

R13

Code No: 114CV

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**B.Tech II Year II Semester Examinations, November/December - 2015****ELECTRONIC CIRCUIT ANALYSIS**

(Common to ECE, EIE)

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART- A

(25 Marks)

- 1.a) List the advantages of h-parameters used for amplifier analysis. [2M]
- b) Write about the Darlington pair and its significance. [3M]
- c) Discuss the effect of bypass capacitors on the bandwidth of an amplifier. [2M]
- d) Sketch the low frequency equivalent circuit of common source amplifier. [3M]
- e) Write the Conditions for Oscillations in oscillators circuits. [2M]
- f) Discuss how Negative feedback can improve stability in an Amplifier. [3M]
- g) Define a heat sink and there requirements in large amplifiers. [2M]
- h) Classify large signal amplifiers based on its operating point. [3M]
- i) What do you mean by synchronous tuning. [2M]
- j) Express the methods to stabilize the tuned amplifiers against oscillations. [3M]

PART-B

(50 Marks)

- 2.a) Discuss the variation of A_v , A_{v_s} , R_i and R_o with R_s and R_L in Common Emitter configuration.
 - b) For a CE configuration, what is the maximum value of R_L for which R_o differs by no more than 10 percent of its value for $R_L = 0$. The h-parameter values are $h_{ie} = 50$, $h_{re} = 1.1K$, $h_{fe} = 2.5 \times 10^{-4}$, $h_{oe} = 25 \mu A/V$. [5+5]
- OR**
- 3.a) Draw the circuit diagram of Common collector amplifier and derive an expression for its Voltage gain and current gain.
 - b) An amplifier consists of 3 identical stages in cascade. The bandwidth of overall amplifier extends from 20 Hz to 20 kHz. Calculate the bandwidth of individual stage. [5+5]
- 4.a) Prove that at low frequencies the Hybrid - π model with r_{be} and r_{ce} taken as infinite reduces to the approximate CE h-parameter model.
 - b) Draw the small signal equivalent circuit for an emitter follower stage at high frequencies. [5+5]
- OR**
5. Write about MOS amplifiers classifications and discuss in detail about the MOS Small signal Model, with equations and parameters involved. [10]

6. Discuss the effect of Feedback on Amplifier Characteristics, and classify various feedback amplifier configurations and their parameter evaluations in detail. [10]

OR

7.a) Write about the Classification of Feedback Amplifiers based on the type of feedback.
b) Calculate the feedback factor β , and the gain of an amplifier with feedback given amplifier with open loop gain of 2000 ± 150 and is necessary that voltage gain varies by more than $\pm 0.2\%$ [6+4]

8.a) Draw the class-B power amplifier and explain its operation. [6+4]
b) Explain the origin of various distortions in transistor amplifier circuits.

OR

9.a) With the help of a circuit diagram, explain the principle of operation of a class-C power amplifier.
b) Discuss in detail the origin and effect of cross-over distortion write the methods to avoid the cross over distortion in power amplifiers circuit. [6+4]

10.a) What is meant by the term Tuned amplifier and briefly explain the various methods of classification of tuned amplifiers?

b) Derive an expression for bandwidth of an n-stage synchronously tuned amplifier. [5+5]

OR

11.a) Draw and explain the circuit diagram of a single tuned Capacitance coupled amplifier with its operation in detail.

b) Compare the frequency response of single tuned, double tuned and staggered tuned amplifiers. [5+5]

