

Enrolment No:

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LDRP INSTITUTE OF TECHNOLOGY AND RESEARCH, GANDHINAGAR
DEPARTMENT OF ELECTRONICS AND COMMUNICATION
B.E. 5th SEMESTER
MID SEMESTER EXAMINATION AUGUST-2014

Subject Code: EC-505

Subject Name : Integrated Circuits and Applications

Date : 28/08/2014

Branch: EC

Total Marks: 30

Time: 08.30 AM to 10.00 AM

Instructions: - All questions are compulsory.
- Figures to the right indicate full marks.
- Make suitable assumption, wherever necessary.

- Que. 1 A) Define :** (4)
- | | |
|--------------------------|------------------------------|
| 1. Output offset voltage | 2. CMRR |
| 3. Slew rate | 4. Large signal voltage gain |
- B) Draw frequency response of ideal and practical low pass and band pass filter. (2)

- Que. 2 Answer the following questions.**
- A) Draw and explain block Diagram of Typical OP-AMP. (4)
- B) What are the characteristics of an ideal op-amp? (2)
- C) Derive expressions for voltage gain, input resistance and bandwidth for Voltage-Series feedback amplifier. (6)

OR

- A) Explain two special cases of inverting amplifier with feedback. (4)
- B) Draw equivalent circuit of op-amp and ideal voltage transfer curve. (2)
- C) Draw circuit diagram of differential amplifier with one op-amp and derive expression for its output signal as a function of input signals. Also derive expression of input resistance faced by each input signal. (6)

- Que. 3 Answer the following questions.**
- A) Design second order Butterworth low pass filter with -3dB frequency of 10 KHz. Choose $C = 1 \text{ nF}$. (6)
- B) With the help of a circuit diagram explain the operation of first order high pass filter. (6)

OR

- A) Design wideband band pass filter using a single op-amp for $f_L = 100 \text{ Hz}$, $f_H = 1 \text{ KHz}$ and pass band gain of 4. Also calculate the value of quality factor Q . (6)
- B) Derive the expression for filter transfer function of a first order low pass filter and draw its frequency response characteristics. (6)

*****All The Best*****