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. [CO1]

2. Briefly describe the working principle of LED and its application in electronic devices. [CO1]

3. Provide a concise overview of basic clipping and clamping circuits using diodes. [CO1]

4. Discuss the small signal models of Bipolar Junction Transistor (BJT) and Junction Field-Effect Transistor (JFET). [CO2]

5. Explain the configurations of BJT and JFET (CE/CS, CB/CG, CC/CD) and highlight their features. [CO2]

6. Describe the principles of transistor biasing and the methods such as fixed bias and self-bias. [CO2]

7. Define the concept of feedback and explain the impact of positive and negative feedback on gain and bandwidth. [CO3]

8. Discuss qualitative aspects of feedback topologies, including voltage series and current shunt. [CO3]

9. Provide a brief treatment of stability concepts in feedback systems. [CO3]

10. Explain the Barkhausen criterion for oscillation in electronic circuits. [CO4]

11. Provide a qualitative treatment of RC oscillators and LC oscillators. [CO4]

12. Briefly discuss the various classes of operation in power amplifiers (Class A, B, and AB) and their qualitative characteristics. [CO4]

13. Describe the block diagram of an Operational Amplifier (OP-AMP) and its ideal characteristics. [CO5]

14. Explain the functionality of Inverting and Non-Inverting Amplifiers using OP-AMPs. [CO5]

15. Provide a brief overview of different circuits involving OP-AMPs, including integrator, differentiator, and comparator. [CO5]