

19/12/22 (M)

Exam.Code:0927

Sub. Code: 6575

2122

B.É. (Electronics and Communication Engineering)

Third Semester

EC-307: Electronics Devices and Circuits

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Unit.

x-x-x

I. Attempt the following:-

- a) What is biasing of transistor and why do we need it?
- b) Draw the h-parameter model ckt of CE-transistor amplifier.
- c) Differentiate between RC-coupled and transformer coupled amplifier.
- d) Explain the condition for sustained oscillations in an oscillator.
- e) Explain the distortions present in power amplifiers. (5x2)

UNIT - I

II. a) Explain the transistor operation in CE configuration.

- b) In a germanium transistor using potential divider method of biasing, the operating point is chosen such that $I_C = 2\text{mA}$, $V_{CE} = 4\text{V}$. If $R_L = 2\text{k}\Omega$, $V_{cc} = 10\text{V}$ and $\beta = 50$, determine the values of R_1 and R_2 . Assume $I_1 = 10I_B$. (2x5)

III. Derive the expression for input impedance, output impedance, voltage and current gain for CE amplifier in terms of h-parameters. (10)

IV. Explain the working of and characteristics of N-channel MOSFET. (10)

UNIT - II

V. Analyse the low frequency middle frequency and high frequency response of R-C coupled CE amplifier. (10)

VI. Explain the working of Colpitt's oscillator. Also derive its expression for frequency of oscillations. (10)

VII. a) Derive an expression for the efficiency of class A power amplifier.

- b) Explain the working and advantages of push-pull amplifier. (2x5)

x-x-x