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Electronics - I Semester

(M.ECS)

SVD of PG Question Bank

pg ①

Electronics.

Long Answer Questions

Unit-I

1. What is phasor? Explain phasor notation and phasor algebra.
2. Explain operator  $j$  and phasor representation of sinusoidal voltages.
3. What is operator  $j$ ? using complex number representation.
4. State Kirchhoff's voltage law and current law. Obtain the conditions of balance of wheatstone bridge.
5. What is mesh analysis? Mention the rules in writing a mesh equation.
6. Describe the loop current method for single source network.

Unit-II

1. State and prove Thevenin's theorem.
2. State and prove Norton's theorem.
3. State and prove superposition theorem.
4. State and explain Millman's I Theorem.

Q. State and Prove Millman's III-theorem.

5. State and Prove Maximum power transfer theorem

### Unit-III

1. Derive Expression for growth and decay of current in an (Inductance - resistance) R-L circuit.
2. Derive the expression for growth and decay of current in (capacitance - resistance) R-C circuit.
3. Explain the working of differentiator and Integrator with R-C combination.
4. Explain the working of differentiator and Integrator with R-L combination.
5. Discuss Frequency response of R-C and R-L circuits.

### Unit-IV

1. Explain LCR series resonance circuit. Define Q-factor, Bandwidth and selectivity.
  2. Derive the resonant frequency of a parallel resonant RLC circuit and explain the terms Q-factor, Bandwidth and selectivity.
  3. Draw the diagram of CRT and explain the function of each part.
  4. Derive an expression for electrostatic deflection sensitivity.
  5. Derive an expression for magnetostatic deflection sensitivity.
- Q. Draw the diagram of CRO and explain it.

## Short Answer Questions

Pg 2

### Unit - I

1. Define power factor, ~~and~~ form factor, and crest factor
2. Derive an expression for Average Value (or) Mean Value
3. Derive an expression for RMS Value (or) Virtual Value
4. Define (i) Node and branch (ii) loop and mesh (iii)

### Active and passive networks

5. Explain Impedance ~~or~~ 6. Explain Admittance

### Unit - II

7. state and explain Reciprocity theorem
8. state and explain Millman's I-Theorem

### Unit - III

9. What is transient response?
10. Define Time constant of an LR and CR circuits
11. Describe the working of RC Integrating circuit
12. write a short notes on filter circuits
13. write a short notes on low pass filter and high pass filter

### Unit - IV

14. Distinguish between series and parallel resonance circuits
15. Explain the term Quality factor of resonance circuit
16. Define Electrical resonance
17. Why parallel resonant circuit is called rejector circuit

✓ 18. write a note on electron gun ✓ 19. Explain Applications of CRO

✓ 20. Explain fluorescent screens  
✓ 21. Explain the application frequency and phase

- Ac fundamentals
- Kirchhoff's laws
- network theorems

22. Explain High pass filter and low pass filter in detail

23. Explain  $\Pi$ -Section filter using RCL circuit