Bharati Vidyapeeth's College of Engineering for Women, Pune

Electronics and Telecommunication Department

Unit Test:1 2009-10(Marks:30)

Subject: AICDA

1st question is compulsory

1.a) What is meant by virtual short and virtual ground? 4

b)state and explain any six chara. of ideal opamp?
4

c)Explain effect of internal compensation on freq response of opamp? 5

d)Define slew rate. what is effect of limiting of slew rate. How slew rate affect the BW? 5

2. a)Explain different methods of improving CMRR in differential ampr? 8

b)Design practical integrator ckt to integrate square wave of freq 10 Khz. The dc gain of integrator should be adjusted to 12.
8

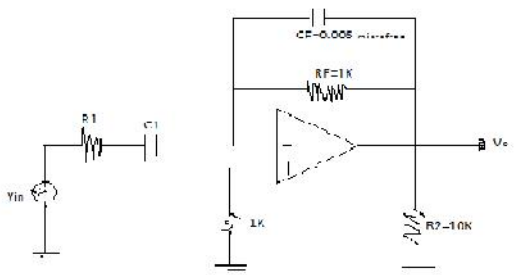
3a)Write short note on

1.level shifter ckt
8

2.current mirror ckt

b)for differentiater ckt., if sine wave of peak amplitude of 2v , freq of 1 khz is applied at i/p

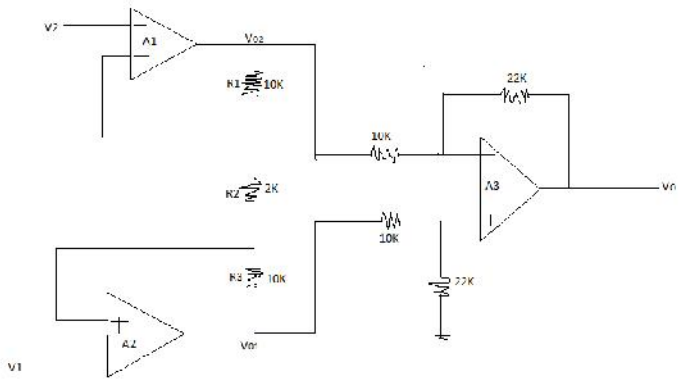
obtain o/p vtg. sketch i/p- o/p vtg. waveform



4a)Explain difference between differential amplifier and instrumentation amplifier.What are basic requirement for good instrumentation amplifier?

4b)Calculate gain of configuration.Vo,Vo1,Vo2

V1=2mv V2=1mv



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Unit Test:2 2009-10(Marks:30)

Subject: AICDA

1ST question is compullsory

from 2 to 4 solve any 2

1 a) Write short note on
8

1) precision rectifier

2)schmitt trigger

b)state advantages of active filter over passive filter.
5

c)comparision of inverting and non inverting comparators.
5

2 a) Design schmitt trigger having upper & lower threshold of 120 mv. i/p to this ckt is 1V peak to peak triangular wave of 100 Hz. Draw hysteresis loop. 8

b) Discuss application of analog multiplier for

1) squaring 2) freq doubling
8

3 a)Write short note on

1) peak detector
8

2)sample & hold ckt

b) Design 1.5kHZ low pass 2nd order Butterworth filter. use sallen & key equal component model.

alpha= 1.414, R1=1 ohm
8

4 a) Explain sallen &key equal component & unity gain ckt. 8

b)Design wide bandpass filter for f2= 100 hz, fH= 1KHZ & passband gain equal to 4. Also calculate quality factor a

for LPF c=0.01 microfarad , R1= 10K
8

For HPF c= 0.05 microfarad , R1=10K

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Unit Test:1 2008-09 (Marks:30)

Subject: AICDA

1)Draw block schematic of Op_Amp & explain each block. [6]

2)Why there is need for frequency compensation?Explain

dominant pole frequency compensation. [8]

3)Write short note on- [8]

a)Level shifter circuit

b)Active Load.

