

313324

25226

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) Define Gain and Distortion of Amplifier.
 - b) List two applications of current to voltage converter.
 - c) Define Oscillator. Classify Oscillators.
 - d) State the Barkhausen criteria of an Oscillator.
 - e) Define terms related to filters.
 - i) Center frequency
 - ii) Roll off rate
 - f) Draw ideal and practical transfer characteristics of op-Amp.
 - g) Draw pin diagram of IC 555.

P.T.O.

- 2. Attempt any THREE of the following : 12**
- a) State advantages and disadvantages of negative feedback.
 - b) Compare Class A, Class B, Class AB and Class C power amplifier.
 - c) Draw the block diagram of an op-amp and write the function of each block.
 - d) Draw the circuit diagram of Basic integrator. Derive expressions of its output voltage with its input and output waveforms.
- 3. Attempt any THREE of the following : 12**
- a) Write ideal and practical values of any four parameters of an op-Amp.
 - b) Draw the Ckt diagram of first order low pass filter. Give expression of cut off frequency and gain.
 - c) Draw and explain RC phase shift oscillator using op-Amp.
 - d) Draw and explain Class B push-pull amplifier with input output waveforms.
- 4. Attempt any THREE of the following : 12**
- a) Draw the circuit of voltage to current converter with grounded load and derive an expression for the output current in terms of input voltage.
 - b) For a first order butterworth low pass filter, calculate the cut off frequency if $R = 10\text{k}\Omega$ and $C = 0.001\mu\text{F}$. Also calculate the passband voltage gain if $R_1 = 10\text{k}\Omega$ and $R_F = 100\text{ k}\Omega$
 - c) Draw the circuit of single stage Class B push-pull power amplifier. Explain crossover distortion in Class B push pull amplifier.
 - d) Draw and explain the working of FM demodulator using PLL.
 - e) Draw and explain single stage direct coupled Class A power amplifier.

5. Attempt any TWO of the following : 12

- a) Draw and explain Sample and Hold circuit with input and output waveform.
- b) Draw the circuit of Monostable multivibrator using IC 555 and explain its working.
- c) Draw and explain the circuit diagram of first order High Pass Filter. Give expression of cut off frequency and Gain.

6. Attempt any TWO of the following : 12

- a) Describe the working principle of BJT based Crystal oscillator with circuit diagram.
 - b) Design and draw high pass filter with cutoff frequency 2kHz and pass band gain of 2.
 - c) Draw the circuit of Astable multivibrator using IC 555 and explain it's working with waveform.
-