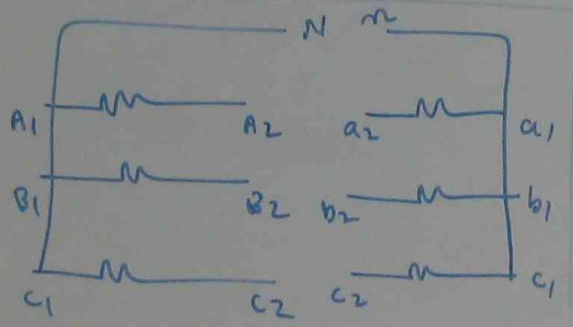
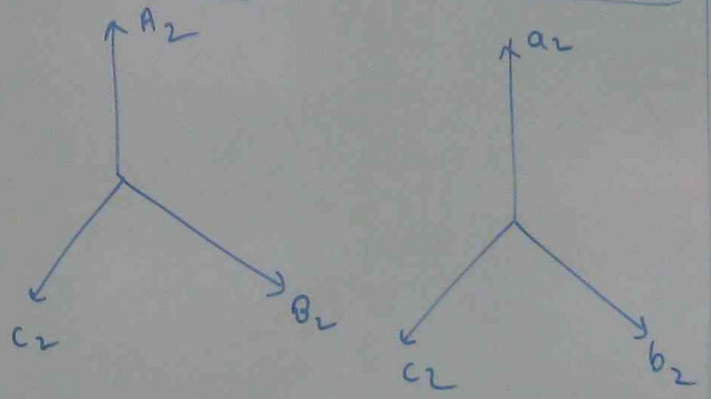
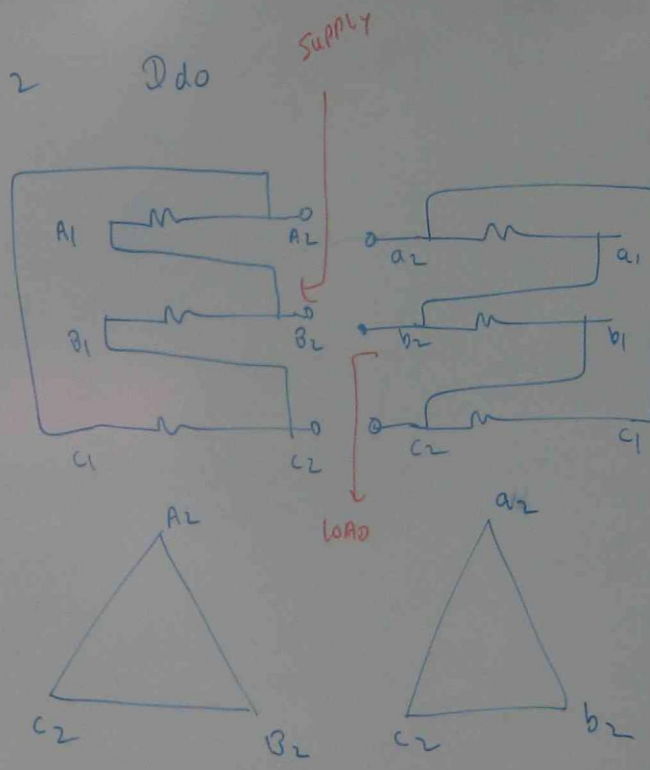
3ϕ TRANSFORMER CONNECTION

