Code No: R05220202 **R05** **Set No. 2**

II B.Tech II Semester Examinations,April/May 2012
LINEAR AND DIGITAL IC APPLICATIONS
Common to Instrumentation And Control Engineering, Electrical And Electronics Engineering

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

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Draw the internal block diagram of IC 565 and explain its working. Discuss the terms Lock Range and Capture Range as referred to PLL system and state their inter relationship.
   (b) Draw the FSK demodulator circuit using IC 565 and explain its working. [10+6]

2. (a) Find Vo for the following circuit given (figure5).
   (b) Design a subtractor circuit whose output is equal to the difference between the two inputs. Use a differential Op-amp configuration. [8+8]

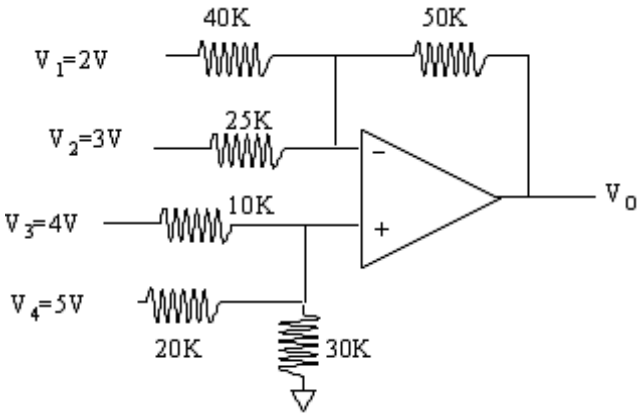

Figure 5

3. (a) What is the difference between ideal and practical Op-amp.
   (b) For the differential Amplifier shown in fig 2 using ideal Op-amp find the output voltage V_O and show that the output corresponding to common mode voltage $V_{CM} = \frac{(V_1+V_2)}{2}$ = is zero if $\frac{R'}{R} = \frac{R_2}{R_1}$. Find V_O also.
   (c) What is the input impedance of a non-inverting Op-amp amplifier? Obtain the expression. [5+6+5]

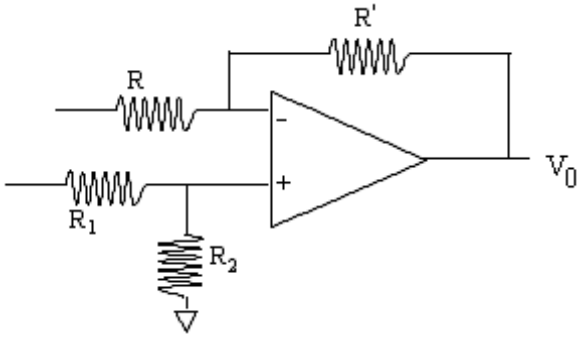

Figure 2

4. (a) Write short notes on Binary to gray code converter.
   (b) Give the logic diagram of Demultiplexer and explain its truth table? [8+8]

5. (a) Design an 8-bit synchronous binary counter with serial enable control?
   (b) Explain the operation of 4 bit serial-in-serial-out shift register. [8+8]

6. (a) List important specifications and characteristics of a monolithic Digital to Analog converter IC MC1408.
   (b) Explain the operation of an 8-bit tracking type Analog to Digital converter.
   (c) Compare the conversion times and efficiencies of 8-bit tracking type and successive approximation type Analog to Digital converters. [5+7+4]

7. (a) Derive the transfer function for a general second order sallen-key filter with suitable circuit diagram.
   (b) With suitable circuit diagram explain the operation of a triangular wave generator using a comparator and an integrator. [8+8]

8. (a) With neat circuit explain the operation of TTL inverter.
   (b) Briefly explain different types of TTL gates.
   (c) Explain the effect of floating inputs on CMOS gate? [5+7+4]

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Code No: R05220202 **R05** **Set No. 4**

II B.Tech II Semester Examinations,April/May 2012
LINEAR AND DIGITAL IC APPLICATIONS
Common to Instrumentation And Control Engineering, Electrical And Electronics Engineering

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

Answer any FIVE Questions
All Questions carry equal marks

⋆ ⋆ ⋆ ⋆ ⋆

1. (a) What is the difference between ideal and practical Op-amp.
   (b) For the differential Amplifier shown in fig 2 using ideal Op-amp find the output voltage V_O and show that the output corresponding to common mode voltage $V_{CM} = \frac{(V_1+V_2)}{2}$ = is zero if $\frac{R'}{R} = \frac{R_2}{R_1}$. Find V_O also.
   (c) What is the input impedance of a non-inverting Op-amp amplifier? Obtain the expression. [5+6+5]

