

Subject Title: Basic Electronics

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Unit - I: NETWORK ELEMENTS AND NETWORK THEOREMS

1. Define the terms Resistor, Inductor, Capacitor.
2. What are active and passive elements? Explain in detail.
3. Distinguish between active and passive elements with suitable examples.
4. Explain Z, Y, h and ABCD parameters.
5. Explain T and π networks.
6. State and explain Superposition theorem.
7. State and explain Thevenin's theorem.
8. State and explain Norton's theorem.
9. State and explain Maximum power transfer theorem

Unit – II: BAND THEORY OF P-N JUNCTION AND DIODES

10. Explain valence and conduction band.
11. Explain briefly the classification of semiconductors.
12. What are P type and N type extrinsic semiconductors?
13. Derive continuity equation.
14. Explain P-type and N-type extrinsic semiconductors.
15. Explain working of PN junction diode and its V-I characteristics.
16. Explain the operation of Zener diode.
17. Explain how Zener diode acts as voltage regulator. Mention its applications.
18. What is a Rectifier? Explain bridge rectifier.

Unit - III: BIPOLAR JUNCTION TRANSISTOR (BJT) AND FEEDBACK CONCEPT AND OSCILLATORS

19. What is a transistor? Mention different types of transistors.
20. Explain PNP and NPN transistors.
21. Write a note on different configurations of BJT (CB, CE and CC).

22. Define α , β and γ .
23. Explain how transistor acts as an amplifier. Explain RC coupled amplifier.
24. What do you mean by feedback? Explain positive and negative feedback.
25. List the advantages of negative feedback.
26. What is an Oscillator? Explain Barkhausen criterion for oscillators.

Unit - IV: DIGITAL ELECTRONICS AND LOGIC GATES.

27. Explain different types of number systems with suitable examples.
28. Conversions of number systems.
29. Explain 1's and 2's complement method.
30. Explain 2's complement method of subtraction.
31. Explain logic gates.
32. Explain realization of logic gates by discrete components.
33. State and prove De-Morgan's theorems.
34. Show that NOR and NAND gates are Universal gates.
35. Explain EX-OR gate.

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