6. (a) Draw the current to voltage converter circuit and derive the expression for the output voltage. **10**

(b) Describe the function of an Op-amp as : **10**

(i) Bridge amplifier

(ii) AC voltage follower.

7. (a) Explain the working of mono-stable multivibrator. **10**

(b) Explain logarithmic multiplier with suitable diagram. **10**

8. Write short notes on any *two* of the following : **20**

(a) Class-B push-pull amplifier

(b) Schmitt Trigger

(c) ADC.

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B. Tech. EXAMINATION, Dec. 2017

(Fifth Semester)

(Old Scheme) (Re-appear Only)

(EE-ECE)

ECE-305

ANALOG ELECTRONIC CIRCUITS

Time : 3 *Hours*] [*Maximum Marks :* 100

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt any *Five* questions. All questions carry equal marks.

1. (a) Why do we need more than one stages of amplifiers in pratical circuits ? What are the various coupling schemes of two stages of amplifiers ? **10**

(b) Explain, how transformer coupling results in small power less than R-C coulpling. **10**

2. (a) Prove that negative feedback in amplifiers increases the bandwidth and improves S/N ratio. **10**

(b) A single stage amplifier has a midband gain A_m = 500, lower and upper cut-off frequencies f_L = 1 kHz, f_H = 5 kHz. A negative feedback with $\beta = \frac{1}{100}$ is given. Determine gain and cut-off frequencies with feedback. Derive the relations used. **10**

3. (a) Define the following terms used to specify the performance of an oscillator :

(i) Dial resolution

(ii) Amplitude stability

(iii) Frequency stability

(iv) Output impedance

(v) Frequency range. **10**

(b) Describe the functioning of a crystal controlled oscillator. Give its design procedure. **10**

4. (a) Show that the maximum collector efficiency of class A transformer coupled power amplifier is 50%. **10**

(b) Define and explain harmonic distortion in power amplifiers. How do you determine it ? **10**

5. (a) Define the following terms : **10**

(i) Slew rate

(ii) CMRR

(iii) I/P offset vottage

(iv) I/P Bias current

(v) O/P offset voltage.

(b) Draw the basic circuit diagram of an Op-amp and explain the operation of each block. **10**