Code No: 07A40402 **R07** **Set No. 2**

II B.Tech II Semester Examinations,April/May 2012
LINEAR IC APPLICATIONS
Electronics And Instrumentation Engineering

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Define the terms: SVRR, CMRR, input bias current, input offset voltage and Gain band width product.
   (b) What are the differences between the inverting and non-inverting terminals? What do you mean by the term "virtual ground"? [10+6]

2. (a) Design a second order IGMF band pass filter with the following specifications: fo = 500Hz, Gain at resonance = -5 and band width = 50Hz. Use the circuit shown in Figure 3. Assume necessary data.
   (b) Explain the operation of a RC phase shift oscillator and obtain the frequency of oscillation. [6+10]

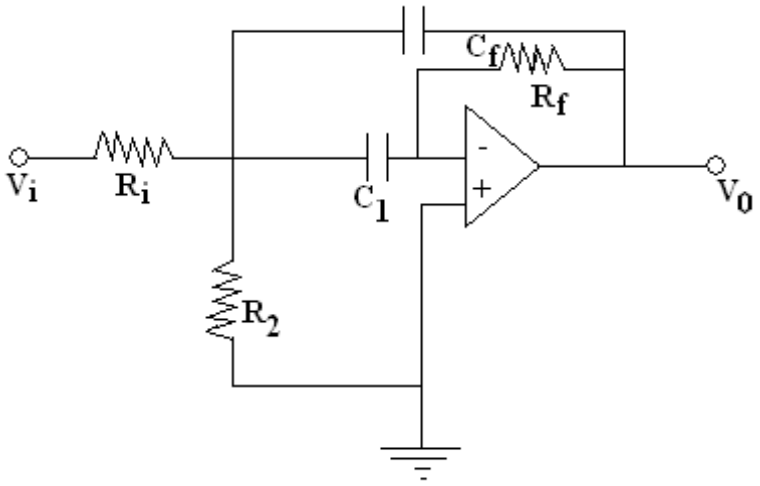

Figure 3

3. In some measurements it is necessary to sense current from a transducer and convert it into voltage. For a three op - amp realization of a current input instrumentation amplifier, derive the expression for Vo. [16]

4. What are the basic blocks of analog multiplexer? Explain how the data selection process is performed using it. [16]

5. (a) Design a logarithmic amplifier for positive input voltages in the range 5mV to 50V.
   (b) With suitable circuit diagram explain the operation of a triangular wave generator using a comparator and a integrator. [8+8]

6. Describe any two applications of 555 timer in

(a) Astable multivibrator configuration

(b) Monostable multivibrator configuration. [8+8]

7. (a) Draw the circuit of a R-2R ladder type DAC for 4 bits and derive expression for output voltage.

(b) Sketch the Analog output voltage for the given digital code.

(c) Compare R - 2R and Weighted resistor types of DACs. [8+4+4]

8. (a) An op - amp has a slew rate of $2V/\mu s$. What is the maximum frequency of an output sinusoid of peak value 5 V at which the distortion sets in due to the slew rate limitation?

(b) What are the characteristics of an ideal op - amp? Explain. [8+8]

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Code No: 07A40402 **R07** **Set No. 4**

II B.Tech II Semester Examinations,April/May 2012
LINEAR IC APPLICATIONS
Electronics And Instrumentation Engineering

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. In some measurements it is necessary to sense current from a transducer and convert it into voltage. For a three op - amp realization of a current input instrumentation amplifier, derive the expression for Vo. [16]

2. (a) Design a logarithmic amplifier for positive input voltages in the range 5mV to 50V.
   (b) With suitable circuit diagram explain the operation of a triangular wave generator using a comparator and a integrator. [8+8]

3. (a) Define the terms: SVRR, CMRR, input bias current, input offset voltage and Gain band width product.
   (b) What are the differences between the inverting and non-inverting terminals? What do you mean by the term "virtual ground"? [10+6]

4. What are the basic blocks of analog multiplexer? Explain how the data selection process is performed using it. [16]

5. Describe any two applications of 555 timer in
   (a) Astable multivibrator configuration
   (b) Monostable multivibrator configuration. [8+8]

6. (a) Draw the circuit of a R-2R ladder type DAC for 4 bits and derive expression for output voltage.
   (b) Sketch the Analog output voltage for the given digital code.
   (c) Compare R - 2R and Weighted resistor types of DACs. [8+4+4]

7. (a) Design a second order IGMF band pass filter with the following specifications: fo = 500Hz, Gain at resonance = -5 and band width = 50Hz. Use the circuit shown in Figure 3. Assume necessary data.
   (b) Explain the operation of a RC phase shift oscillator and obtain the frequency of oscillation. [6+10]

