

## ELECTRONICS CIRCUIT & COMMUNICATION FUNDAMENTALS

1. Find the mathematical expression of FM signal
2. With neat diagram explain Zero-Crossing Detector
3. A public address system is connected to a microphone that has a maximum output voltage of 10mV. The microphone is connected to a 10-watt audio amplifier system that is driving an 8 Ohm speaker. The voltage amplifier is a noninverting op-amp circuit. Calculate the maximum voltage gain for the voltage amplifier stage and determine the resistor values to obtain the desired gain. Assume the power amplifier stage has a voltage gain of 1.
4. Explain lock range and capture range.
5. List down various parameters of Opamp along with their typical values for IC741. Also explain what the significance of CMRR and Slew Rate is?
6. Explain how operational amplifier can be used for taking summation of three signals. 5
7. Explain fly wheel effect in Class C amplifier.
8. Explain Nyquist criteria.
9. Determine the magnitude of  $g_m$  for a JFET with  $I_{pss} = 8 \text{ mA}$  and  $V_p = -4 \text{ V}$  at dc bias points  $V_{GS} = -0.5 \text{ V}$  and also at  $V_{GS} = -2.5 \text{ V}$ .
10. What is DSBSC wave? Explain its generation using balanced modulator.
11. Explain the use of PLL as FM detector.
12. Explain super heterodyne receiver in detail along with the waveforms at each stage
13. What do you understand by signal multiplexing? Explain TDM and FDM with suitable Examples
14. Write short note on generation of FM by Armstrong method.
15. Mention important specifications of ADC and DAC required for communication
16. Explain in detail what is meant by quantization noise.
17. Compare n-channel and p-channel JFET with respect to their device features and
18. voltage-current characteristics