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**Subject**: 15ECE211 Electronic Circuits

**Class / Batch**: ECE-B

**Assignment No.: 2**

**Due Date**: 10/03/2020

**Honor Pledge**

I, **ARNAB DAS**, **CB.EN.U4ECE18106**, hereby affirm on my honor as an Amritian, that I have neither received nor provided any assistance or used any unauthorized material, in completing this assignment.

**ARNAB DAS**

**Question 1:**

Find the FFT of the function f(t) = Asin(w0t)

**Solution:**

According to Euler’s form,

And we know the DTFT for ejwot is 2πd(w-wo)

So, Asin(wot) =

Taking 2π common

**Question 2:**

Given an ECG signal of amplitude 1mV with source resistance of 10KΩ, design an amplifier to obtain output of 10mV, given a source of 5V, diode of SL100 with β=100. No resistor greater than 220KΩ is to be used. Assume all CC is short circuited at a frequency of operation. Simulate and verify.

**Solution:**

Therefore framing the input and output equations, we get IB=12.5 µA and Ic=1.25 mA

Rπ= VT/IB=2k

Therefore the drop Vπ= 1/5\*Vi. Therefore the gain has to be 10\*6=60, which implies IC

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Assuming R1 = 5R2 , we get

And Rth = 0.83R2

Assuming R2 = 20KΩ implies R1 = 100KΩ and hence

From the input equation we get IB = 12.5µA and IC = 1.25mA

Now the drop need to be Vπ = 1/5\*Vi.

New gain is 10\*6 = 60

So,

Gives me Rc = 1.2KΩ

Therefor we meet the above specifications.

