

COURSE CODE (CREDITS): 18B11EC411(3)

MAX. MARKS: 35

COURSE NAME: Analog Integrated Circuits

COURSE INSTRUCTORS: Lt. Pragya Gupta,

MAX. TIME: 2 Hour

**Note:** (a) All questions are compulsory.

(b) Marks are indicated against each question in square brackets.

(c) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems

(d) Do all parts of the question in the same place in sequence.

(e) Try to do all the questions in sequence.

**Q1.** Explain the pin configuration of the 555 timer IC and the operational amplifier IC 741. Illustrate the pin diagrams for both components and describe the function of each pin. Additionally, provide a brief overview of the typical applications for each IC. (7) [CO-3]

**Q2 a)** How can we generate Triangular Waves using Schmitt Trigger. Explain it with neat diagram and also derive the expression for frequency of oscillations and peak to peak amplitude of the Triangular Wave

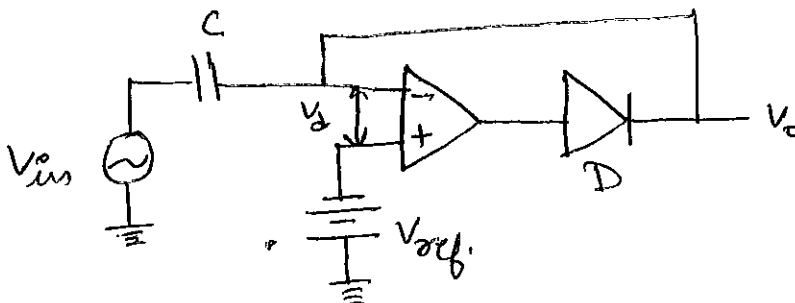
**b)** Design a Square wave generator of frequency 2 KHz using IC 741 (5+2) [CO-4]

**Q3.** Write a note on the following

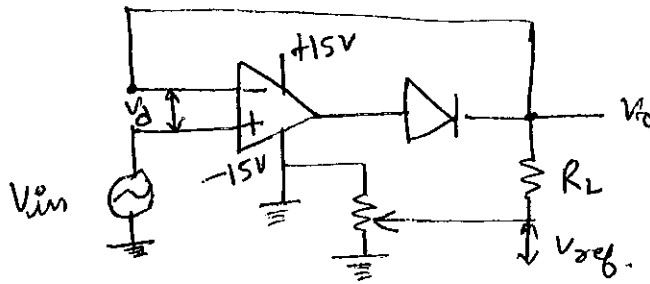
- a) Super Diode
- b) Astable, Monostable and Bistable Multivibrators
- c) Peak detector

(2+2+3) [CO-3]

**Q4 a)** For the given circuit draw the output waveform, if  $V_{in}$  is 500mV (P-P) Sine wave at 100Hz and  $V_{ref}$  is -50mV

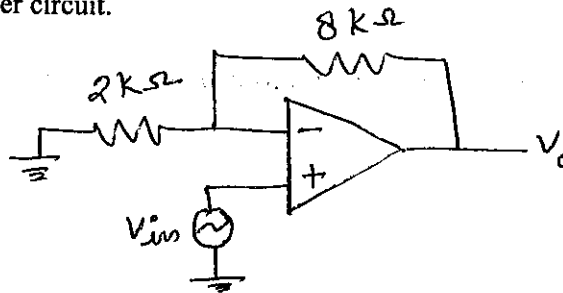


b) For the given circuit draw the output waveform, if  $V_{in}$  is a 350mV peak sine wave at 500 Hz and  $V_{ref}$  is 100mV



(3.5+3.5) [CO-4]

Q5 a) The operational amplifier has a very poor open loop gain of 45, otherwise it is ideal. Find the gain of the given amplifier circuit.



b) In the given circuit find the value of current flowing through the load resistance. Assume Op-Amp is ideal

(3.5+3.5) [CO-2]

