

GUJARAT TECHNOLOGICAL UNIVERSITY**B.E. Sem-IV Examination June- 2010****Subject code: 141101****Date: 18 / 06 /2010****Subject Name: Advance Electronics****Time: 10.30 am – 01.00 pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) List the parameter those affecting to the transistor at high frequencies. Draw the hybrid π model for CE configuration and explain it. Also derived the equation for any two above listed parameter for CE configuration. **07**
- (b) Draw and Explain with necessary figure the single stage CE transistor amplifier response. Also explain the significance of gain bandwidth product. **07**

- Q.2** (a) The upper 3dB frequency of 16 kHz and lower 3dB frequency of 25 Hz of a three identical stage cascaded amplifier Calculate **07**
- (1) f_L and f_H of each stage.
- (2) Band width of each stage.
- (b) Draw and explain RC coupled amplifier. List all parameters affecting the low frequency response of RC coupled amplifier and derived the equation for any two of them **07**

OR

- (b) Draw and explain the two cascaded CE transistor stage. Explain the significance of each component connected into it, also derived required equation **07**

- Q.3** (a) What is the negative feedback system? List the general characteristics of the negative feed back amplifier and explain any two of them with necessary equation. **07**
- (b) Calculate the bandwidth of an amplifier when 6% negative feedback introduced to 300kHz bandwidth and 100 voltage gain? Also calculate gain bandwidth product after and before application of feedback? Finally calculate amount of feedback if bandwidth is calculate to 1 MHz. **07**

OR

- Q.3** (a) List the methods to analyze the multi stage amplifier with voltage series feedback. Explain it with necessary equations. **07**
- (b) The 4% negative feedback is employed in an amplifier with $A_v=140$, $f_L=200\text{Hz}$ and $f_H=200\text{ kHz}$, $R_i=2\text{k}\Omega$, $R_o=4.7\text{k}\Omega$ Determine the following. **07**
- A_{vf} , R_{if} , R_{of} , f_{LF} , f_{HF}

- Q.4** (a) What is oscillator? Explain the concept of oscillation. Explain the concept of oscillation Properly with Barkhausen criteria. **07**
- (b) Design RC phase shift oscillator for the frequency of 2kHz. **07**

OR

- Q.4** (a) What is CMRR ? What is the significance of CMRR? List and Explain the methods to improve the CMMR. **07**

(b) Draw and explain Hartley oscillator. Calculate the value of tank circuit capacitor of a hartley oscillator for 50 kHz with L1 and L2 are of 100 μ H. 07

Q.5 (a) Give the classification of Logic families. Also list the characteristics of digital IC and explain any three of them 07

(b) List the logic family. Give comparisons of each of them. Also give the advantages and disadvantages of each logic families. 07

OR

Q.5 (a) What is Digital to Analog Convertor ? Draw and Explain R-2R DAC ? Also give the advantages and disadvantages of R-2R Digital to Analog convertor. 07

(b) What is Analog to Digital convertor ? List the types of Analog to Digital convertor used. Explain the Successive Approximation Analog To Digital Convertor. 07
