# UNIT IV

PART –A

1. Why are h parameters not used at high frequencies?
2. Write the expressions for gain bandwidth product for voltage and current.
3. How is the high frequency gain of an amplifier limited?
4. Draw general frequency response curve of an amplifier.
5. What is bandwidth of an amplifier?
6. What is the effect of coupling capacitors on the bandwidth of the amplifier.
7. Short circuit common emitter current gain of transistor is 25 at a frequency of 2 MHz if $f_\beta =$ 200KHz, calculate f_T and h_{fe}. What is the bandwidth that can be obtained using BJT, if the rise time of a BJT is 40 nano seconds?
8. What are the effects of emitter bypass capacitor on high frequency response?
9. What is meant by gain-bandwidth product?
10. Calculate the amplification factor, μ of FET, if $r_d = 4K\Omega$ and $g_m = 4mA/V$.
11. Draw the high frequency model of MOSFET.
12. Two amplifiers having gain 20 dB and 40 dB are cascaded. Find the overall gain in dB.
13. Write the equation of overall upper and lower cut off frequencies of multistage amplifiers.

PART – B

1. Define alpha cutoff frequency. (4)

2. Explain the significance of cut off frequencies and gain bandwidth product of amplifier.(6)
3. Explain the low frequency response and the high frequency response of an amplifier. (16)
4. Draw the high frequency hybrid π model for a transistor in the CE configuration and explain the significance of each component. (12)
5. Explain in detail with neat diagram frequency response of BJT amplifier. Discuss the significance of cut off frequencies and band width of the amplifier.(16)
6. Using hybrid π model of a CE amplifier derive the expression for its short circuit gain.(16)
7. The following circuit has $R = 100K\Omega$, $R_{in} = 420K\Omega$, $C_{gs} = C_{gd} = 1PF$, $g_m = 4mA/V$, $R_t = 3.33K\Omega$. Find the mid band gain and upper 3 dB frequency, f_H .   (16)
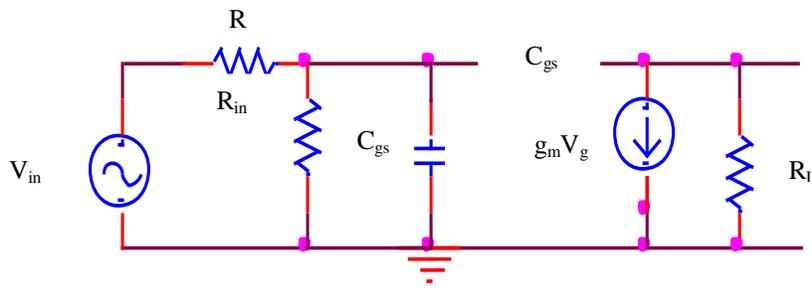
8. Explain the operation of high frequency common source MOSFET amplifier with neat diagram.
9. Derive the expression for
        (a) voltage gain
        (b) input admittance

        (c) input impedance

        (d) output admittance   (16)

10. Draw the high frequency equivalent circuit of MOSFET amplifier and derive all the parameters related to its frequency response.(16)

11. Explain the high frequency equivalent circuit of MOSFET and hence derive gain bandwidth product for any one configuration.(16)

12. Derive the expression for frequency response of multistage amplifier.(10)

13.Explain the frequency response of multistage amplifiers. Calculate the overall upper and lower cut off frequencies. (10)

14.How does Rise and Sag time related to cut-off frequencies? Justify (8)

15.Explain the terms rise time and sag. (6)

16.Define alpha cutoff frequency. (4)

17.Explain the significance of cut off frequencies and gain bandwidth product of amplifier.(6)

18.Explain the low frequency response and the high frequency response of an amplifier. (16)