

22423

24225

3 Hours / 70 Marks

Seat No.

--	--	--	--	--	--	--	--

-
- Instructions* – (1) All Questions are *Compulsory*.
(2) Answer each next main Question on a new page.
(3) Illustrate your answers with neat sketches wherever necessary.
(4) Figures to the right indicate full marks.
(5) Assume suitable data, if necessary.
(6) Use of Non-programmable Electronic Pocket Calculator is permissible.
(7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Attempt any FIVE of the following : 10
- a) List ideal and practical value of CMRR and slew rate.
 - b) Draw voltage follower circuit using Op-Amp.
 - c) List four specifications of IC LM 324.
 - d) State four applications of Instrumentation Amp^r.
 - e) State two merits of active filter over passive filter.
 - f) Define with respect to filter
 - i) Roll of Rate
 - ii) Pass band
 - g) Draw pin diagram of IC 555.

P.T.O.

- 2. Attempt any THREE of the following :** **12**
- a) Compare open loop and closed loop configuration.
 - b) Draw ideal and practical voltage transfer characteristics of Op-Amp.
 - c) Sketch first order Butterworth low pass filter with component value at cut-off frequency of 10 kHz with passband gain of 2.
 - d) Explain the PLL as FM demodulator.
- 3. Attempt any THREE of the following :** **12**
- a) Sketch the circuit diagram of closed loop inverting amplifier and derive expression for its output voltage.
 - b) Draw circuit diagram Active Differentiator. Draw input and output waveform for sine wave and square wave input.
 - c) Draw circuit diagram of logarithmic amplifier using Op-Amp. Derive its output voltage expression.
 - d) Sketch the Bistable multivibrator using IC-555 and explain it.
- 4. Attempt any THREE of the following :** **12**
- a) Draw block diagram of Op-Amp. Explain its input stage and level shifter stage.
 - b) Design the circuit to get output voltage
 $V_0 = - (3V_1 + 5V_2 + V_3)$ where V_1 , V_2 and V_3 are input voltages.

- c) Identify and draw the Op-Amp based filter circuit to fulfill the following frequency response. (Refer Fig. No. 1)

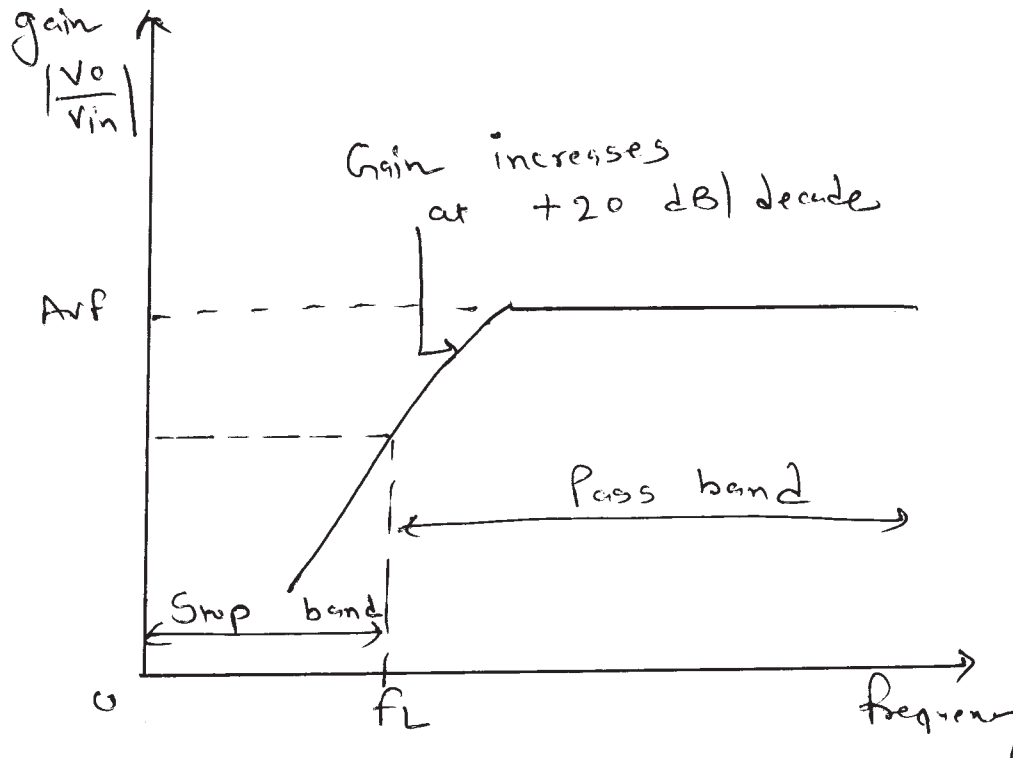


Fig. No. 1

- d) Explain phase shift oscillator using IC 741 with neat diagram.
e) Explain the block diagram of PLL.

5. Attempt any TWO of the following :

12

- a) Explain operation of Instrumentation amplifier with two op-amp with neat diagram.
b) Draw circuit diagram and input output waveform of inverting ZCD and noninverting ZCD.
c) Design second order high pass Butterworth filter with higher cut-off frequency of 2 kHz. Draw circuit with component values.

6. Attempt any TWO of the following :**12**

- a) Draw a circuit diagram of V-I converter with grounded load. Derive expression for its output. List any two applications.
 - b) Explain the operation of sample and hold circuit by using Op-Amp. with neat sketch and draw its input and output waveform.
 - c) Draw circuit diagram of Notch filter. Describe it in detail. Draw its frequency response.
-