Total number of printed pages:2 **D/4th/DECE404**

2021

LINEAR INTEGRATED CIRCUIT

Full Marks:60

Time:2 hours

The figures in the margin indicates full marks of the question

Answer all question

A Write down whether the following statements are TRUE/FALSE 1X20=20

1) Integrated circuit means using single wafer during fabrication of components.
2) Common mode noise will be cancelled out for a differential output of a differential amplifier.
3) Common mode rejection ration of a ideal differential amplifier is 0.
4) Operational amplifier uses Differential amplifier at it's final stage.
5) Input impedance of ideal operational amplifier is infinite.
6) Input impedance of ideal operational amplifier is 0.
7) Open loop gain of operational amplifier is very high.
8) Negative feedback may be used to stabilize operational amplifier.
9) If a dc input is applied to a differentiator then expected output is ramp.
10) If a dc input is applied to a integrator then expected output is ramp.
11) If a dc ramp input is applied to a differentiator then expected output is constant.
12) For oscillation to happen close loop gain should be equal to 1.
13) For oscillation close loop effective phase difference should be equal to 180.
14) At resonant frequency gain of the circuit is maximum.
15) Comparator circuit uses negative feedback.
16) Integrated circuit occupies lesser space than discrete circuit.
17) Portability of discrete circuit is much better than integrated circuit.
18) Wein bridge oscillator generates square wave signal.
19) Power amplifier is being used at final stage of operational amplifier.
20) High pass filter rejects all frequency above cut off frequency.

B 2X6=12

1)For a non inverting amplifier calculate voltage gain if Rf=2kohm Ri=500ohm.

2) For a inverting amplifier calculate voltage gain if Rf=10kohm Ri=5kohm.

3)For a two input inverting summing amplifier if vin1=2V vin2=4V then calculate output voltage.

4)Plot the frequency response of a low pass filter.

5)For a comparator if vref=1V then for 4V peak to peak sinusoidal signal plot output voltage.

6)Draw the circuit diagram of a voltage follower.

C 7X4=28

1)Derive voltage gain of a non inverting operational amplifier.

2) Explain low pass filtering action of a passive low pass filter.

3)Explain common rejection of a differential amplifier .

4)Draw and explain OP-AMP differentiator.

5) Explain high pass filtering action of a passive high pass filter.

6)Explain lead-lag network response curve.

7)Explain the fuction of a weighted resistor type DAC.