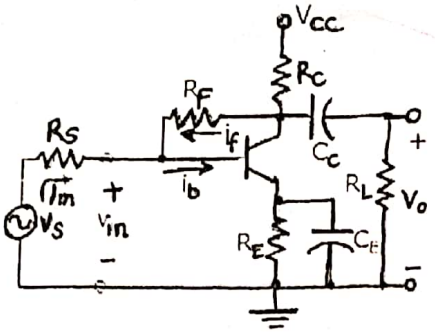
PUNJAB ENGINEERING COLLEGE
(Deemed to be University)
Mid-Term Examination, September, 2019

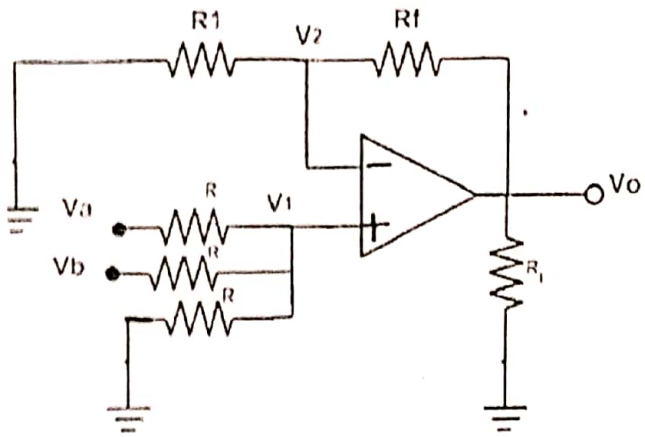
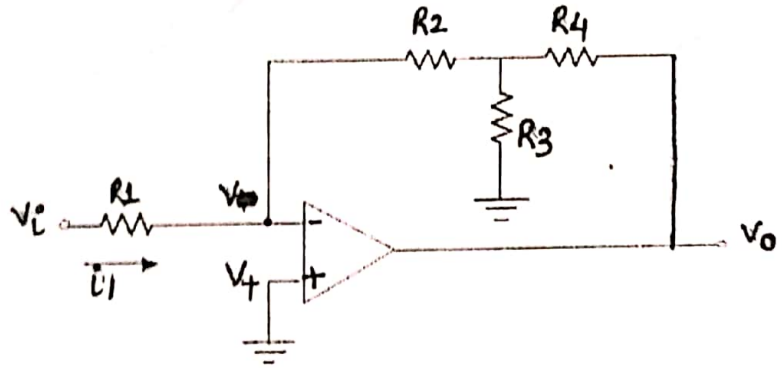
Programme: **B.Tech (ECE)**
Course Name: **Analog Electronic Circuits -II**
Maximum Marks: **40**

Year/Semester: Second/1st
Course Code: **ECN 204**
Time allowed: **1 hr 30 min**

Notes:

1. All questions are compulsory.
2. Unless stated otherwise, the symbols have their usual meanings in context with subject. Assume suitably and state, additional data required, if any.
3. STUDENT ARE NOT ALLOWED TO SHARE THE CALCULATOR.

Q. No		Marks
1 a)	Show the effect of negative feedback on Amplifier bandwidth.	3
b)	 Identify the feedback topology. Calculate the overall gain (with feedback) V_o/V_S Where R_S=10K, R_F= 40K, R_C=4K, h_{ie}=1.1K,h_{fe}=50, h_{re}=h_{oe}=0. (May use Miller's theorem for R_F).	4
c)	Draw the circuit of Wein bridge oscillator. Show the presence of positive and negative feedback in the circuit. Design the RC elements of a Wein bridge oscillator for operation at f_0=10 kHz.	4
2 a)	Design a dual input balanced output differential amplifier with constant current bias. Assume gain as A and bias current as I_{BIAS}.	5
b)	Following are the parameters of an Opamp connected in non-inverting configuration: A = 400,000, R_I=470 ohms, R_F=4.7K, Supply voltages =±15 *V*, unity gain bandwidth = 0.6MHz. Compute the closed loop parameters A_F, R_{iF}, R_{oF}, f_F.	4

d)	Why is integrator preferred over differentiator?	2
3 a)	Why it is necessary to connect a resistance at non inverting input in an inverting Opamp?	3
b)	What are the applications of voltage to current converter circuit using Opamp?	2
c)	Evaluate the output voltage for the given non inverting Opamp. $V_a = +2V$, $V_b = -1V$, $R_1 = R$, $R_f = 2R$. 	4
d)	Evaluate the expression for V_O. 	5

PEC
EXPLORE INNOVATE EXCEL

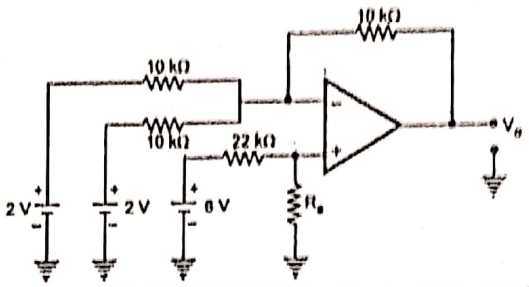
PUNJAB ENGINEERING COLLEGE
(Deemed to be University)
END-Term Examination (Nov.-Dec., 2019)

Programme: **B. Tech. (ECE)**
Course Name: **Analog Electronic Circuit-II**
Maximum Marks: **40**

Year/Semester: **2019/ODD**
Course Code: **ECN 204**
Time allowed: **3 Hours**

Notes:

- All questions are compulsory.
- Unless stated otherwise, the symbols have their usual meanings in context with subject. Assume suitably and state, additional data required, if any.
- The candidates, before starting to write the solutions, should please check the question paper for any discrepancy, and also ensure that they have been delivered the question paper of right course code.

S. No.		Question	Marks
1.	a.	What is the concept of feedback? How different configurations of feedback affects the gain, input impedance and output impedance of the circuit. Explain any two configurations with suitable diagrams.	4
	b.	Calculate the value of R_S in the given figure, such that V_0 becomes zero. 	3
	c.	Design a 3-stage Phase Shift Oscillator capable to produce 6.5 KHz signal utilizing the capacitors of 1 nF.	3
2.	a.	Design a band pass filter with a centre frequency of 2kHz. Draw the circuit diagram.	3
	b.	How sample-and-hold circuit can be used in digital circuits? Justify your answer describing its working.	3
3.	a.	Describe the principle of operation of second order high pass filter using op-amp and draw its frequency response curve. What are its advantages over first order and a passive high-pass filter? How Butterworth approximations can improve the response of the designed filter?	4
	b.	Explain working of PLL using appropriate block diagram and define capture range, lock range, and pull in time.	3
4.	a.	Why Schmitt Trigger circuit is improved version of Zero-crossing detector? Justify your answer with suitable explanation and diagrams	3
	b.	Explain the working of a precision half-wave rectifier proving suitable diagram. How it is different than a normal full-wave rectifier. Justify your answer.	4
5.	a.	Design an astable multivibrator with an output signal frequency of 700 Hz and 50% duty cycle using a 555 timer.	3
	b	Design a circuit using Op-Amp to get an output of "ln $((V_X V_Y)/V_Z)$" from inputs of V_X, V_Y and V_Z	4
	c	How "Humming noise" can be suppressed using differential amplifier? Explain with the help of diagrams and derivations analysing various parameters such as gain, CMRR, input impedance and output impedance.	3