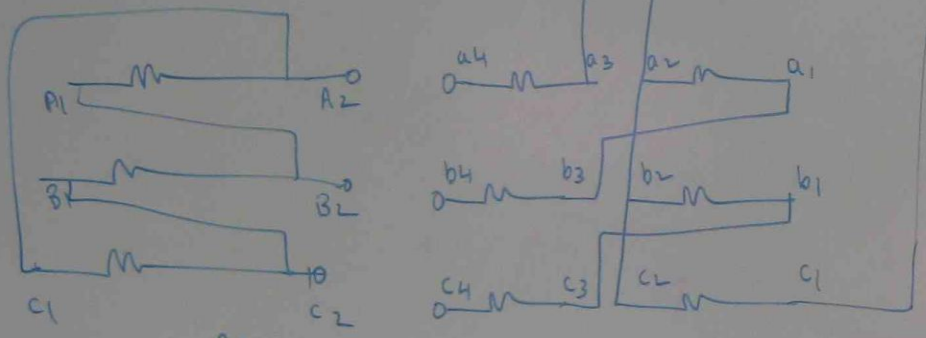
GROUP NO. SYMBOL PHASE ANGLE	CONNECTION	EMF VECTOR
1 Y_1 Y_{y0} 0		

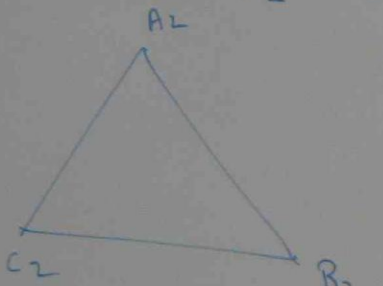
GROUP	CONNECTION			PHASE DISPLACEMENT
G 1	1_1	1_2	1_3	
	Y_{y0}	D_{d0}	D_{z0}	0°
G 2	2_1	2_2	2_3	
	Y_{y6}	D_{d6}	D_{z6}	180°
G 3	3_1	3_2	3_3	
	D_{y1}	Y_{d1}	Y_{z1}	-30°
G 4	4_1	4_2	4_3	
	D_{y11}	Y_{d11}	Y_{z11}	$+30^\circ$

1_2 D_{d0}

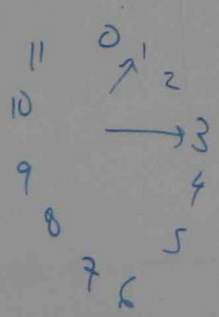


1 3 D_{Z0}

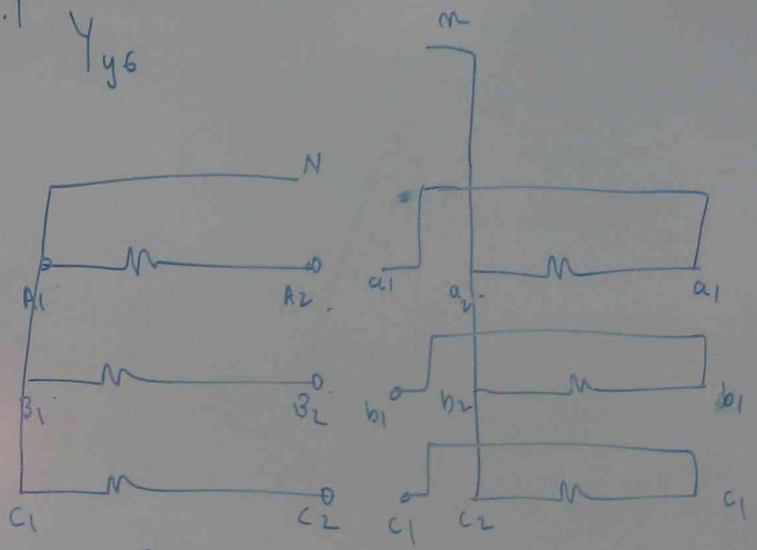


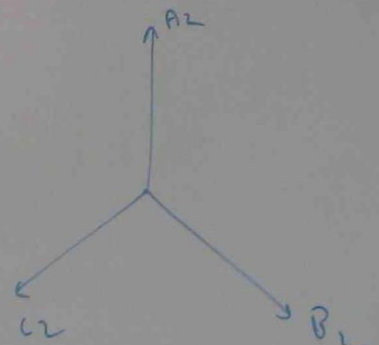


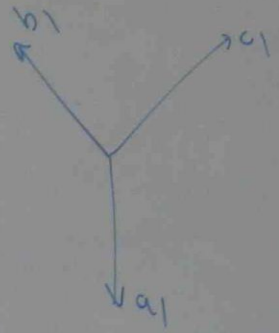
USE FOR EARTHING TRANSFORMERS.



