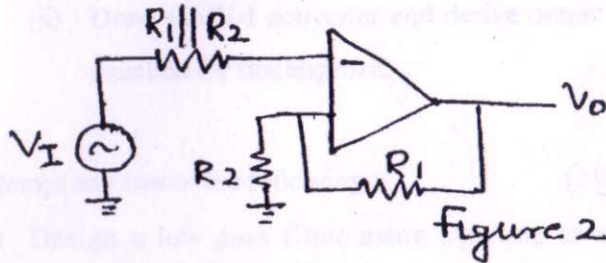


- (ii) Determine the value of R_1 and R_2 if the maximum allowable current through them is $100\mu\text{A}$ for Schmitt Trigger as given in figure 2. Assuming $V_{\text{sat}} = +10\text{V}$, $-V_{\text{sat}} = -10\text{V}$ and $V_H = 0.1\text{V}$.



- (c) Write short notes of the following :

- (i) Log/Antilog Amplifier
- (ii) Phase locked loop (PLL)

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

PAPER ID : 2115

Roll No.

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B.Tech.

(SEM. V) THEORY EXAMINATION 2011-12
ANALOG INTEGRATED ELECTRONICS

Time : 3 Hours

Total Marks : 100

Note :- (1) Attempt all questions.

(2) All questions carry equal marks.

1. Attempt any **two** of the following : **(10×2=20)**
 - (a) Draw the open loop frequency response of operational amplifier (Op-Amp) and explain it.
 - (b) Discuss in brief that how the high frequency model differs from the equivalent circuit of an Op-amp. Discuss frequency response of internally compensated Op-Amp.
 - (c) What is the stability of an Op-amp ? Explain the various stability specifications with constant gain bandwidth product.
2. Attempt any **two** of the following : **(10×2=20)**
 - (a) Draw and explain the Instrumentation Amplifier using Op-Amp. Discuss the most desired characteristic of it and maximum limit to that.
 - (b) Design an inverting Op-Amp circuit with a voltage gain of

$A_v = V_o/V_i = -8$, when the input voltage is $V_i = -1V$. Maximum current in R_1 and R_2 must be no longer than $15\mu A$. Determine the minimum values of R_1 and R_2 .

- (c) (i) Draw the I-V converter and derive its output expression.
 (ii) Draw the V-I converter and derive output voltage equation for floating load.

3. Attempt any two of the following : (10×2=20)

- (a) Design a low pass filter using Op-Amp at a cut-off frequency of 1kHz with pass gain of 2.
 (b) Discuss the classification of active filters and explain its advantage and disadvantage with suitable example using Op-Amp.
 (c) (i) Draw a block diagram and explain the characteristic of successive approximation type A/D converter.
 (ii) For the digital input 1111 with R/2R ladder 4 bit type DAC, find the output voltage and resolution. Assume $V=10V$ and $R=10k\Omega$.

4. Attempt any two of the following : (10×2=20)

- (a) Write short notes on the following :
 (i) Square wave generator
 (ii) Triangular wave generator.

(b) With the help of a neat block diagram, explain the principle of working of Sample and Hold circuit using Op-Amp. Enlist its applications.

- (c) (i) Explain in brief the advantage of Precision rectifier over simple diode rectifier.
 (ii) A Precision rectifier having the value of gain is -2 for the negative input and zero otherwise and input resistance is $100 K\Omega$ as shown in given figure 1. Determine the value of R_1 and R_2 .

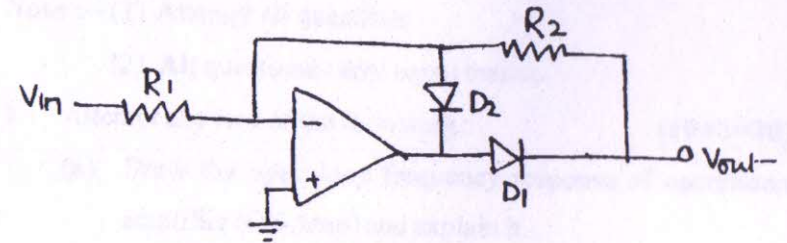


Figure 1

5. Attempt any two of the following : (10×2=20)

- (a) Using the block diagram explain the functionality of an OTA.
 (b) (i) What are the advantages of the adjustable voltage regulator over the fixed voltage regulator ?