

JK Lakshmipat University, Jaipur

Institute of Engineering and Technology

End Term Examination

B.Tech III Semester V [2013-14]



Course Name: Linear Integrated Circuits

Course Code: ECE501

Max Marks: 40

Time: 03:00 Hr.

Instruction:

1. Attempt ALL Sections. Attempt any Six from section-B.
2. Make suitable assumption wherever necessary.
3. Symbols and abbreviations have their usual meaning.

SECTION-A (fill in the blanks and short answer type) (1M*10=10 Marks)

1. (i) The values of A_{VOL} and bandwidth for an ideal op-amp are
- (ii) The value of CMRR for ideal op-amp is
- (iii) The expression for SVRR is
- (iv) An op-amp current-to-voltage converter is also called Amplifier.
- (v) By using active filter, loading effect can be
- (vi) An integrator circuit can be used as Filter.
- (vii) To obtain BPF, LPF and HPF must be connected in
- (viii) The 555 timer can be operated in and modes.
- (ix) List one application in which 555 can be used as a astable multivibrator.
- (x) What is a comparator?

SECTION-B (Essay Type Questions) (5M*6=30 Marks) (ATTEMPT ANY SIX)

2. Which type of feedback is used in inverting op-amp? Derive exact expressions for voltage gain, input resistance, output resistance and bandwidth for inverting op-amp.
3. Explain following terms related to op-amp:
1. CMRR 2. PSRR 3. Slew Rate 4. Input offset current 5. Input offset voltage
4. Explain Schmitt trigger circuit along with circuit diagram and necessary waveforms. State its advantages and applications.
5. Explain the application of op-amp as a positive and negative clipper circuit.
6. Explain working of 555 timer based astable multivibrator. Design the same for the output pulse frequency of 10 kHz with a duty cycle of 25%.
7. Describe working principle of phase locked loop electronic system and discuss its application as a frequency multiplier.
8. Design input offset voltage compensating network for non-inverting op-amp which has a gain 11 and feedback resistance of 10 K Ω . The op-amp used in non-inverting op-amp has an input offset voltage of 10 mV.