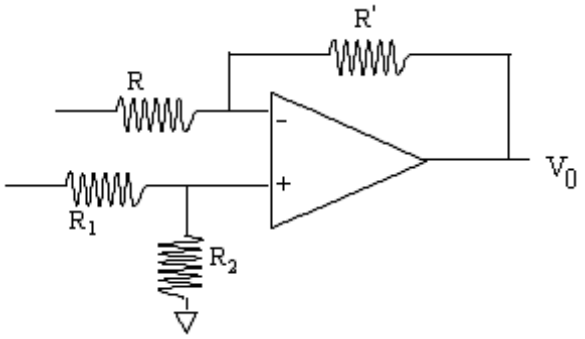

Figure 2

2. (a) With neat circuit explain the operation of TTL inverter.
   (b) Briefly explain different types of TTL gates.
   (c) Explain the effect of floating inputs on CMOS gate? [5+7+4]
3. (a) Write short notes on Binary to gray code converter.
   (b) Give the logic diagram of Demultiplexer and explain its truth table? [8+8]
4. (a) Find Vo for the following circuit given (figure5).
   (b) Design a subtractor circuit whose output is equal to the difference between the two inputs. Use a differential Op-amp configuration. [8+8]

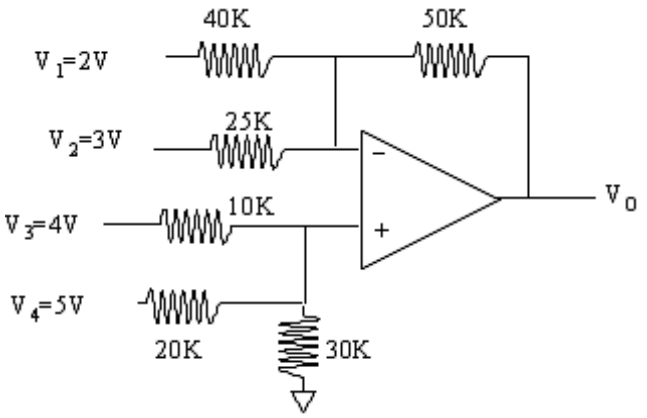

Figure 5

5. (a) Derive the transfer function for a general second order sallen-key filter with suitable circuit diagram.
   (b) With suitable circuit diagram explain the operation of a triangular wave generator using a comparator and an integrator. [8+8]

6. (a) Draw the internal block diagram of IC 565 and explain its working. Discuss the terms Lock Range and Capture Range as referred to PLL system and state their inter relationship.
   (b) Draw the FSK demodulator circuit using IC 565 and explain its working. [10+6]

7. (a) Design an 8-bit synchronous binary counter with serial enable control?
   (b) Explain the operation of 4 bit serial-in-serial-out shift register. [8+8]

8. (a) List important specifications and characteristics of a monolithic Digital to Analog converter IC MC1408.
   (b) Explain the operation of an 8-bit tracking type Analog to Digital converter.
   (c) Compare the conversion times and efficiencies of 8-bit tracking type and successive approximation type Analog to Digital converters. [5+7+4]

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Code No: R05220202 **R05** **Set No. 1**

II B.Tech II Semester Examinations,April/May 2012
LINEAR AND DIGITAL IC APPLICATIONS
Common to Instrumentation And Control Engineering, Electrical And Electronics Engineering

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

Answer any FIVE Questions
All Questions carry equal marks

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   (b) Design a subtractor circuit whose output is equal to the difference between the two inputs. Use a differential Op-amp configuration. [8+8]

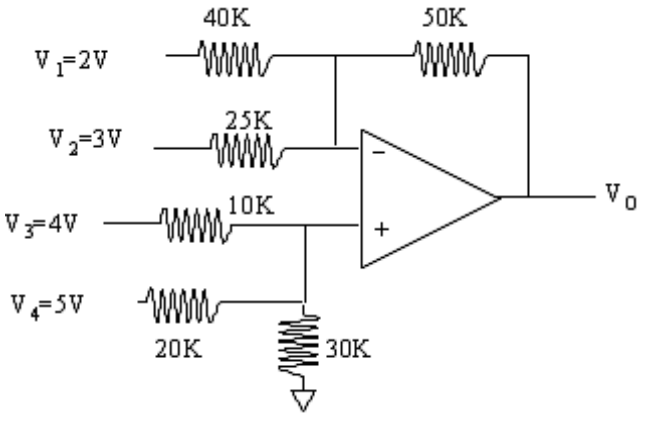

Figure 5

4. (a) Derive the transfer function for a general second order sallen-key filter with suitable circuit diagram.
   (b) With suitable circuit diagram explain the operation of a triangular wave generator using a comparator and an integrator. [8+8]

5. (a) What is the difference between ideal and practical Op-amp.
   (b) For the differential Amplifier shown in fig 2 using ideal Op-amp find the output voltage V_O and show that the output corresponding to common mode voltage $V_{CM} = \frac{(V_1+V_2)}{2}$ = is zero if $\frac{R'}{R} = \frac{R_2}{R_1}$. Find V_O also.