2.1 Y_{y6}

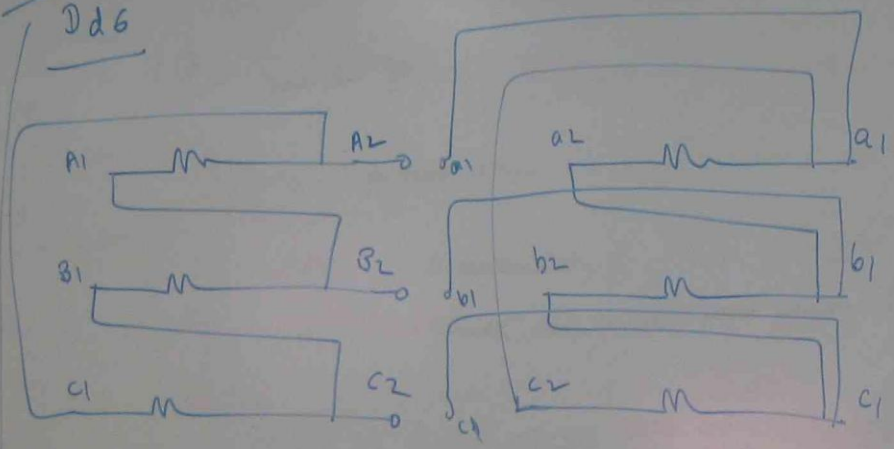


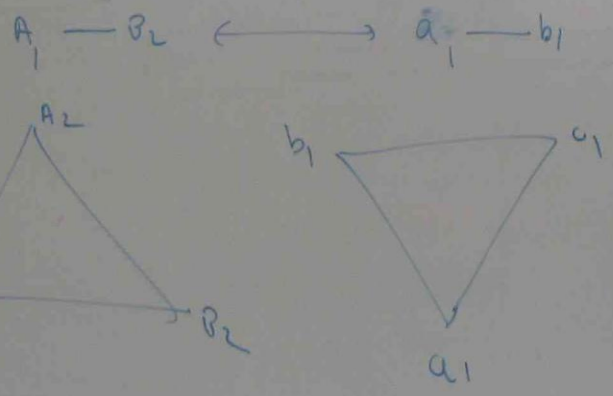




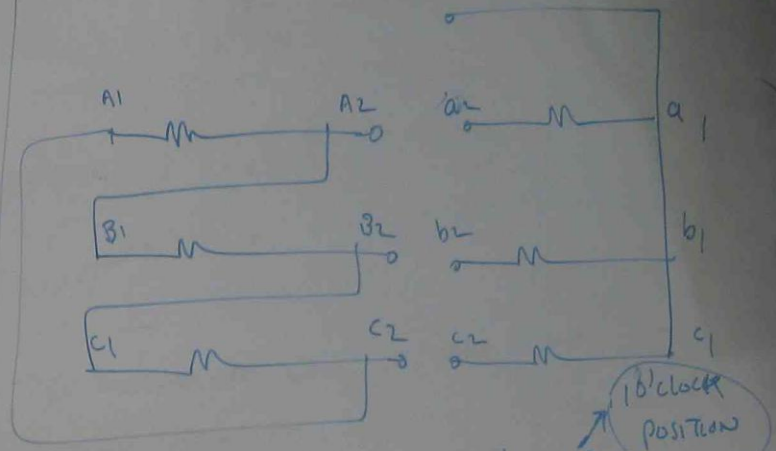
2.2

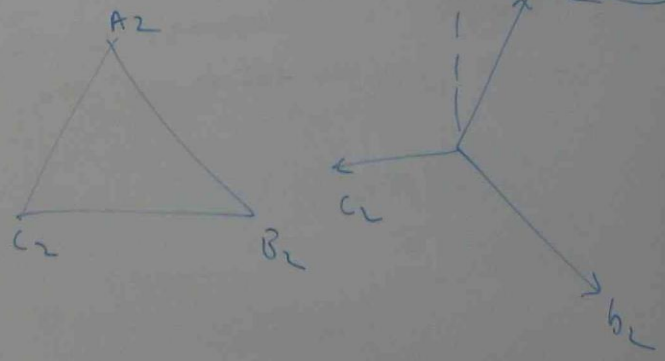
Dd6


A1
A2
a2
a1
B1
B2
b2
b1
C1
C2
c2
c1

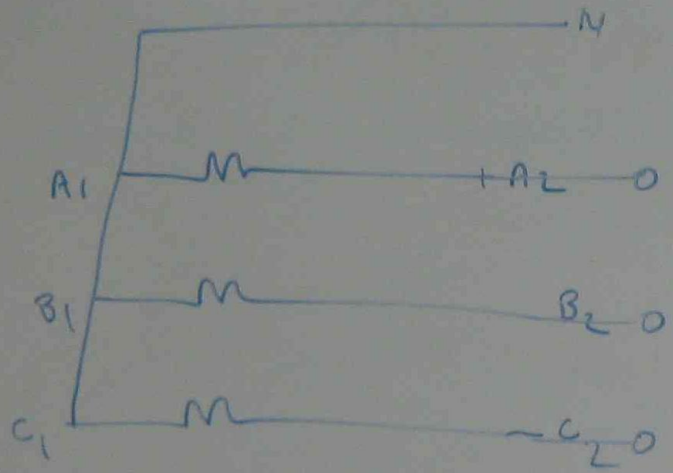