4)For dual input unbalanced output differential amplifier Vcc=10v, Vee=-10v,Rc=4.7k,Rs=50,Re=6.8k,hfe=500,hie=18k,Vbe=0.7V

Determine,

a)Icq,Vceq b)Voltage gain c)Input & output resistance. [8]

5)For differential amplifier

Rs=1k,Rc=1k,hfe=50,hie=1k,Re=2.5m.Differential input is 1mv.

Calculate 0utput voltage & CMRR in dB if common mode signal is

20mv.Assume single ended output. [8]

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Unit Test:2 2008 -09(Marks:30)

Subject: AICDA

*Q1 is compulsory.

*Solve any one from Q2 & Q3

Q1a)What are drift parameters?How these parameters affect OPAMP performance?How drift is compensated? [8]

b)Compare between difference amplifier & instrumentation amlifier. [6]

Q2a)Explain practical differentiator with neat diagram.Draw its frequency response & explain how it differs from basic diffferentiator. [8]

b)Design practical differentiator circuit that will differentiate an input signal with Fmax=150Hz. [8]

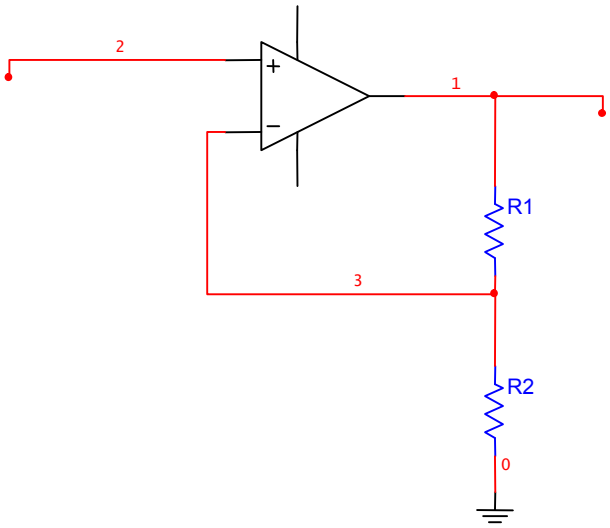
OR

Q3a)Write short note on

1)Precision rectifer

2)Scimitt trigger [8]

b)For circuit calculate value of R1 & R2 if saturation voltages are +12V & -12V hysterisis width =6V [8]



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Electronics and Telecommunication Department

Unit Test:3 2008-09 (Marks:50)

Subject: AICDA

a)First question is compulsory

b)From 2 to 5 solve any

1a)Write short note on [8]

- Precision rectifier.
- Sample and hold circuit.

b)Draw frequency response of ideal &practical HPF & draw its frequency response characteristics. [4]

c)Comparison between inverting &non inverting comparator . [6]

2a)With help of circuit diagram & waveform,explain operation of zero crossing detectors. [8]

b)Using IC741, draw circuit of scimitt trigger.Design circuit with width of hysteresis loop equal to 6 V.Use dc supply of +-10 V ,scimitt trigger is inverting type R 1=10kΩ. [8]

3a)Draw & explain wein bridge oscilllator using OPAMP.Derive expression for frequency of oscillations.State condition for sustained oscillations for this circuit. [8]

3b)Design asssymterical square wave generator using OPAMP with output frequency of 2khz & 60% duty cycle.Draw circuit diagram & i/p & o/p waveform. [8]

4a)State advantage of active filter over passsive filter classify active filter. Compare chebyshev & butterworth approximation. [8]

4b)Design 1.5khz low pass second order butterworth filter. Use sallen & key equal Component model.Damping factor=1.414. [8]

5a)Draw block diagram of PLL &expain its working. [8]

b)Calculate output frequency Fo,lock range ΔFc of PLL if Rt=1kΩ,Ct=0.1,C=10μF [8]