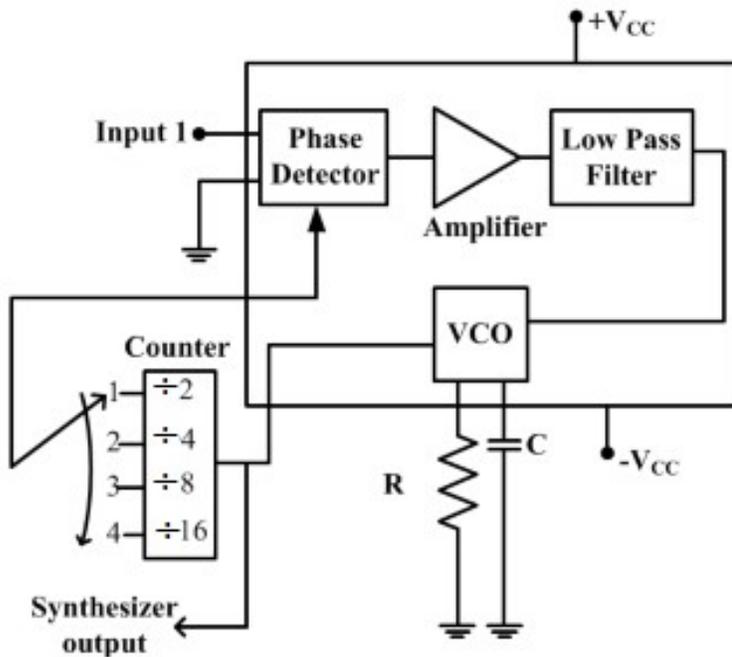


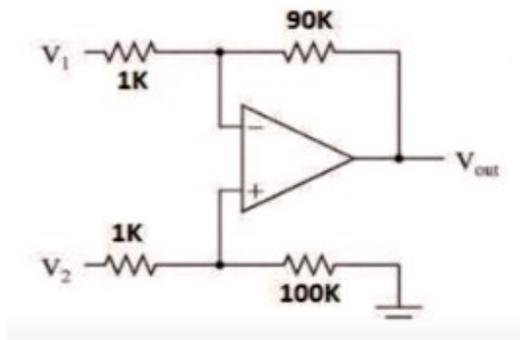
7. How is VCO different from oscillator?
8. The block diagram of a frequency synthesizer consisting of a Phase Locked Loop (PLL) and a divide-by- N counter (comprising $\div 2$, $\div 4$, $\div 8$, $\div 16$ outputs) is sketched below. The synthesizer is excited with a 5 kHz signal (Input 1). The free-running frequency of the PLL is set to 20 kHz. Assume that the commutator switch makes contacts repeatedly in the order 1-2-3-4.



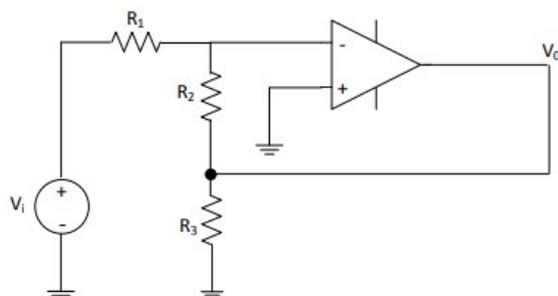
The corresponding frequencies synthesized are:-----,-----,-----,-----

PART B - (4 X16 = 64 marks)

9. (a) (i) Find CMRR of the given circuit (8)

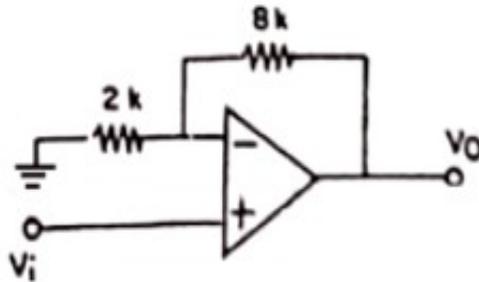


- (ii) Derive the voltage gain of the circuit given below (8)

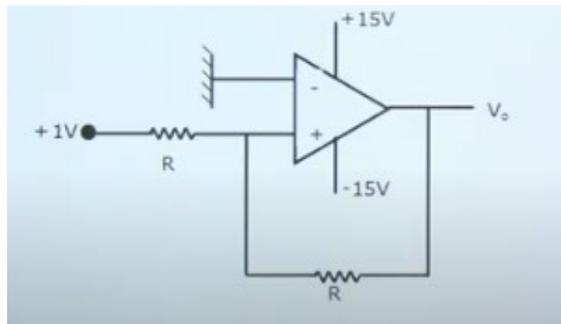


(OR)

- (b) (i) List and explain the non-ideal DC characteristics of an op-amp (8)
 (ii) If the operational amplifier has a poor open loop gain as 40, find the closed loop gain of the amplifier, given below: (8)



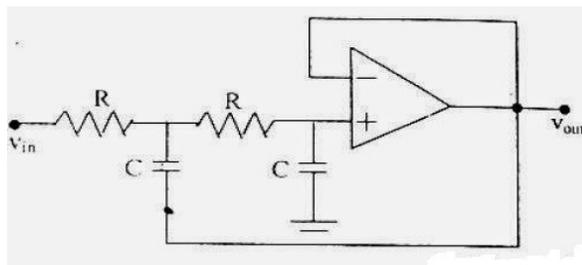
10. (a) (i) Find the output voltage of given Schmitt trigger circuit. (8)



- (ii) Draw a circuit to find $V_O = (V_1 + V_2) - (V_3 + V_4)$. (8)

(OR)

- (b) (i) Design an op-amp based second order active Butterworth Low Pass Filter with cut-off frequency 10KHz (8)

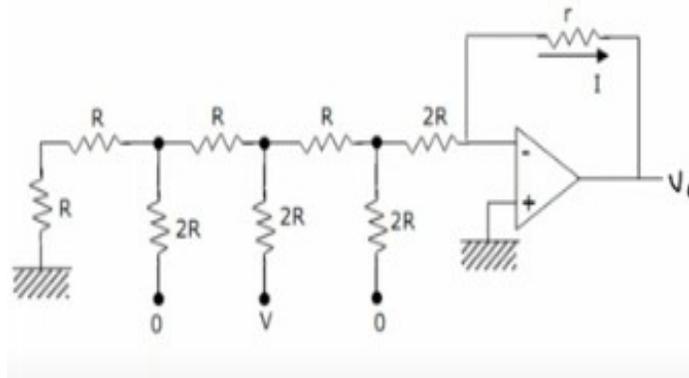


- (ii) Derive the oscillating frequency and voltage gain of Opamp based RC Phase shift oscillator. (8)

11. (a) (i) With a neat sketch, explain single slope A/D converter. (8)
 (ii) Discuss the operation of Dual-slope A/D converter. (8)

(OR)

- (b) (i) Find the current I flowing through r . (8)



- (ii) With a neat sketch, Explain the working of successive approximation type A/D converter. (8)
12. (a) (i) How can PLL be modelled as Frequency multiplier and AM Detector. (8)
- (ii) Draw the block schematic of PLL and describe the function of each block in detail. (8)

(OR)

- (b) Explain and analyze the working of a Four quadrant Gilbert Multiplier cell. (16)