(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 3086 Roll No. | | | | | | | | | | |

B. Tech.

(SEM. V) ODD SEMESTER THEORY EXAMINATION 2010-11

ANALOG INTEGRATED CIRCUITS

Time : 3 Hours *Total Marks : 100*

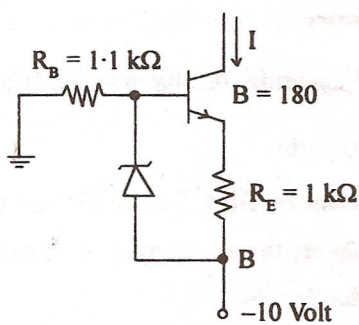
Note : Attempt **all** the questions.

1. Attempt any **four** parts : **(5×4=20)**

(a) Explain brief view of differential amplifier.

(b) What is the level translator circuit ? What is its significance in a cascade differential amplifier ?

(c) Calculate current I in the circuit of figure 1.



(d) Draw the block diagram of an OP-Amp and describe its various blocks.

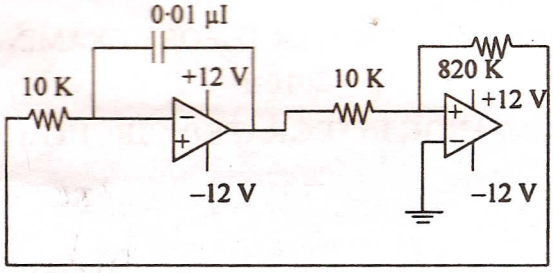
(e) Discuss the operation and significance of a multiple output transistor current mirror.

(f) What is primary advantage of using an active load.

2. Answer any **four** parts : **(5×4=20)**

(a) Why timer IC was given the name IC555. What are its essential building blocks ? Explain them.

(b) Calculate the amplitude of the triangular wave and square wave for fig. (a).



(c) Explain the difference between capture and lock range of frequencies of the PLL with suitable examples.

(d) Explain crystal controlled oscillator.

(e) Determine the frequency and duty cycle for 555 astable multivibrator output for C = 0·01µF, R_A = 2·2 kΩ and R_B = 3·901 kΩ.

(f) Design a Wein bridge oscillator that will oscillate at 2 kHz.

3. Attempt any **two** parts : **(10×2=20)**

(a) What is meant by filter ? Give the classification of the filters. What are the advantages of an active filter over a passive filter ?

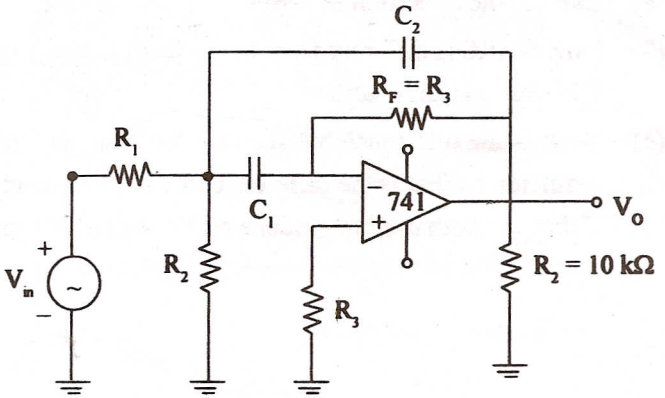
(b) Write short notes on any **two** :

(i) Second order active filter method

(ii) High order filters

(iii) State variable filter.

(c) Design a Bandpass filter using the op-amp 741 shown below, so that $F_C = 1$ KHz, $Q = 3$ and gain $A_F = 10$.

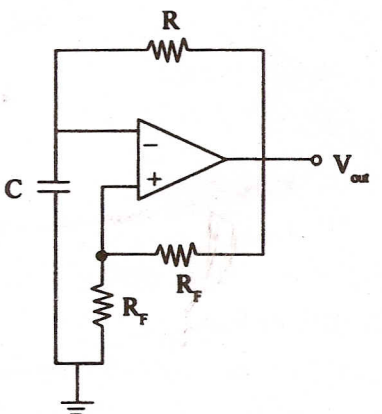


4. Answer any **two** parts : **(10×2=20)**

(a) Explain the hysteris loop obtained in the Schmitt trigger operation.

(b) Draw a sample-and-hold circuit. Explain its operation briefly.

(c) Given a circuit of Fig. which gives square wave output. Find R and C so that square wave with period 10 m secs can be generated.



5. Attempt any **two** parts : **(10×2=20)**

(a) Explain the operation of series voltage regulator.

(b) How SMRS is different from linear feedback regulator ? Give various applications.

(c) What is the difference between an 7808 and an 7908 IC regulator ? What is the difference in circuit connections, if they are both used to produce an 8V regulated supply ?