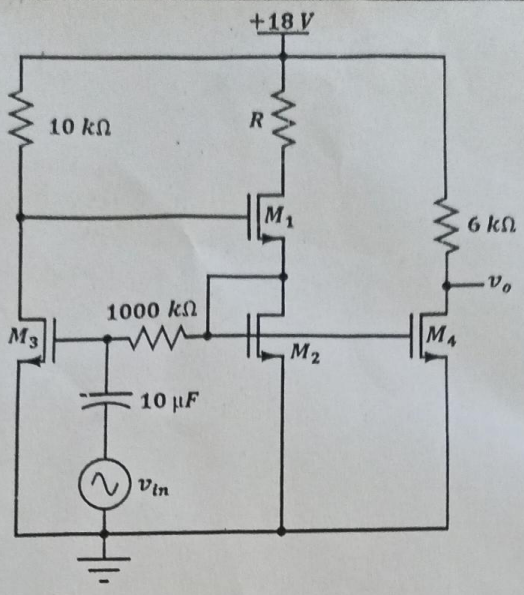


Figure 2

3	a	Consider the following circuit, which is shown in Figure 3 with an ideal op amp except for the open-loop voltage gain, where the op amp's open-loop gain is limited to 100. Find the output voltage V_{OUT} for R = 0 and ∞.	10

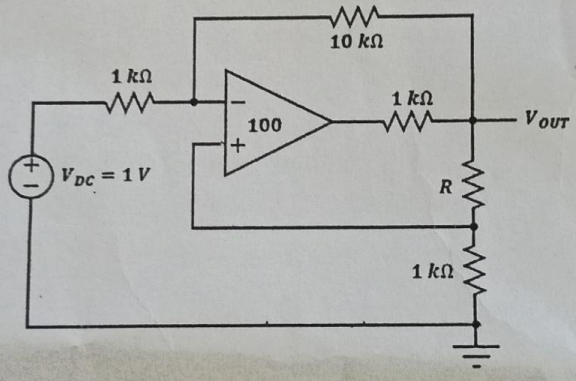


Figure 3

	b	Consider the circuit shown in Figure 4. (a) Calculate the low frequency voltage gain and the unity gain frequency of $A_1(s) = \frac{V_{o1}}{V_{in}}$ and $A_2(s) = \frac{V_{o2}}{V_{in}}$. Assume that op amps are ideal.	10

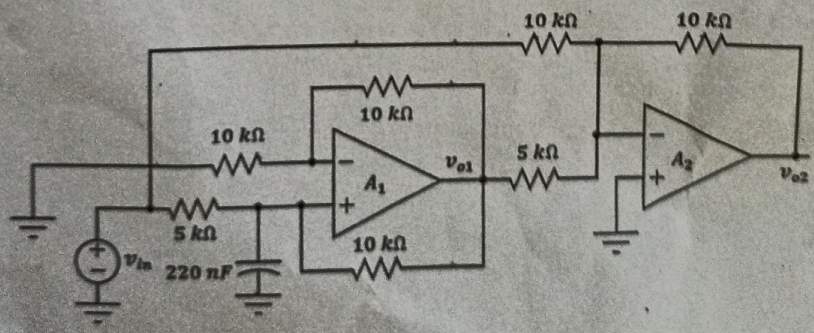


Figure 4

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