A1 — B2 ⟷ a1 — b1
A2
B2
C2
b1
c1
a1

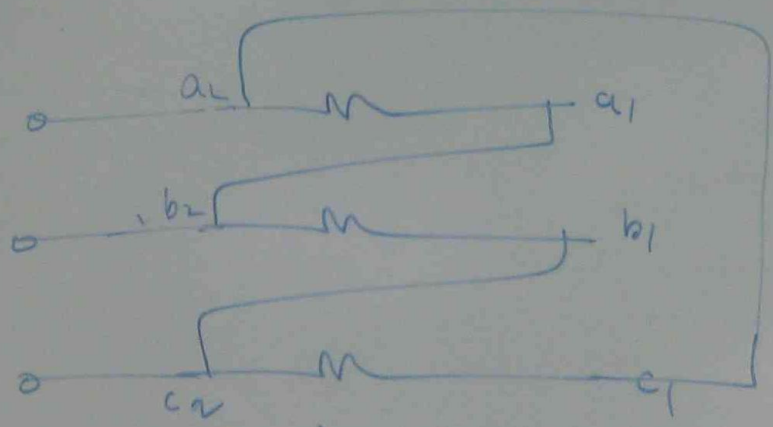
3 | Dy1

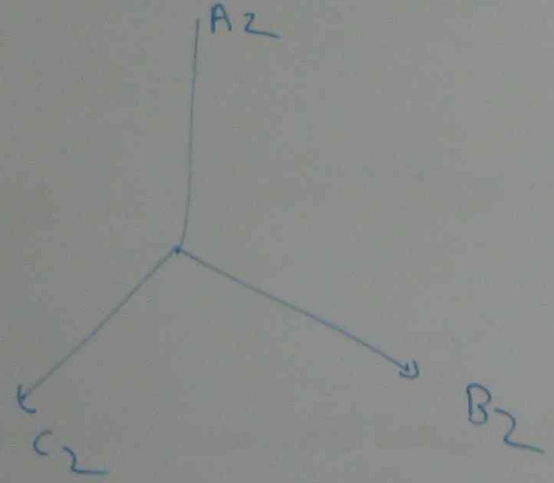

A1
A2
a2
a1
B1
B2
b2
b1
C1
C2
c2
c1
1b'clock position

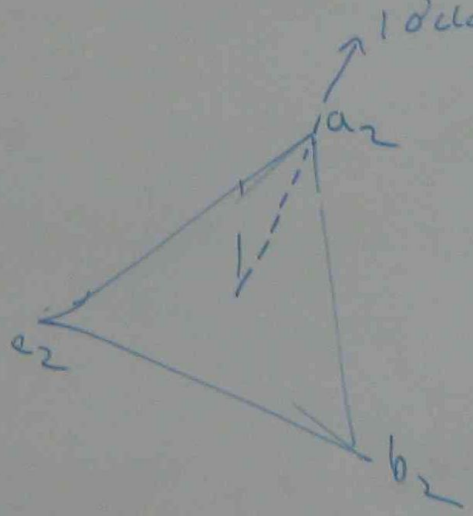

A2
C2
B2
a2
C2
b2

