REG.NO.:

VIT®

Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

SLOT:A1+TA1

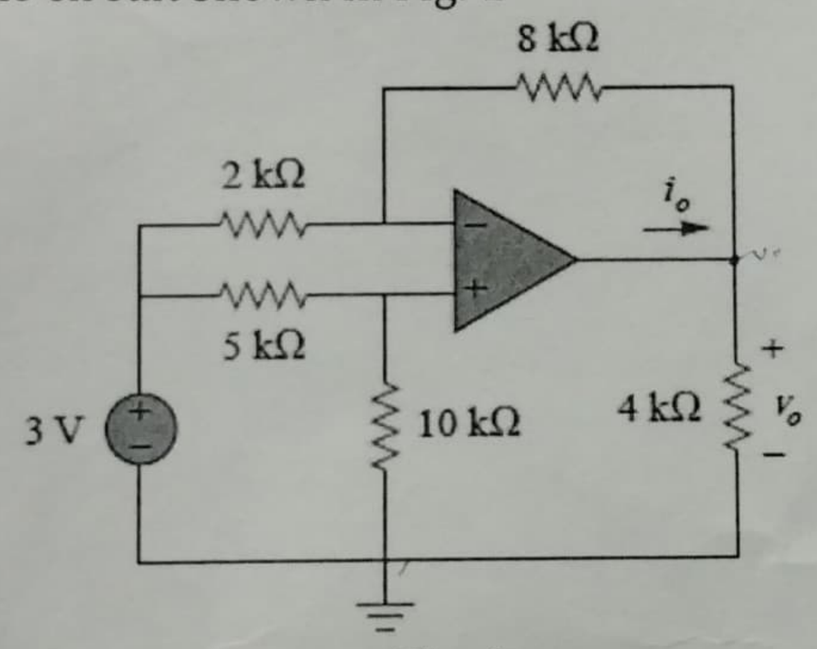
SCHOOL OF ELECTRONICS ENGINEERING
CONTINUOUS ASSESSMENT TEST - II
FALL SEMESTER 2024-2025

Programme Name & Branch : **B.Tech – in VLSI Design**
Course Code and Course Name : BEVD204L, Electronic Circuits
Faculty Name(s) : Dr Abdul Majeed K K
Class Number(s) : VL2024250104065
Date of Examination :**13/10/24**
Exam Duration : **90 minutes** **Maximum Marks: 50**

General instruction(s):

- Answer All Questions
- M - Max mark; CO – Course Outcome; BL – Blooms Taxonomy Level (1 – Remember, 2 – Understand, 3 – Apply, 4 – Analyse, 5 – Evaluate, 6 – Create)
- Course Outcomes

CO4: Design and Analyse various Feedback Amplifiers
C05: Build op-amp based circuits to generate various waveforms

Q. No	Question	M	CO	BL
1.	Design a circuit for Vo= $-4V_1+6V_2-10V_3$ using maximum two operational amplifiers.	10	4	3
2.	Find *Vo* and *io* in the circuit shown in Fig. 1  Fig. 1	10	4	4
3.	a) A noninverting amplifier incorporates an op-amp having an open-loop gain of 100 and bandwidth of 1 MHz. If the circuit is designed for a closed-loop gain of 16, determine the resulting bandwidth and time constant. **(5 M)**	5	4	4
	b) The internal circuitry of an op amp can be simplified to a 1-mA current source charging a 5-pF capacitor during large-signal operation. If an amplifier using this op amp produces a sinusoid with a peak amplitude of 0.5 V, determine the maximum frequency of operation that avoids slewing. **(5 M)**	5		
4.	Calculate the A_{vf}, R_{if} and R_{of} for the circuit shown in Fig. 2. Given values are h_{ie} = 1K and h_{fe}=100	10	5	5

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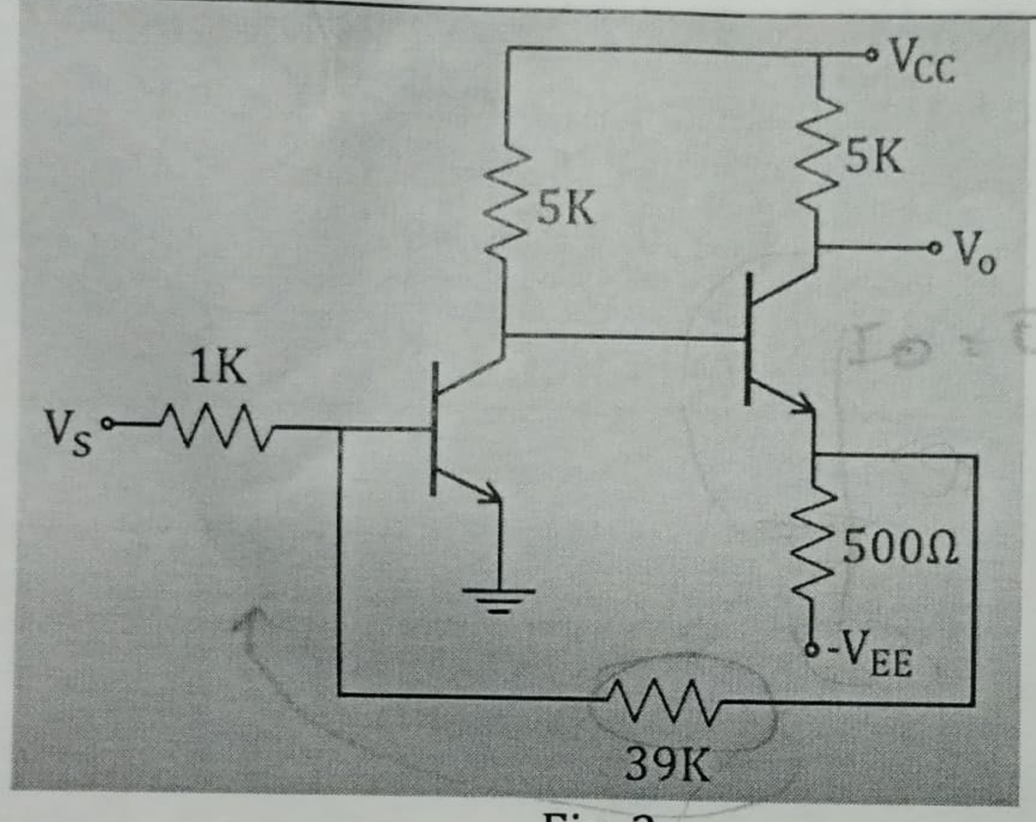

Fig. 2

5.	Design a voltage shunt feedback inverting amplifier, R_1 = 470 Ω and R_f = 4.7 kΩ. Assume that op-amp is a 741 having the following specifications. A = 200000, Ri = 2 M Ω, Ro = 75 Ω, fo = 5 Hz, Vcc = +/- 15 V. Calculate and compare the values of with and without feedback gain, bandwidth, input impedance.	10	5	5

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