

**Reg. No:**

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

**B.Tech II Year II Semester Supplementary Examinations Nov/Dec 2019**

**ELECTRONIC CIRCUIT ANALYSIS**

**(ECE)**

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 Draw the circuit diagram of a single stage RC coupled Amplifier and discuss the steps used for designing it. **6M**  
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). **6M**

**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 a Short circuit CE current gain of a transistor is 25 at a frequency of 2MHz. If  $f_{\beta} = 200KHz$ . Calculate (i)  $f_T$  (ii)  $h_{fe}$  (iii) Find  $|A_v|$  at frequency of 10MHz and 100MHz. **6M**  
b Derive the expression for cut off frequencies  $f_{\alpha}$ ,  $f_{\beta}$  and  $f_T$ . **6M**

**UNIT-III**

- 5 a Explain the classification of amplifiers. **6M**  
b Discuss the need of cascading amplifiers. **6M**

**OR**

- 6 a Explain the effect of cascading of amplifiers on bandwidth. **6M**  
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. **6M**

**UNIT-IV**

- 7 a Discuss Feedback topologies. **6M**  
b An amplifier has an open loop gain of 1000 and a feedback ratio of 0.04. If the open Loop gain changes by 10% due to temperature, find the percentage change in gain of the amplifier with feedback. **6M**

**OR**

- 8 a State Barkhausen Criterion for oscillations. Explain the principle of operation of oscillator. **6M**  
b Discuss the working principle of Wein bridge oscillator and derive the expression for frequency of oscillations. **6M**

**UNIT-V**

- 9 a Describe Higher order harmonic distortion by five point method. **6M**  
b With neat diagram explain Push Pull Class B Power Amplifier and derive its maximum efficiency. **6M**

**OR**

- 10 Discuss Double Tuned Amplifier with neat diagram and derive the expression for its bandwidth. **12M**

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