32 Y d1



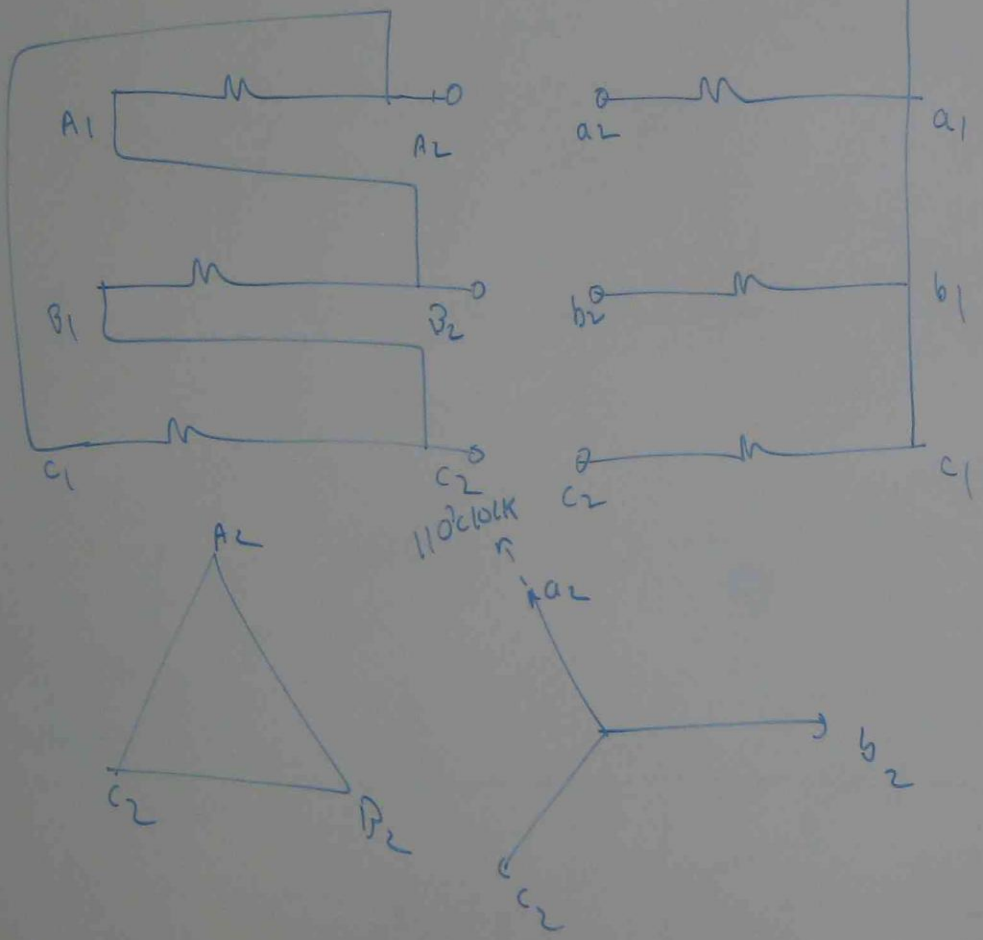






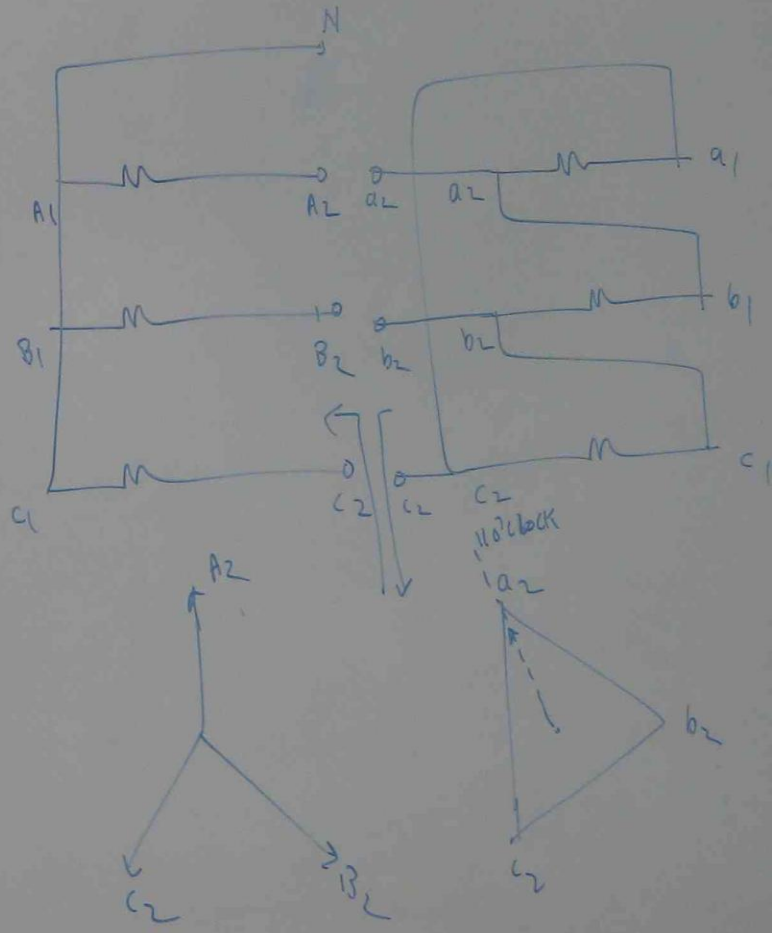
4.1

Dy11



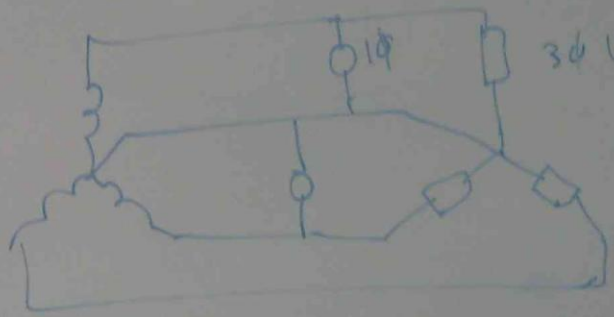
4.2

Ydll



APPLICATION OF TRANSFORMER CONNECTIONS

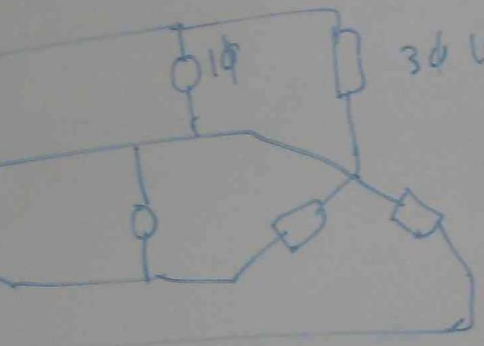
TYPE OF CONNECTION	APPLICATION
Y_{y0} , Y_{y6}	SMALL H.V TRANSFORMER MINIMUM INSULATION REQUIRED. NORMAL FLUX DENSITY NO 3rd HARMONIC 3ϕ CORE TYPE
D_{d0} D_{d6}	ECONOMICAL LARGE L.V TRANSFORMERS. NO URGENT INSULATION PROBLEM NO DIFFICULTY FOR LARGE AMOUNT OF UNBALANCED LOAD.

