

Q.P. Code: 16EC407

**R16**

Reg. No.

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**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR  
(AUTONOMOUS)**

**B.Tech II Year II Semester (R16) Regular & Supplementary Examinations May 2019  
ELCTRONIC CIRCUIT ANALYSIS**

Time: 3 hours

Max. Marks:60

(Answer all Five Units 5 X 12 = 60 Marks)

**UNIT-I**

- 1 Using low frequency h-parameter model, derive the expressions for voltage gain, current gain, input impedance and output admittance for a BJT Amplifier in CE configuration. 12M

**OR**

- 2 a Compare the transistor amplifier parameters for CE, CB and CC configurations. 5M  
b Determine Voltage Gain, Current Gain, Input resistance and Output resistance for a CE amplifier using NPN transistor with  $h_{ie} = 1200\Omega$ ,  $h_{re} = 0$ ,  $h_{fe} = 36$  and  $h_{oe} = 2 \times 10^{-6}$  mhos,  $R_L = 2.5k\Omega$  and  $R_S = 500\Omega$  (neglect the effect of biasing circuit). 7M

**UNIT-II**

- 3 a Draw the Hybrid- $\pi$  model and explain the significance of each and every component in it. 6M  
b Derive the expression for Hybrid-  $\pi$  capacitance of CE transistor at high frequency. 6M

**OR**

- 4 With the help of necessary circuit diagrams and approximations obtain the expression for CE Short circuit current gain and derive the relation between  $f_\beta$  and  $f_T$ . 12M

**UNIT-III**

- 5 a Describe different methods used for coupling multistage amplifiers with their frequency response. 10M  
b List the classification of amplifiers. 2M

**OR**

- 6 a What is Darlington Connection? Mention the advantages of Darlington Pair Amplifier. 4M  
b With diagram, derive the expression for current gain and input resistance of Darlington amplifier. 8M

**UNIT-IV**

- 7 Explain the characteristics of negative feedback amplifiers. 12M

**OR**

- 8 a Derive the expression for frequency of oscillations for RC phase shift Oscillator. 6M  
b Discuss the working principle of Wein bridge oscillator and derive the expression for frequency of oscillations. 6M

**UNIT-V**

- 9 a Discuss with diagram, Transformer coupled Class A Power Amplifier and derive its Maximum efficiency. 6M  
b Explain second harmonic distortion by three point method. 6M

**OR**

- 10 a Compare Single Tuned and Double Tuned Amplifier. 2M  
b Describe the operation of a single tuned capacitive coupled amplifier with diagram and derive the expression for its centre frequency, Quality factor, Voltage gain and bandwidth. 10M

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