

14/5/19

(5)

Exam.Code:0906

Sub. Code: 7032

1059

B.E. (Civil Engineering)

Second Semester

EC-201: Analog Electronic Circuits – I

Duration: 3 Hours

Max. Marks: 50

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

x-x-x

I. Answer of the following:-

- Why is thermal stability in a transistor necessary? (2)
- What is the need for bias stabilization in Transistor Biasing? (2)
- Why are non-sinusoidal oscillators referred to as relaxation oscillators?(2)
- State the Barkhausen criterion, i.e., the conditions necessary for sinusoidal oscillations to be sustained. (1)
- What is heat sink? (1)
- Why transistor is called current controlled device? (1)
- What is distortion in power amplifiers? (1)

UNIT – I

- Explain the input and output characteristics of a transistor in CE configuration with reference to early effect.
 - Calculate I_c and I_E for a transistor that has $\alpha_{dc} = 0.98$ and $I_B = 100 \mu A$. Find the value of β_{dc} of the transistor. (6,4)
- Obtain an expression in terms of 'h' parameters for a transistor as a two port network. Using the above developed equations obtain the hybrid model of CE, CC, and CB configuration.
 - A transistor is connected as a common emitter amplifier driving a load of $10 k\Omega$. It is supplied by a source of $1 k\Omega$ internal resistance. The 'h' parameter are $h_{ie}=1.1 k\Omega$, $h_{ie} = 50$, $h_{re} = 2.5 \times 10^{-4}$, $h_{oe} = 1/40 k\Omega$. Find (i) current gain, (ii) Voltage gain, (iii) input impedance, (iv) output impedance. (5,5)
- What is meant by a Field Effect Transistor? Explain its biasing process.
 - Explain FET small signal model and list FET applications. (5,5)

P.T.O.

(2)

UNIT - II

- V. a) What is an Transformer coupled amplifier? Explain its working with the help of suitable diagram.
- b) What is meant by bandwidth of an amplifier? What is its significance and how do you determine it in case of amplifier? (5,5)
- VI. a) With the help of relevant circuit diagram, describe the operation of Phase Shift Oscillator. What are the phase shifts introduced by the feedback and amplifier parts?
- b) What are Crystal oscillators? What makes crystal oscillators exhibit exceptionally high frequency stability? (5,5)
- VII. a) What are Single tuned and double tuned amplifiers? What are the drawbacks of a single tuned amplifier?
- b) What is Push Pull amplifier? Explain the functioning of a Class B push-pull power amplifier with necessary circuit diagram. (5,5)

x-x-x