

Question Bank (I-Scheme)

Name of course: Electric Motors and transformers

Unit Test: II

Subject code: 22418 (CNE)

Semester: IV

Program: EE

Chapter 3: Single Phase Transformers

2 Marks

1. Define all day efficiency of transformer.
2. Why transformer rating is in KVA?

4 Marks

3. A 600kVA, distribution transformer have copper and iron losses of 5.4 kW and 3.4 kW respectively on full load. The transformer is loaded as shown below

Calculate the all day efficiency.

Loading (kW)	Power factor(lag)	No. of hours
500	0.9	08
300	0.8	10
100	0.75	03
No load	--	03

4. A 500kVA transformer has iron losses of 2600W and copper losses of 7400W at full load. Calculate its efficiency at $\frac{3}{4}$ full load at unity pf and 0.9 pf lagging.

5. A single phase 2200/440V transformer has the following winding resistances and reactances (referred to respective sides): $R_1 = 0.7\Omega$, $R_2 = 0.011\Omega$, $X_1 = 3.6\Omega$, $X_2 = 0.045\Omega$. The secondary is connected to coil having resistance of 6 Ω and inductive reactance 4 Ω . Calculate secondary terminal voltage and power consumed by the coil.

6. A 1 phase 50kVA, 2400/120V, 50Hz transformer gave following test results:-

OC Test(Instruments on LV side): 120V, 9.85A, 396W

SC Test(Instruments on HV side): 92V, 20.8A, 810W

Calculate: i) The equivalent circuit constants ii) Efficiency at rated kVA and 0.8pf lagging.

7. A 10 KVA, 1 Phase, 50 Hz, 500 / 250 V transformer have following result:
OC test (LV side) - 250 V, 3 A, 200 W
SC test (HV side) - 15 V, 30 A, 300 W
Calculate efficiency and regulation at full load 0.8 P.F. lagging.

Chapter 4: Three Phase Transformers

2Marks

8. Draw circuit diagram for polarity test on single-phase transformer.
9. Give the specification of three phase transformer as per IS 1180 (Part-1) 1989 (any four).
10. State any two advantages of three phase transformer over bank of single phase transformers.
11. Justify need for cooling of transformers.
12. State different types of cooling system used for three phase transformer.

4Marks

13. Give any four selection criteria for : i) Distribution transformer ii) Power transformer as per IS:10028(part-I).
14. With the help of neat diagram, describe the procedure to carry out phasing out test on a 3-phase transformer. Also state the purpose of conducting this test on 3 phase transformer.
15. Explain with neat circuit diagram only the Scott connection scheme for conversion of three phase supply to two phase supply. Name one application of the same.
16. Explain with the help of neat diagram working of 3 phase autotransformer. Write any two application.
17. Explain the effect of Harmonics on the Transformer.
18. Compare the distribution and power transformers on any four points.
19. State the advantages of amorphous core type distribution transformer.
20. Justify the need for parallel operation of transformers. State the conditions for successful parallel operation of three phase transformers.
21. A 500 KVA, 3-phase, 50 Hz transformer has a voltage ratio (line voltages) of 33/11KV and is delta/star connected. The resistance per phase are: high voltage 35 Ω low voltage 0.876 Ω and iron loss is 3050W. Calculate the value of efficiency at full load.

Chapter 5: Special Purpose Phase Transformers

2Marks

- 22.** Define current transformer.
- 23.** State the function of the isolation transformer.
- 24.** List two special feature of welding transformer.

4Marks

- 25.** Explain with circuit diagram use of potential transformer to measure 33kV.
- 26.** Describe with simple circuit diagram the working of the single phase welding transformer.
- 27.** Explain the working of the pulse transformer and name two applications for the same.
- 28.** Compare Single phase with three phase auto transformers.