Subject code: PC403EC Semester: 1st

Subject name: Analog Electronics ACY: 2022-2023

**Assignment Questions**

1. Explain the characteristics of a Zener diode and its applications as a voltage regulator.

2. Briefly describe the working principle of LED and its application in electronic devices.

3. Provide a concise overview of basic clipping and clamping circuits using diodes.

4. Discuss the small signal models of Bipolar Junction Transistor (BJT) and Junction Field-Effect Transistor (JFET).

5. Explain the configurations of BJT and JFET (CE/CS, CB/CG, CC/CD) and highlight their features.

6. Describe the principles of transistor biasing and the methods such as fixed bias and self-bias.

7. Define the concept of feedback and explain the impact of positive and negative feedback on gain and bandwidth.

8. Discuss qualitative aspects of feedback topologies, including voltage series and current shunt.

9. Provide a brief treatment of stability concepts in feedback systems.

10. Explain the Barkhausen criterion for oscillation in electronic circuits.

11. Provide a qualitative treatment of RC oscillators and LC oscillators.

12. Briefly discuss the various classes of operation in power amplifiers (Class A, B, and AB) and their qualitative characteristics.

13. Describe the block diagram of an Operational Amplifier (OP-AMP) and its ideal characteristics.

14. Explain the functionality of Inverting and Non-Inverting Amplifiers using OP-AMPs.

15. Provide a brief overview of different circuits involving OP-AMPs, including integrator, differentiator, and comparator.