TYPE OF CONNECTION	APPLICATION
$\Delta\lambda$, $\lambda\Delta$ Dy Yd Dy_1 Yd_1 Dy_{11} Yd_{11}	VERY COMMON FOR POWER SUPPLY TRANSFORMERS. λ POINT FOR MIXED LOADING  3rd HARMONIC CAN BE CARRIED BY λ POINT
ZIG ZAG Yz_1 Yz_{11}	EARTHING TRANSFORMER EQUALIZE PHASES

CATION

COMMON FOR POWER SUPPLY
FORMERS.

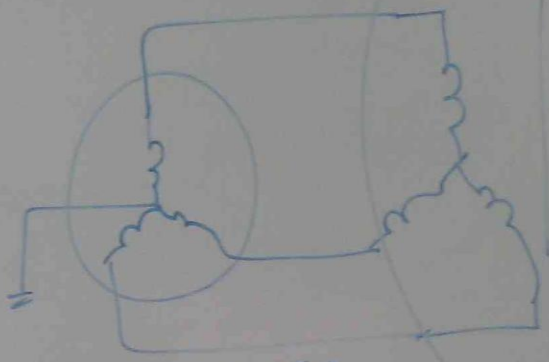
INT FOR MIXED LOADING



RMONIC CAN BE CARRIED BY Δ POINT

THING TRANSFORMER

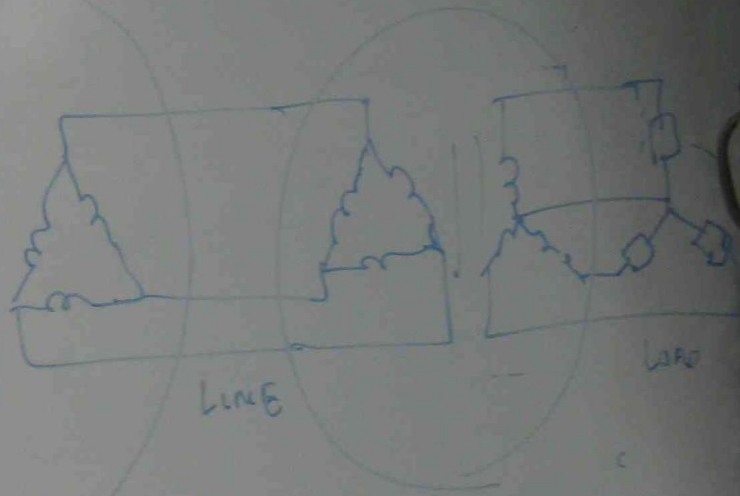
ALL 3E PHASES



λ | Δ

STEP UP

23KV | 230KV



Δ | λ

STEP DOWN

230KV | 66KV

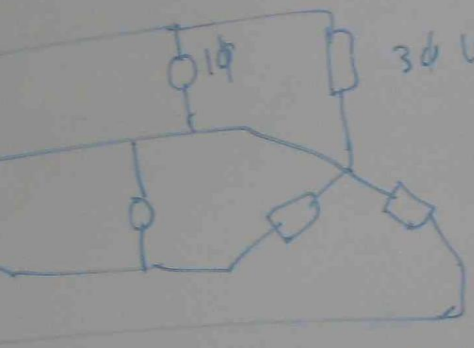
↓

11KV

CATION

COMMON FOR POWER SUPPLY
FORMERS.