(c) What is the input impedance of a non-inverting Op-amp amplifier? Obtain the expression. [5+6+5]

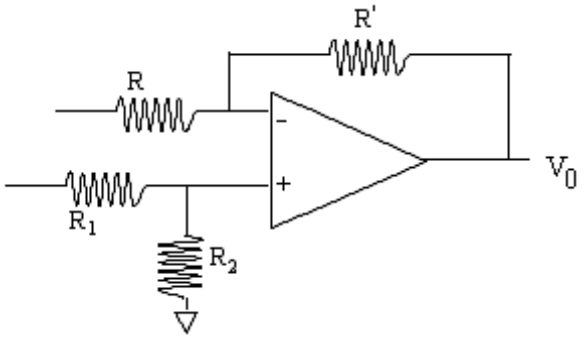

Figure 2

6. (a) Write short notes on Binary to gray code converter.
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7. (a) Design an 8-bit synchronous binary counter with serial enable control?
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Code No: R05220202 **R05** **Set No. 3**

II B.Tech II Semester Examinations,April/May 2012
LINEAR AND DIGITAL IC APPLICATIONS
Common to Instrumentation And Control Engineering, Electrical And Electronics Engineering

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

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) With neat circuit explain the operation of TTL inverter.
   (b) Briefly explain different types of TTL gates.
   (c) Explain the effect of floating inputs on CMOS gate? [5+7+4]
2. (a) What is the difference between ideal and practical Op-amp.
   (b) For the differential Amplifier shown in fig 2 using ideal Op-amp find the output voltage V_O and show that the output corresponding to common mode voltage $V_{CM} = \frac{(V_1+V_2)}{2}$ = is zero if $\frac{R'}{R} = \frac{R_2}{R_1}$. Find V_O also.
   (c) What is the input impedance of a non-inverting Op-amp amplifier? Obtain the expression. [5+6+5]

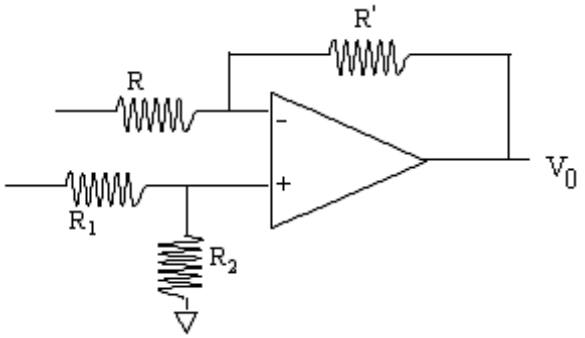

Figure 2

3. (a) List important specifications and characteristics of a monolithic Digital to Analog converter IC MC1408.
   (b) Explain the operation of an 8-bit tracking type Analog to Digital converter.
   (c) Compare the conversion times and efficiencies of 8-bit tracking type and successive approximation type Analog to Digital converters. [5+7+4]
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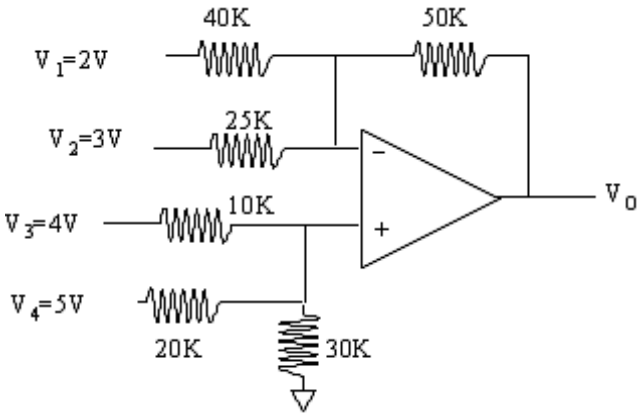

Figure 5

6. (a) Design an 8-bit synchronous binary counter with serial enable control?
   (b) Explain the operation of 4 bit serial-in-serial-out shift register. [8+8]

7. (a) Derive the transfer function for a general second order sallen-key filter with suitable circuit diagram.
   (b) With suitable circuit diagram explain the operation of a triangular wave generator using a comparator and an integrator. [8+8]

8. (a) Write short notes on Binary to gray code converter.
   (b) Give the logic diagram of Demultiplexer and explain its truth table? [8+8]

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