1. A 20 kVA, 250V/2500V, 50Hz single phase transformer gave the following test results:
   No-load test (on L.V. side) : 250V, 1.4 A, 105 watts
   Short circuit test (on H.V. side): 120V, 8 A , 320 watts
   Calculate the equivalent circuit parameters referred to primary side and draw the equivalent circuit **[Ro = 595.2 ohm, Xo = 187.2 ohm, R_{01} = 0.05 ohm and X_{01} = 0.14 ohm]**

2. A 50 KVA, 2200/110V transformer when tested gave the following results:

OC test:	400 W	10 A	110 V
SC test:	808 W	20.5 A	90 V

   Compute all the parameters of the equivalent circuit referred to HV and LV sides of the transformer. Draw the equivalent circuits also. **[HV side: 12120Ω, 4723.2Ω, 1.932Ω, 3.946Ω; LV side: 30.30Ω, 11.80Ω, $4.808*10^{-3}$Ω, $9.865*10^{-3}$Ω]**

3. A 20 kVA 2200/ 220V, 50 Hz distribution transformer is tested for efficiency and regulation.
   OC test: 220V, 4.2 A, 148 W on LV side
   SC test: 86V, 10.5 A, 360 W on HV side
   Determine:
   i. Equivalent resistance and reactance referred to primary and secondary side.
   ii. Regulation at 0.8 pf lagging
   iii. Efficiency on half load at 0.8 pf lagging.

4. A 220V DC shunt motor runs with 1200 rpm with an armature current of 50 A. The value of armature resistance is 0.2 ohm. Calculate the value of resistance to be connected in series with the armature so that the speed drops to 1000 rpm.

a) The test data were obtained for 20KVA, 50Hz, 2000/200 V distribution single phase transformer. Calculate the approximate equivalent circuit refer to both H.V. and L.V. side.

Test	Voltage(V)	Current(A)	Power (Watt)
OCC with H.V. open Circuited	200	40	120
SC with L.V. Short Circuited.	60	10	300

Also determine the efficiency for half load of 0.8 pf lagging.

A 240 V shunt motor runs at 1000 rpm of full load with an armature current of 10 A. The total resistance of the armature and brushes is 0.6Ω. If the speed is to be reduced to 800 rpm with the same armature current, calculate the value of resistance to be connected in series with the armature.

A 50 KVA, 2200/110 transformer when tested gave the following results

OC test : 400W 10A 110V

SC test : 808W 20.5A 90V

Compute all the parameters of the equivalent circuit referred to LV sides of the transformer.

A 220 V dc shunt motor having an armature resistance of 0.25 ohm carries an armature current of 50 A and runs at 600 rpm. If the flux is reduced by 10% by field regulator, find the speed assuming load torque remains the same.

A single phase, 25KVA, 250/500V transformer has following results on tests:

Open circuit test	250V	1A	80W
Short circuit	25V	10A	100W

Obtain the parameters of the transformer referred to both LV and HV sides.

A 240v shunt motor runs at 1450 rpm at full load with an armature current of 11 A. The total resistance of armature and brush is 0.6Ω. If the speed to be reduced to 1000rpm with the same armature current, calculate the value of resistance to be connected in series with the armature.

Explain the principle of operation

A 25 KVA, 3300/1100 V, 50 Hz single phase transformer has primary and secondary winding resistances of 0.2Ω and 0.06Ω respectively. The primary and secondary winding leakage reactances are 0.32Ω and 0.012Ω respectively. Find the equivalent winding resistance, reactance and impedance referred to

i. HV side
ii. LV side.

A shunt generator has induced voltage of 250 V. When the machine is loaded, the terminal voltage drops down to 230 V. Determine the load current if the armature resistance is 0.05Ω and the field circuit resistance is 23Ω.

A 25KVA, 400/200V, 1ϕ transformer has high voltage winding resistance and reactance are 0.2Ω and 0.5Ω respectively. The values of low voltage are 0.6Ω and 0.8Ω respectively. Calculate the equivalent resistance, reactance and impendence referred to

i. LV side
ii. HV side.

A 220v dc shunt motor runs with 1000 rpm with an armature current of 40A. The resistance of armature is 0.5Ω. Calculate the value of resistance to be connected in series so that the speed drops to 600rpm.

The following results were obtained on a 4kVA, 200/400V, 50Hz transformer.

Open circuit test: 100W, 1A, 200V

Short circuit test: 85W, 10A, 15V

Determine equivalent circuit parameters referred to LV side and HV

A 220V, dc shunt motor draws a current of 50A at full load and runs with a speed of 1700rpm. Calculate the value of resistance to be inserted in the armature circuit so that the speed drops to 1200rpm at constant load. Given that armature resistance and field resistance are 0.04 ohm and 155 ohm respectively.

A transformer has 600 primary turns and 150 secondary turns. The primary and secondary resistances are 0.25 Ω and 0.01 Ω respectively and corresponding leakage reactance are 1.0Ω and 0.04 Ω respectively. Determine a) the equivalent resistance and reactance referred to primary side b) Equivalent resistance and reactance referred to secondary side.

25KVA, 1ϕ, 250/500v transformer gives the following results on tests:

Open circuit test	200V	1A	70W
Short circuit test	25V	5A	80W

Calculate:

i. Parameters of the transformer
ii. Secondary terminal voltage if it supplies 50A at 0.8 pf lag

OR

A 250 V DC shunt motor takes 8A line current on no load and runs at 1000 rpm. The resistance of the field winding and armature winding are 200Ω and 0.8Ω respectively. If the full load line current is 20A, calculate the full load speed, assuming constant air gap flux.

A 250V shunt motor on no load runs at 1000rpm and takes 5A. The total armature and shunt field resistance are respectively 0.2Ω and 250 Ω. Calculate the speed when loaded and taking a current of 50A, if the armature reaction weakens the field by 3%.

A single phase 10KVA , 200/400 V, 50Hz, transformer gave the following test results:

O.C test : 200V, 1.3A, 120W
S.C test : 22V, 30A, 200W

Find the parameters of equivalent circuit as referred to HV side and LV side.

A 50KVA, 500/250V transformer has a primary winding resistance of 0.5Ω and leakage reactance of 0.7Ω. The secondary winding resistance is 0.8Ω and leakage reactance of 0.9Ω. Calculate the equivalent resistance, reactance and impedance of transformer referred to

i. Primary
ii. Secondary

A 240v shunt motor runs at 1450 rpm at full load with an armature current of 11 A. The total resistance of armature and brush is 0.6Ω. If the speed to be reduced to 1000rpm with the same armature current, calculate the value of resistance to be connected in series with the armature.

A 10KVA 200/1000 V, 50 Hz, single-phase transformer gave the following test results:

O.C. test(L.V. Side): 200 V, 2.4 A, 100W
S.C. test(H.V. Side): 50 V, 10A, 150W

i. Calculate the parameters of the equivalent circuit referred to L.V. Side.
ii. Calculate efficiency for ½ rated 0.8 P.f. lagging, & load current for which it gives maximum efficiency

A 220V dc shunt motor runs at 500rpm when armature current is 50A. Calculate the speed if the torque is doubled Given that armature resistance is 0.2 ohm and flux remain constant.

A 220v dc shunt motor runs with 1200rpm with an armature current of 50A. The value of armature resistance is 0.2 Ω. Calculate the value of resistance to be connected in series with the armature so that the speed drops to 1000rpm.