

UNIT-IV

Equivalent circuit - losses and efficiency

Q1. The equivalent circuit of a transformer represents

- A. Mechanical parts
- B. Electrical behavior of the transformer
- C. Cooling system
- D. Oil circulation

Answer: B

Q2. Core loss consists of

- A. Copper and friction losses
- B. Hysteresis and eddy current losses
- C. Brush losses
- D. Windage losses

Answer: B

Q3. Copper loss is proportional to

- A. Voltage
- B. Frequency
- C. Square of load current
- D. Flux

Answer: C

Q4. Core loss is approximately

- A. Zero

- B. Constant at rated voltage
- C. Proportional to load²
- D. Variable with load

Answer: B

Q5. Maximum efficiency occurs when

- A. Copper loss is zero
- B. Copper loss equals core loss
- C. Core loss is zero
- D. Output is zero

Answer: B

Q6. Transformer efficiency is

- A. $\text{Input/Output} \times 100\%$
- B. $\text{Output/Input} \times 100\%$
- C. V/I
- D. I/V

Answer: B

Q7. All-day efficiency is important for

- A. Power transformers
- B. Distribution transformers
- C. Isolation transformers
- D. Instrument transformers

Answer: B

Q8. Voltage regulation is

- A. Current change
- B. Frequency change
- C. Change in secondary voltage from no-load to full-load
- D. Core loss

Answer: C

Q9. Positive voltage regulation occurs for

- A. Leading PF
- B. Lagging power factor load
- C. Unity PF only
- D. No-load

Answer: B

Q10. Open-circuit test is performed on

- A. HV side only
- B. LV side usually
- C. Both sides together
- D. Neutral

Answer: B

Q11. Open-circuit test measures

- A. Copper loss
- B. Core loss
- C. Stray loss
- D. Mechanical loss

Answer: B

Q12. During OC test the secondary is

- A. Shorted
- B. Open
- C. Grounded
- D. Loaded

Answer: B

Q13. Short-circuit test is performed with

- A. Rated voltage
- B. Double rated voltage
- C. Low applied voltage
- D. Zero voltage

Answer: C

Q14. Short-circuit test measures

- A. Core loss
- B. Full-load copper loss
- C. Mechanical loss
- D. Dielectric loss

Answer: B

Q15. During SC test one winding is

- A. Open
- B. Short-circuited
- C. Removed
- D. Grounded

Answer: B

Q16. The exciting current in SC test is

- A. Rated
- B. Very small
- C. Twice rated
- D. Zero

Answer: B

Q17. Equivalent resistance represents

- A. Core loss
- B. Copper loss
- C. Leakage flux
- D. Magnetizing current

Answer: B

Q18. Equivalent reactance represents

- A. Magnetizing branch
- B. Leakage reactance
- C. Core loss
- D. Capacitance

Answer: B

Q19. Magnetizing reactance accounts for

- A. Copper loss
- B. Magnetizing current
- C. Load current
- D. Leakage

Answer: B

Q20. Core-loss resistance represents

- A. Copper loss
- B. Iron loss
- C. Leakage
- D. Load

Answer: B

Q21. Sumpner's test is also known as

- A. Brake test
- B. Back-to-back test
- C. SC test
- D. OC test

Answer: B

Q22. Sumpner's test requires

- A. One transformer
- B. Two identical transformers
- C. Three transformers
- D. No transformer

Answer: B

Q23. Main advantage of Sumpner's test

- A. Needs huge power
- B. Full-load testing with little power
- C. Measures frequency

D. Changes turns ratio

Answer: B

Q24. Predetermination of efficiency uses

- A. Brake test only
- B. OC and SC test results
- C. DC test
- D. Load test only

Answer: B

Q25. Predetermination of regulation uses

- A. Core dimensions
- B. Equivalent circuit parameters
- C. Oil level
- D. Temperature only

Answer: B

Q26. Hysteresis loss mainly depends on

- A. Load current
- B. Frequency and flux density
- C. Copper area
- D. Resistance

Answer: B

Q27. Eddy current loss varies as

- A. f
- B. B

C. $f^2 B^2$

D. Current²

Answer: C

Q28. Increasing frequency increases

A. Copper losses only

B. Iron losses

C. Mechanical losses

D. No losses

Answer: B

Q29. Increasing supply voltage increases

A. Copper loss only

B. Core loss

C. Mechanical loss

D. Brush loss

Answer: B

Q30. At constant frequency, core loss mainly depends on

A. Load current

B. Applied voltage

C. Power factor

D. Temperature

Answer: B

Q31. A transformer with low regulation has

A. Poor efficiency

- B. Better voltage stability
- C. Higher copper loss
- D. Lower turns ratio

Answer: B

Q32. Leakage reactance causes

- A. Core saturation
- B. Voltage drop
- C. Cooling
- D. Noise

Answer: B

Q33. Per-unit regulation is usually expressed in

- A. Watts
- B. Amperes
- C. Percentage
- D. Hz

Answer: C

Q34. Distribution transformer design emphasizes

- A. Maximum regulation
- B. High all-day efficiency
- C. Maximum speed
- D. Minimum size

Answer: B

Q35. Power transformer design emphasizes

- A. High all-day efficiency
- B. High full-load efficiency
- C. Low frequency
- D. Low voltage

Answer: B

Q36. OC test wattmeter reading gives

- A. Copper loss
- B. Core loss
- C. Output power
- D. Mechanical loss

Answer: B

Q37. SC test wattmeter reading gives

- A. Core loss
- B. Copper loss at test current
- C. Output power
- D. Iron loss

Answer: B

Q38. Separation of losses means determining

- A. Voltage only
- B. Core and copper losses separately
- C. Frequency only
- D. Turns ratio

Answer: B

Q39. Equivalent circuit parameters are referred to

- A. Core only
- B. Either primary or secondary side
- C. Tank
- D. Earth

Answer: B

Q40. The ideal transformer has

- A. Only copper loss
- B. Zero losses
- C. Only core loss
- D. High regulation

Answer: B