DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE – RAIGAD -402 103

Winter Semester Examination – Dec. - 2019

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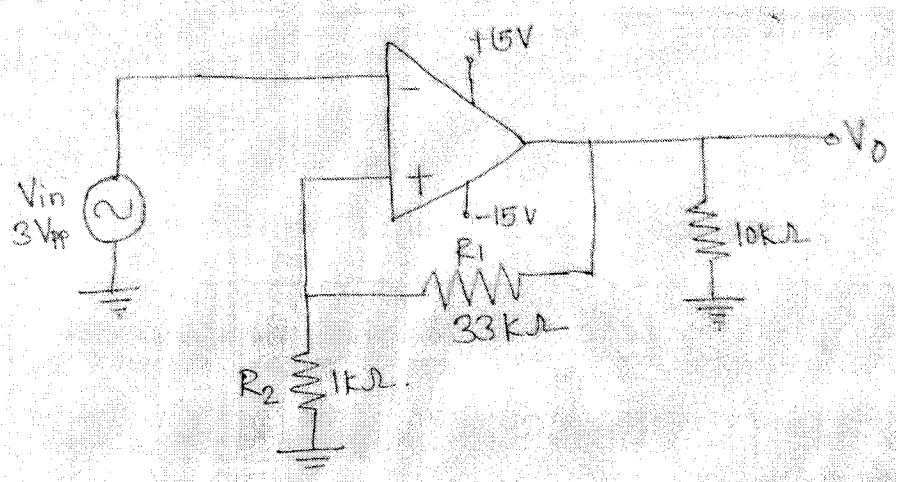
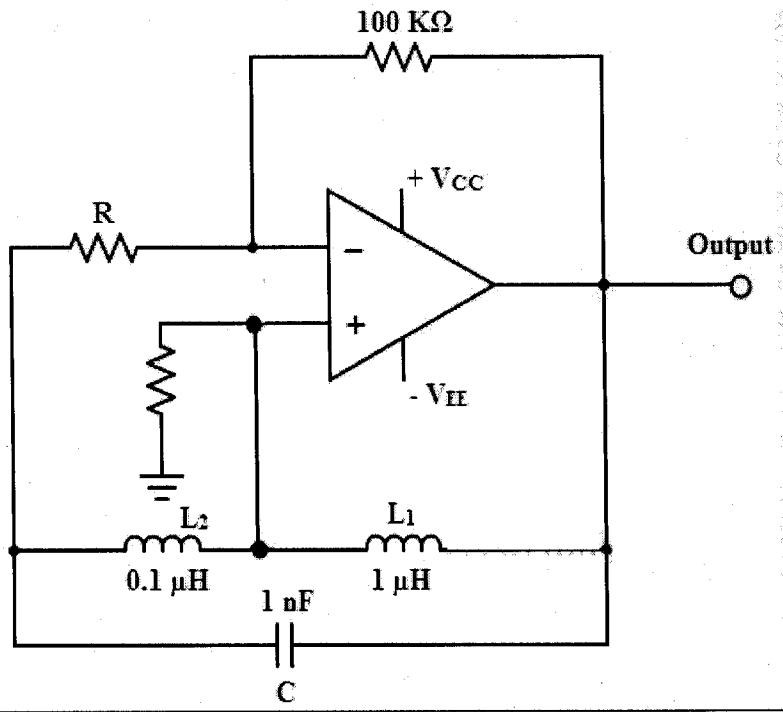
Branch: Electronics and Telecommunication Engineering **Sem.:- III**
Subject:- Analog Circuits (BTEXC302) **Marks: 60**
Date:- 12/12/2019 **Time:- 3 Hr.**

Instructions to the Students

1. Each question carries 12 marks.
2. Attempt **any five** questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately Assume it and should mention it clearly

		(Marks)
Q.1.A)	Draw the block diagram of an op-amp and explain the necessity and implementation of each block.	6
B)	Derive the expressions for gain, input impedance, output impedance of the voltage series feedback configuration.	6
Q.2.A)	Draw and explain the circuit diagram of an instrumentation amplifier and derive the output equation.	6
B)	Draw and explain the working of a practical differentiator circuit including its derivation.	6
Q.3.A)	Draw and explain circuit of a square wave generator. Design a square wave generator for a frequency of oscillation of 1KHz. Assume Vsat=± 14V.	6
B)	For the inverting Schmitt trigger shown below. Calculate UTP, LTP, hysteresis with. Draw input and output waveform. 	6
Q.4.A)	Draw and explain the working of a 3bit -binary weighted resistor DAC.	6
B)	With suitable diagram explain the working of a successive approximation convertor.	6

Q.5.A)	Draw the circuit of a Wien Bridge oscillator using op-amp and derive an equation for frequency of oscillation.	6
B)	Derive the frequency expression of hartley oscillator is constructed with operational amplifier shown below and feedback LC network. By referring the given values determine the operating frequency and maximum acceptable value of resistance R for oscillations to start. 	6
Q.6.A)	Draw the circuit of 1st order low pass butterworth active filter and derive the expression for its gain	4
B)	Draw the circuit of 1st order bandpass butterworth active filter and derive the expression for its gain	4
C)	Design a first order low pass filter with high cut-off frequency of 1 kHz and pass band gain is 3	4

Paper End