Exam.Code:0928
Sub. Code: 33656

2015

B.E. (Electronics and Communication Engineering)

Fourth Semester

EC-406: Analog Electronic Circuits

Time allowed: 3 Hours **Max. Marks: 50**

NOTE: Attempt five questions in all, including Question No. I which is compulsory and selecting two questions from each Section.

x-x-x

1. Attempt all (2x5)
   a) Define the slew rate and discuss its significance.
   b) What is Miller theorem?
   c) What is thermal Drift? How does it affect the performance of an op-amp circuit?
   d) List out the demerits of negative feedback on amplifier performance.
   e) What is CMRR?

Section A

2. What is cascode amplifier? List the characteristic of the cascode amplifier. Draw equivalent circuit of cascode amplifier and calculate voltage gain, current gain and input resistance. (10)
3. Design the dual-input balanced differential amplifier using the diode constant current bias to find out the value of R_E and I_E, given specifications are : (10)
   (i) supply voltage Vi= ±12V
   (ii) Emitter current IE in each differential amplifier transistor = 1.5mA.
   (iii) Voltage gain less than equal to 60.

4. (a) Briefly explain why negative feedback is desirable in amplifier application? (5)
   (b) In what way is the voltage follower a special case of the non-inverting amplifier. (2.5)
   (c) Similar amplifiers are cascaded, with lower cut-off frequency 100Hz. Bandwidth is B1=10 kHz. What is the higher cut-off frequency of the cascaded network? (2.5)

Section B

5. (a) Design the circuit for voltage substractor using op-amp and derive the output equation for the same. (5)
   (b) What are the steps involved in designing a low pass filter? Design a low pass filter at a cutoff frequency of 1KHz with a pass band gain of 2. (5)
6. (a) What is the difference between clipper and clampers? Design a negative clipper circuit with reference voltage (i) +3V (ii) 3V. (5)
   (b) Design the circuit for Wein bridge oscillator and derive the equation for the oscillator frequency. (5)
7. Write note and draw circuit diagram of :
   a) Operational amplifier comparator. (5)
   b) Log and anti-log amplifier. (5)

x-x-x