

ANALOG ELECTRONIC CIRCUITS

(Electrical and Electronics Engineering)

Time: 3 hours

Max. Marks: 70

PART – A

(Compulsory Question)

- 1 Answer the following: (10 X 02 = 20 Marks)
- Compare performances of RC coupled amplifier with single stage amplifier.
 - Mention the advantages and disadvantages of RC – Coupled amplifier.
 - A voltage series negative feedback amplifier has a voltage gain without feedback of $A = 500$, input resistance $R_i = 3 \text{ K}\Omega$, output resistance $R_o = 20 \text{ K}\Omega$ and feedback ratio $\beta = 0.01$. Calculate the voltage gain A_f , input resistance R_{if} and output resistance R_{of} of the amplifier with feedback.
 - Mention the condition for oscillations to occur.
 - Draw Clapp oscillator and mention its frequency of oscillation.
 - State Piezo-electric effect and in which type of oscillator it is applied.
 - Draw the waveform of class A amplifier with its V-I output characteristics.
 - What do you understand by heat sink?
 - What is the use of clamper circuit? Draw its circuit diagram.
 - List out the applications of Astable and Monostable multivibrator.

PART – B

(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

- 2 (a) Discuss in detail the general analysis of cascaded amplifier.
(b) Explain the frequency response of FET RC coupled amplifier.

OR

- 3 Explain the analysis of RC coupled amplifier (assuming CE configuration) in Low range, Mid- range, High range frequencies.

UNIT – II

- 4 (a) Discuss the effects of Negative Feedback on amplifier characteristics.
(b) Explain voltage series and voltage shunt feedback topology with neat diagram.

OR

- 5 Explain current series feedback topology in detail.

UNIT – III

- 6 Describe about RC phase shift oscillator using cascade connection of High pass filter with necessary diagram.

OR

- 7 Explain the Hartley and Colpitts oscillators and its frequency stability with necessary diagram.

UNIT – IV

- 8 (a) Explain briefly about transformer coupled amplifier.
(b) Explain how to calculate the maximum value of efficiency of class A amplifier.

OR

- 9 (a) Discuss in detail about Push – Pull amplifier.
(b) Give a short note on Complementary symmetry push – pull amplifier.

UNIT – V

- 10 (a) Design the high pass RC circuit and low pass RC circuit by assuming square wave as input.
(b) Explain in detail about clippers and its types.

OR

- 11 (a) Write short note on Schmitt trigger using transistors.
(b) Design a Schmitt trigger circuit to have $V_{cc} = 12 \text{ V}$, $UTP = 5 \text{ V}$, $LTP = 3 \text{ V}$ and $I_C = 2 \text{ mA}$, using two silicon NPN transistors with $h_{fe}(\text{min}) = 100$ and $I_2 = 0.1 I_{C2}$.
