

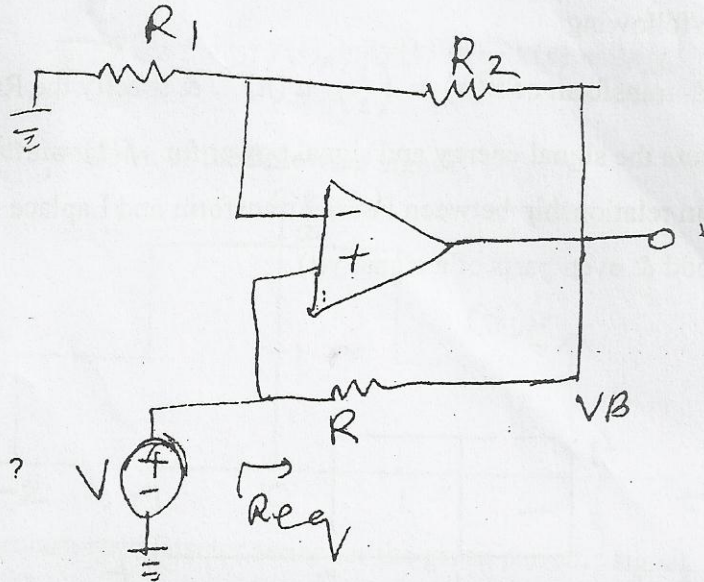
1514

- N.B. (1) Question No. 1 is compulsory.  
 (2) Attempt any four questions from remaining six questions.  
 (3) Assume suitable data if required and state it clearly.

1. Attempt any four :—

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- (a) List the advantages of active filter over passive filter.  
 (b) List the ideal properties of OP-AMP.  
 (c) Explain various sources of noise.  
 (d)



Find Req = ?

- (e) Design an astable MV using IC 555 which will generate a square wave of 1KHz for the duty cycle  $D = 0.25$ .

2. (a) Design Schmitt trigger to get  $V_{UT} = 5V$ ,  $V_{LT} = -3V$ ,  $V_{CC} = 15V$ ,  $V_{EE} = -15V$ . 10  
 (b) Draw and explain the functional block diagram of PLL (IC4046). Give any one application in detail. 10

3. Design a digitally programmable Instrumentation Amplifier having an overall gain :— 20  
 (a) 1 (b) 10 (c) 100 (d) 1000

4. Draw the circuit of KRC LPF and derive its T.F. Find the expression of cut-off frequency using the equal component design, specify elements for a II order LPF with  $f_c = 1KHz$  and  $Q = 5$ . What is its dc gain? 20

5. (a) Draw block diagram of OP-AMP and explain it in detail. Also, specify various typical parameters of IC741. 10  
 (b) Explain the missing pulse detector using 555 timer. 10

6. (a) Explain how will you realize the following circuit using OP-AMP :— 10  
 (i) Voltage Referece Circuit  
 (ii) Window Detector  
 (iii) Sample and Hold Circuit.  
 (b) Draw and explain the functional B.D. of IC8038. Give the equation for frequency of oscillation IC8038. 10

7. Write short notes on (any four) :— 20  
 (a) PLL Transfer characteristics, its lock-in range and capture range  
 (b) V-F Converter.  
 (c) Pulse width Modulator  
 (d) Input stray capacitance compensation in CFA Circuits  
 (e) Ideal-properties of OP-AMP  
 (f) Effect of finite G.B.P. on integrator circuit  
 (g) F-V converters.