Department of Electrical Engineering

1. A 100 kVA, 4000 V/200 V, 50 Hz single-phase transformer has 100 secondary turns. Determine

   (a) the primary and secondary current, (b) the number of primary turns, and

   (c) the maximum value of the flux.

   [Ans: (a) 25A, 100A (b)2000 (c) 9.01 mWb]

2. An iron-core transformer operating from a 120-V line has *500* turns in the primary and **100** turns in the secondary. Find the secondary voltage.

   Ans:24V

3. Find the turns ratio of a transformer used to match a 14400-ohm load to a 400-ohm load.

   Ans:6:1

4. The secondary load of a step-down transformer with a turns ratio of *5* : 1 is **900** ohm. Find the impedance of the primary.
   Ans:22500ohm

5. A 4500 V/225 V, 50 Hz single-phase transformer is to have an approximate e.m.f. per turn of 15

   V and operate with a maximum flux of 1.4 T. Calculate (a) the number of primary and secondary

   turns and (b) the cross-sectional area of the core.

   [Ans: (a) 300, 15 (b) 0.0483 m^2]

6. **A** transformer whose primary is connected to a **110-V** source delivers **11** V. If the number of turns on the secondary is **20** turns, find the number of turns on the primary. How many extra turns must be added to the secondary if it must deliver 33 V?

   Ans:200 Turns, 40 Turns

7. A 2400 V/400 V single-phase transformer takes a no load current of 0.5 A and the core loss is

   400 W. Determine the values of the magnetizing and core loss components of the no load current.

   [Ans: 0.471 A,0.167 A]

8. A transformer has 600 primary turns and 150 secondary turns. The primary and secondary

   resistances are 0.25Ω and 0.01Ω respectively and the corresponding leakage reactances are 1.0Ω

   and 0.04Ω respectively. Determine (a) the equivalent resistance referred to the primary winding,

   (b) the equivalent reactance referred to the primary winding, (c) the equivalent impedance

   referred to the primary winding, and (d) the phase angle of the impedance.

   [Ans: (a) 0.41Ω (b) 1.64Ω (c) 1.69Ω (d) 75.96°]