Total No. of Questions – [6]

Total No. of Printed Pages: 2

G.R. No.	

MARCH 2020 INSEM (T1)
S. Y. B.TECH. (E and TC) (SEMESTER – IV)

COURSE NAME: ANALOG CIRCUITS
COURSE CODE: ETUA22184

(PATTERN 2018)

Time: [1 Hour] **[Max. Marks: 20]**

(*) Instructions to candidates:

1. Attempt Q.1 **OR** Q.2, Q.3 **OR** Q.4, Q.5 **OR** Q.6
2. Figures to the right indicate full marks.
3. Use of scientific calculator is allowed.
4. Assume suitable data wherever required.

Q. 1) Draw block diagram of an op-amp. Describe the function of each block. An op-amp has slew rate of 0.5 V/μS. Determine the full power bandwidth if its output voltage swings to peak value 10 V maximum. [4+4]

OR

Q. 2) In dual input balanced output differential amplifier, determine the differential gain, input resistance and output resistance. Given: R_c= 4.7K Ω, R_L= 2 K Ω, $\pm V_{CC} = \pm 10$ V, V_{BE}= 0.7V [4+4]

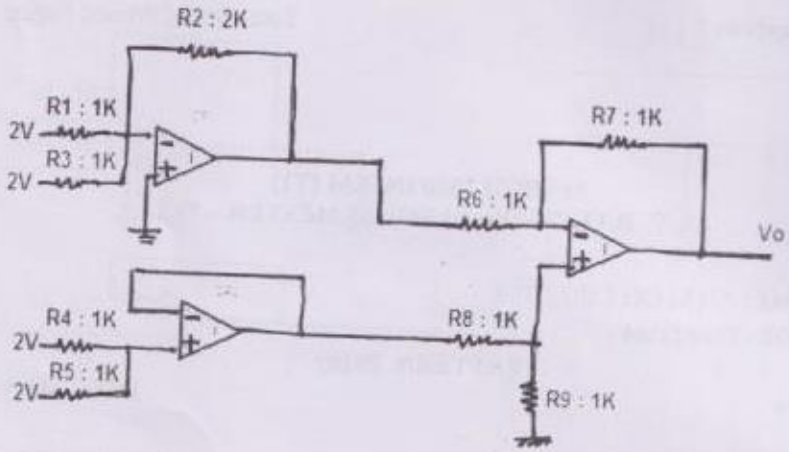
There are two opamps A and B. Op-amp A has input offset voltage 1μV and opamp B has input offset voltage 100 μV. Which of these opamps will you select to amplify 1μV input? The open loop gain of opamp is 10^6. Justify your answer.

Q. 3) Draw the circuit diagram of instrumentation amplifier. State its advantages over single op-amp difference amplifier. [4+4]

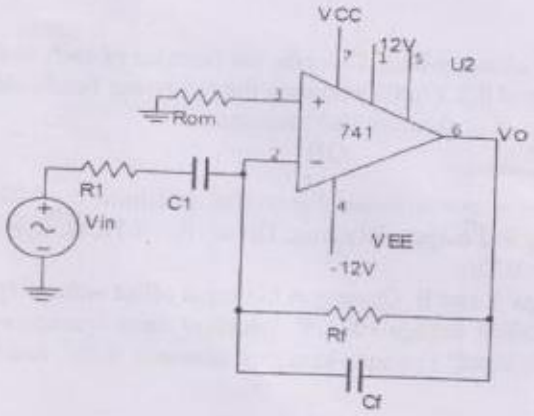
Design an active integrator (practical circuit) to integrate 1 KHz frequency. The dc gain of an integrator is 10. The circuit should have low offset (offset minimization).

OR

Q. 4) Determine the output of the following circuit. Write the expressions for the output at every stage (op-amp). [4+4]



In the following circuit, Determine fa and fb. Also find the gain of the circuit at frequency fa. If square wave signal is applied as input to the circuit draw its input and output waveforms.
Given: R_1= 1K Ω, R_f=10K Ω, Rom=100 Ω, C_1= 0.1 μF, C_f = 0.01μF



Q. 5) Draw the circuit diagram of Inverting comparator. What will be its output if sine wave signal is applied to its input? Draw the input and output waveforms. [4]

OR

Q. 6) Suggest the circuit to convert a sine wave signal into Square wave signal. Draw the circuit and explain its operation. [4]