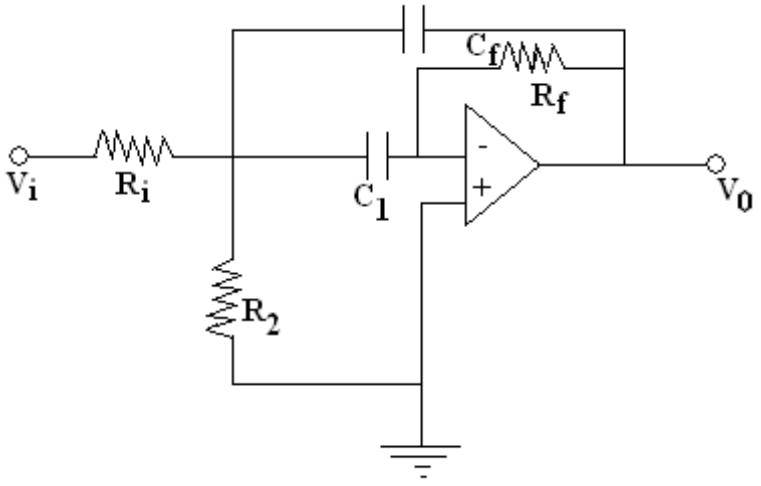

Figure 3

8. (a) An op - amp has a slew rate of $2V/\mu s$. What is the maximum frequency of an output sinusoid of peak value 5 V at which the distortion sets in due to the slew rate limitation?

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Code No: 07A40402 **R07** **Set No. 1**

II B.Tech II Semester Examinations,April/May 2012
LINEAR IC APPLICATIONS
Electronics And Instrumentation Engineering

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) An op - amp has a slew rate of 2V/μs. What is the maximum frequency of an output sinusoid of peak value 5 V at which the distortion sets in due to the slew rate limitation?
   (b) What are the characteristics of an ideal op - amp? Explain. [8+8]

2. (a) Design a second order IGMF band pass filter with the following specifications: fo = 500Hz, Gain at resonance = -5 and band width = 50Hz. Use the circuit shown in Figure 3. Assume necessary data.
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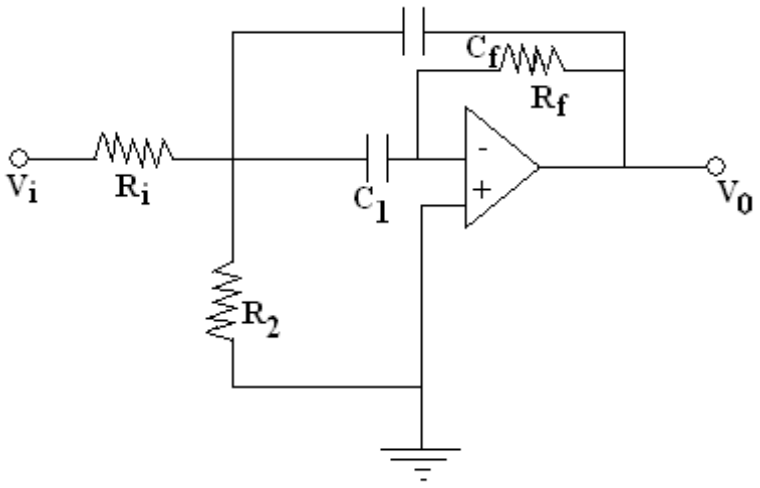

Figure 3

3. Describe any two applications of 555 timer in
   (a) Astable multivibrator configuration
   (b) Monostable multivibrator configuration. [8+8]

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   (b) With suitable circuit diagram explain the operation of a triangular wave generator using a comparator and a integrator. [8+8]

7. What are the basic blocks of analog multiplexer? Explain how the data selection process is performed using it. [16]

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Code No: 07A40402 **R07** **Set No. 3**

II B.Tech II Semester Examinations,April/May 2012
LINEAR IC APPLICATIONS
Electronics And Instrumentation Engineering

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Define the terms: SVRR, CMRR, input bias current, input offset voltage and Gain band width product.
   (b) What are the differences between the inverting and non-inverting terminals? What do you mean by the term "virtual ground"? [10+6]

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   (b) What are the characteristics of an ideal op - amp? Explain. [8+8]

3. (a) Design a second order IGMF band pass filter with the following specifications: fo = 500Hz, Gain at resonance = -5 and band width = 50Hz. Use the circuit shown in Figure 3. Assume necessary data.
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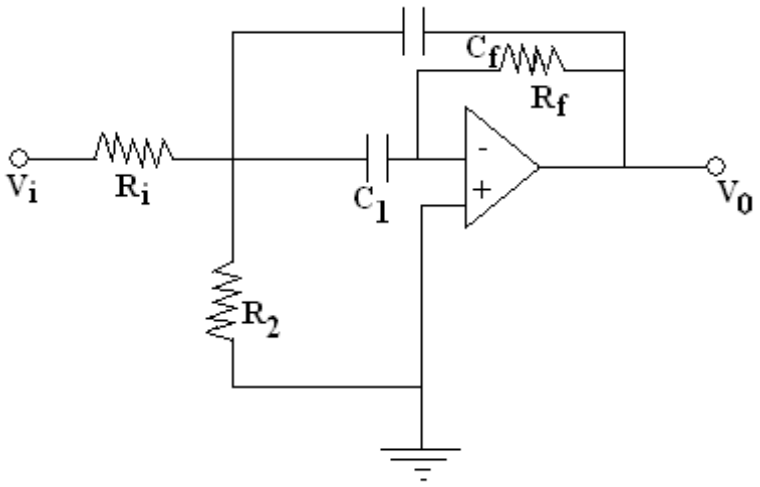

Figure 3

4. Describe any two applications of 555 timer in
   (a) Astable multivibrator configuration
   (b) Monostable multivibrator configuration. [8+8]

5. (a) Design a logarithmic amplifier for positive input voltages in the range 5mV to 50V.

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