# Analog Electronics circuits (Semester V – EEE)

## IMPORTANT QUESTIONS

Q1.Derive an expression for differential mode gain. Describe the advantage of differential amplifier as regards noise immunity and drift immunity.

Q2. Explain what you understand by 'offset voltage' and 'offset current' of opamp. Discuss with a neat circuit diagram the technique used for minimizing offset voltage and offset current in an inverting amplifier.

Q3. Draw the circuit diagram of antilogarithmic amplifier and explain it.

Q4.Sketch the circuit of summing amplifier using opamp to get
Vout= (- 5V1+3V2-4V3) & Rf = 6 Kohm

Q. 5. The two input terminals of an opamp are connected to voltage signals of strength 745 and 740 (microvolts) respectively. The gain of the opamp in differential mode is $5 * 10^5$ and its CMRR is 80 dB. Calculate the output voltage and percentage error due to common mode.

Q6. Draw the circuit diagram of opamp as high pass and low pass filter.

Q7. Draw the circuit of wein bridge oscillator and derive its expression for frequency. Explain why Wein Bridge is widely used in audio frequency range.

Q8.Write a short note on Logarithmic amplifier.

Q9.Draw the circuit diagram of RC phase shift oscillator and derive its expression for oscillation frequency.

Q10. Write a short note on miller and bootstrap sweep generator.

Q11.Design an RC coupled amplifier with two stages. Explain the effect of coupling capacitor on low frequency response. Why does the gain fall off at low and high frequencies?

Q12. A negative feedback of $\beta$=0.002 is applied to an amplifier of gain A=1000. Calculate the change in overall gain of feedback amplifier if internal amplifier is subjected to a gain reduction of 15%.

Q13. What do you understand by feedback in amplifiers? List the four basic negative feedback configuration and indicate the effect on $R_i$ and $R_o$ in each of these configuration.

Q14. An amplifier without feedback gives an output of 36V with 7% second harmonic distortion when the input is 0.02 V. If 1.2% is feedback into the input in negative voltage series feedback, what is output voltage?

Q15. Design the RC elements of a wein bridge oscillator for operation at
$f_o$=10Khz.Given $R_1$=$R_4$=200Kohms.

Q16. Which oscillator will you prefer from stability point of view. Explain its working.

Q17. The parameters of crystal oscillator are $L_s$=0.8H, $C_s$=0.08pF, $R_s$=5Kohm,

$C_p$=1.0 pF. Determine the series and parallel frequencies.

Q18. Write a short note on Schmitt trigger.

Q19.Draw the circuit diagram of class B push pull amplifier and explain its operation. Derive an expression for its maximum conversion frequency.

Q20.A class B push pull amplifier is supplied with Vcc=50 volts. The signal swing the collector voltage down to Vmin=5 volts. The total dissipation in both transistors is 40 watts. Find the total power and conversion efficiency.

Q21. A power amplifier working in class A operation has transformer as a load. If transformer has a turn ration of 10 and secondary load is 100ohms. Find max. ac power output given that zero signal collector current is 0.14A.

Q22. Discuss a transistor class A Power amplifier with output transformer as load. Discuss its working and find an expression for its efficiency.

Q23.What are power amplifier? Classify them according to their operation. Also explain the concept of efficiency and distortion in class B amplifier.

Q24. . Draw the circuit diagram of class B push pull amplifier and show that its maximum efficiency 78.5% and the power dissipation capability of each transistor used shall be at least 0-2 times the maximum power output of the amplifier.

Q25.Discuss the operation of class B push pull amplifier. Hence derive its expression for max. undistorted output power, max. transistor power dissipation, and stage efficiency. What type of distortion occurs in class B power amplifier output. How to minimize the distortion? Derive the expression for max. efficiency of modified circuit.