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

II B.Tech II Semester Examinations,December 2010
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) Compare different logic families and mention their advantages and disadvantages?
   (b) Which is the fastest non-saturated logic gate? Draw the circuit and explain its functions. [8+8]
2. (a) Derive the expression of the output voltage of an antilog amplifier using Op-amp.
   (b) What is a summer? Design a summer to add 4 input voltages in inverting configuration. [10+6]
3. (a) An op-amp has a slew rate of $2V/\mu s$. What is the maximum frequency of an output sinusoid of peak value 5V at which the distortion sets in due to the slew rate limitation. Derive the formulae used.
   (b) If the sinusoid of 10V peak is specified, what is the full power band width?
   (c) List out the non ideal Dc characteristics of an Op-amp? [8+4+4]
4. (a) List the application of IC 565PLL and briefly describe the role of the PLL in any of that application.
   (b) Referring to the circuit shown in figure 8b determine the free running output, lock range and the capture range . [8+8]

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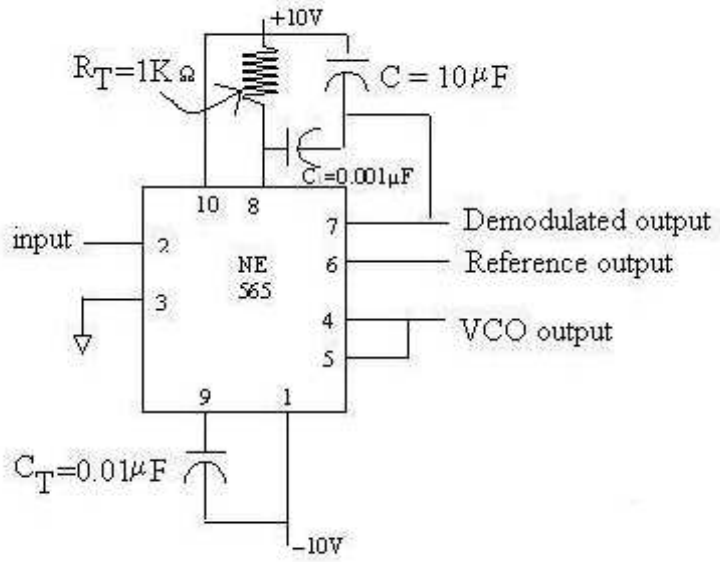

Figure 8b

5. (a) Design a n bit priority encoder.
   (b) Design a 3 bit BCD adder circuit and explain its working. [8+8]

6. Write short notes on:
   (a) Tracking type Analog to Digital converters.
   (b) Weighted resistor type DAC. [8+8]

7. (a) Distinguish between synchronous and asynchronous sequential circuits.
   (b) Write short notes on static RAM. [8+8]

8. (a) Explain the term "Frequency Scaling" with suitable example.
   (b) Design a I-order wide band-pass filter with f_L=200 Hz. f_H=1 KHz and a pass-band gain=4. Draw the frequency response and calculate Q factor for the filter. (Assume necessary data) [6+10]

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

II B.Tech II Semester Examinations,December 2010
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) Distinguish between synchronous and asynchronous sequential circuits.
   (b) Write short notes on static RAM. [8+8]
2. (a) An op-amp has a slew rate of 2V/μs. What is the maximum frequency of an output sinusoid of peak value 5V at which the distortion sets in due to the slew rate limitation. Derive the formulae used.
   (b) If the sinusoid of 10V peak is specified, what is the full power band width?
   (c) List out the non ideal Dc characteristics of an Op-amp? [8+4+4]
3. (a) Explain the term "Frequency Scaling" with suitable example.
   (b) Design a I-order wide band-pass filter with f_L=200 Hz. f_H=1 KHz and a pass-band gain=4. Draw the frequency response and calculate Q factor for the filter. (Assume necessary data) [6+10]
4. Write short notes on:
   (a) Tracking type Analog to Digital converters.
   (b) Weighted resistor type DAC. [8+8]
5. (a) List the application of IC 565PLL and briefly describe the role of the PLL in any of that application.
   (b) Referring to the circuit shown in figure 8b determine the free running output, lock range and the capture range . [8+8]

