**AEC--ASSIGNMENTS**

**Assignment-I**

**UNIT-I**

1. Write briefly about classification of amplifiers.
2. What are advantages and disadvantages of transformer coupled amplifier.
3. Draw high frequency equivalent circuit of FET, BJT and explain.
4. Derive expressions for midband gain and bandwidth of 2-stage RC coupled FET amplifier.
5. Explain RC coupled amplifier. Derive f1, f2, bandwidth draw the equivalent circuit used in finding f1, f2.
6. Draw the small signal equivalent circuit of FET amplifier in CG connection and device the expression for voltage gain.
7. Draw and explain the equivalent circuit of transformer coupled amplifier in low, mid, high frequency range.

**Assignment-II**

**UNIT –II**

1. What are the characteristics of negative feedback amplifiers?
2. What is the effect of negative feedback on i/p & o/p resistances of transconductance amplifier?
3. Differentiate local & global feedbacks.
4. If an amplifier has BW-200kHz & voltage gain =80, what will be new BW & gain if 5% of feedback.
5. What is effect of negative feedback on i/p, o/p resistances on current amplifier?
6. Evaluate the effect of negative feedback on i/p & o/p impedances of voltage shunt amplifier.
7. For single stage voltage shunt feedback amplifier if Rc-2k, Re=1K, Rf=100K, Rs=1K hfe=50, find Rif, Rof.
8. Briefly explain the effect of negative feedback on stability. For single stage current series feedback amplifier if Rc-2k, Re=1K, Rf=100K, Rs=1K hfe=50, find Rif, Rof.
9. An amplifier has midband gain of 100 and bandwidth of 250khz .

a) If 5% negative feedback is introduced find new bandwidth and gain

b) If bandwidth is to be restricted to 1MHz, find feedback ratio.

**UNIT-III**

1. Compare LC & RC oscillations
2. Draw relation between series & parallel resonant freq. of crystal.
3. State & explain barkhausen conditions.
4. Comment why RC oscillators cannot be used at radio freq.
5. What factors decide the freq stability of an oscillator.
6. A Colpitts oscillator C1=0.16µf, L=15.8mH & its freq of osc is 10khz, find value of C2.
7. Derive expression for freq of osc & condition of osc for RC phase shift BJT osc.
8. Draw a neat colpitts osc. Circuit & explain its principle of operation. Derive its freq of operation & condition for osc.
9. Draw a neat RC phase shift oscillator Circuit & explain its principle of operation. Derive its freq of operation & condition for osc.
10. Draw a neat wein bridge oscillator. Circuit & explain its principle of operation. Derive its freq of operation.

**Assignment-III**

**UNIT-IV**

1. What is crossover distortion in power amplifier.
2. Explain class-D operation in power amplifier.
3. Find efficiency. Of transformer coupled class-A power amplifier.
4. Define conversion efficiency & collector efficiency of power amplifier.
5. State advantages of class-c amp. Over class-B amp.
6. In class- A power amp. Vce (max)=15V, Vce (min)=1V, find overall efficiency for

i) series fed load ii) transformer coupled

1. State advantages of complementary push-pull amplifier.
2. Draw circuit of class-B push pull power amp. & find its efficiency.
3. Explain the performance of class D power amplifier.
4. Draw the circuit of Class-c power amplifier & explain its operation & derive its collector efficiency.

**UNIT-V**

1. What is staggered tuned amplifier? Write its advantages
2. 2) What are the requirements of RF voltage amplifiers.
3. What is meant by unloaded Q & loaded Q
4. What is neutralization of tuned amplifier.
5. What is effect of Q on BW of tuned amplifier.
6. Differentiate between single, double & staggered tuned amplifier.
7. Derive expressions for gain at resonance & BW for single tuned amplifier.
8. Find the gain & BW for single tuned capacitance coupled amplifier.
9. Explain the operation of single tuned FET & find an expression for its voltage gain & BW.
10. Draw the circuit of double tuned transformer coupled amp. Using BJT. Derive the expression for gain at center freq.
11. Derive the equation for 3-dB bandwidth of capacitor coupled single tuned amp.
12. Explain the principle of operation of double tuned amp. & obtain an eqn for its gain BW product.