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

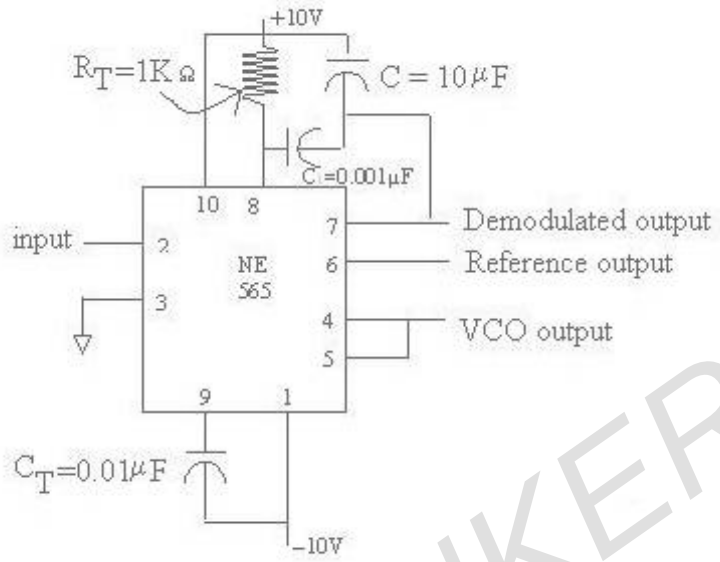

Figure 8b

6. (a) Design a n bit priority encoder.
   (b) Design a 3 bit BCD adder circuit and explain its working. [8+8]

7. (a) Derive the expression of the output voltage of an antilog amplifier using Op-amp.
   (b) What is a summer? Design a summer to add 4 input voltages in inverting configuration. [10+6]

8. (a) Compare different logic families and mention their advantages and disadvantages?
   (b) Which is the fastest non-saturated logic gate? Draw the circuit and explain its functions. [8+8]

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

II B.Tech II Semester Examinations,December 2010
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) Design a n bit priority encoder.
   (b) Design a 3 bit BCD adder circuit and explain its working. [8+8]
2. (a) Compare different logic families and mention their advantages and disadvantages?
   (b) Which is the fastest non-saturated logic gate? Draw the circuit and explain its functions. [8+8]
3. (a) An op-amp has a slew rate of $2V/\mu s$. What is the maximum frequency of an output sinusoid of peak value 5V at which the distortion sets in due to the slew rate limitation. Derive the formulae used.
   (b) If the sinusoid of 10V peak is specified, what is the full power band width?
   (c) List out the non ideal Dc characteristics of an Op-amp? [8+4+4]
4. (a) Distinguish between synchronous and asynchronous sequential circuits.
   (b) Write short notes on static RAM. [8+8]
5. (a) Explain the term "Frequency Scaling" with suitable example.
   (b) Design a I-order wide band-pass filter with f_L=200 Hz. f_H=1 KHz and a pass-band gain=4. Draw the frequency response and calculate Q factor for the filter. (Assume necessary data) [6+10]
6. (a) Derive the expression of the output voltage of an antilog amplifier using Op-amp.
   (b) What is a summer? Design a summer to add 4 input voltages in inverting configuration. [10+6]
7. Write short notes on:
   (a) Tracking type Analog to Digital converters.
   (b) Weighted resistor type DAC. [8+8]
8. (a) List the application of IC 565PLL and briefly describe the role of the PLL in any of that application.

(b) Referring to the circuit shown in figure 8b determine the free running output, lock range and the capture range . [8+8]

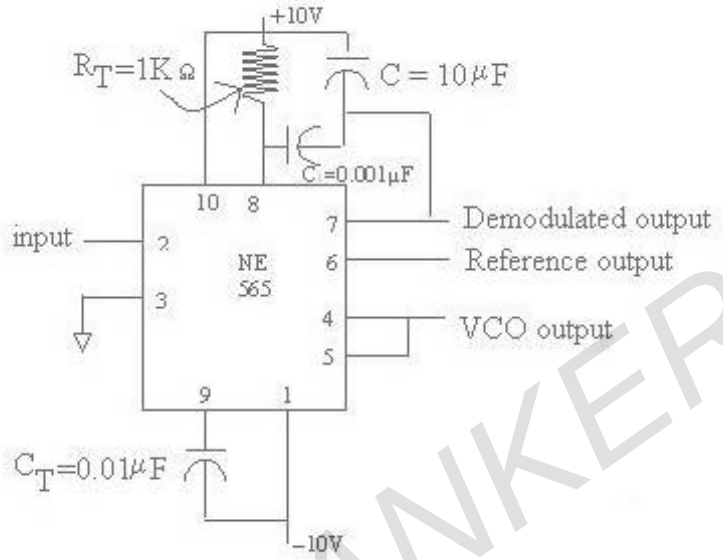

Figure 8b

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Code No: R05220202 **R05** **Set No. 3**

II B.Tech II Semester Examinations,December 2010
LINEAR AND DIGITAL IC APPLICATIONS
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Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Compare different logic families and mention their advantages and disadvantages?
   (b) Which is the fastest non-saturated logic gate? Draw the circuit and explain its functions. [8+8]
2. (a) Derive the expression of the output voltage of an antilog amplifier using Op-amp.
   (b) What is a summer? Design a summer to add 4 input voltages in inverting configuration. [10+6]
3. (a) Design a n bit priority encoder.
   (b) Design a 3 bit BCD adder circuit and explain its working. [8+8]
4. (a) Explain the term "Frequency Scaling" with suitable example.
   (b) Design a I-order wide band-pass filter with f_L=200 Hz. f_H=1 KHz and a pass-band gain=4. Draw the frequency response and calculate Q factor for the filter. (Assume necessary data) [6+10]
5. (a) Distinguish between synchronous and asynchronous sequential circuits.
   (b) Write short notes on static RAM. [8+8]
6. (a) An op-amp has a slew rate of $2V/\mu s$. What is the maximum frequency of an output sinusoid of peak value 5V at which the distortion sets in due to the slew rate limitation. Derive the formulae used.
   (b) If the sinusoid of 10V peak is specified, what is the full power band width?
   (c) List out the non ideal Dc characteristics of an Op-amp? [8+4+4]
7. Write short notes on:
   (a) Tracking type Analog to Digital converters.
   (b) Weighted resistor type DAC. [8+8]
8. (a) List the application of IC 565PLL and briefly describe the role of the PLL in any of that application.

Code No: R05220202 **R05** **Set No. 3**

(b) Referring to the circuit shown in figure 8b determine the free running output, lock range and the capture range . [8+8]

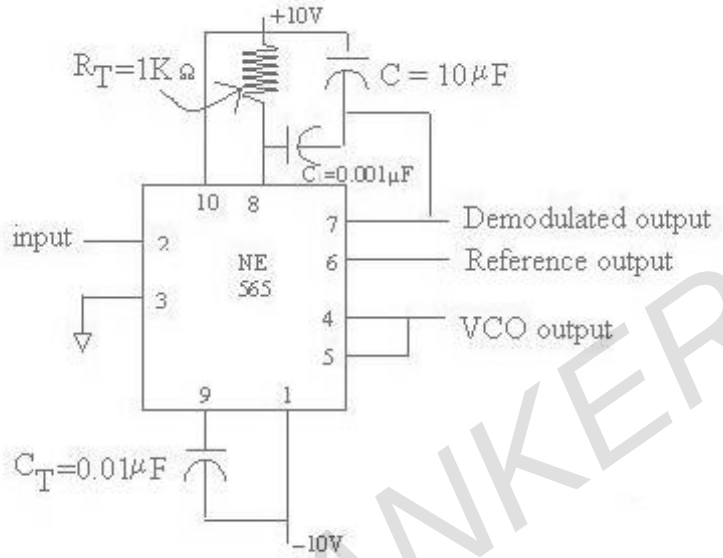

Figure 8b

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