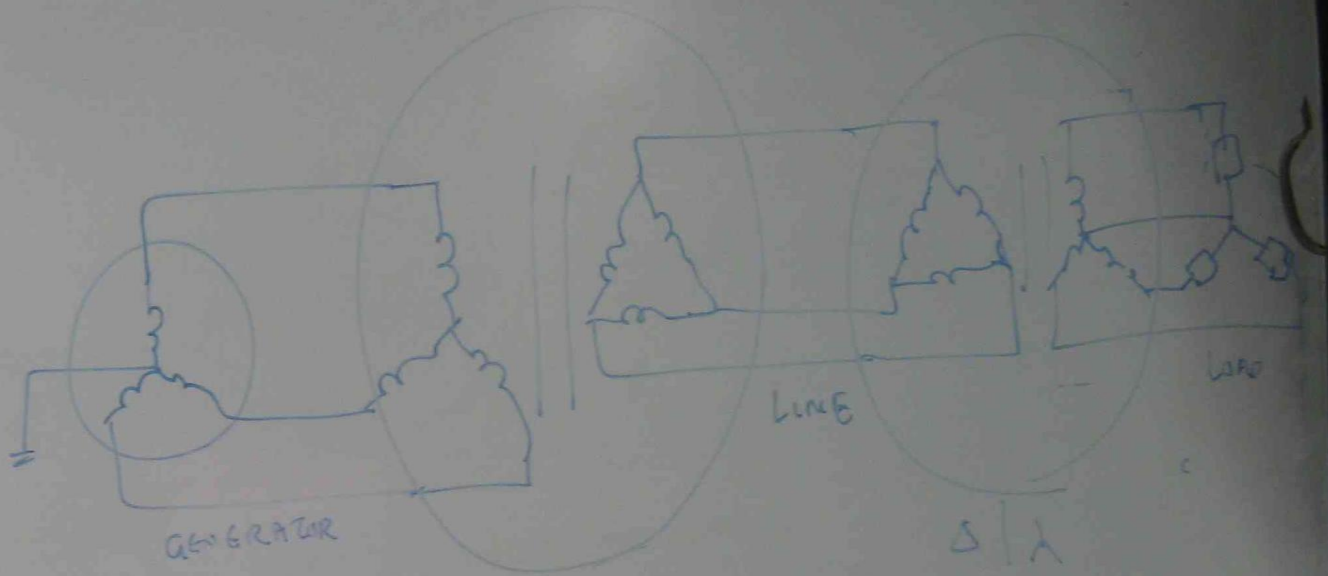
INT FOR MIXED LOADING



RMONIC CAN BE CARRIED BY Δ POINT

THING TRANSFORMER

ALL 3E PHASES



λ | Δ

STEP UP

23KV | 230KV

Δ | λ

STEP DOWN

230KV | 66KV ↓ 11KV

TR1

TR2

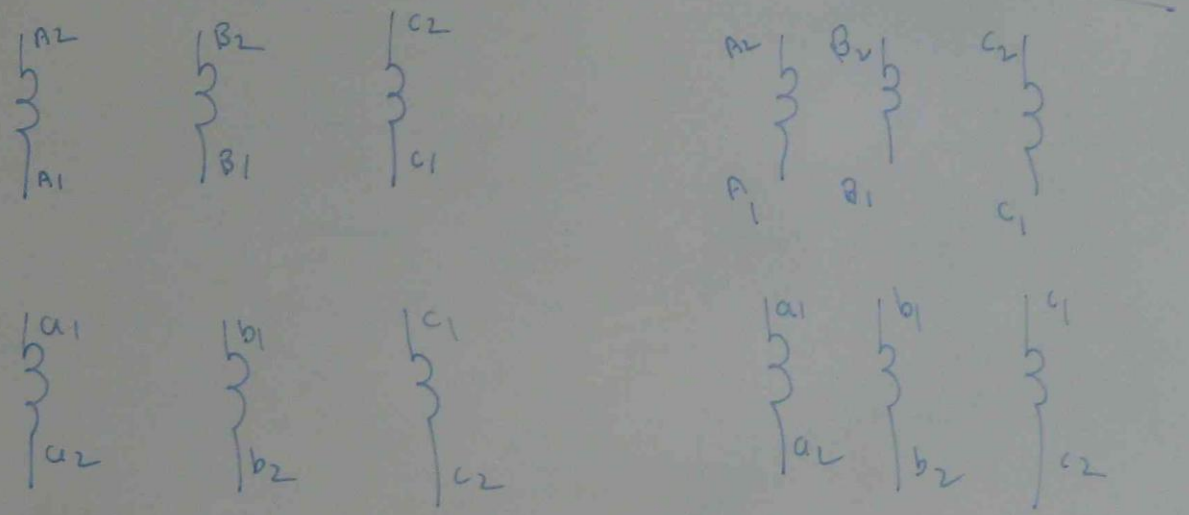
Q

R

Y

B

(a)



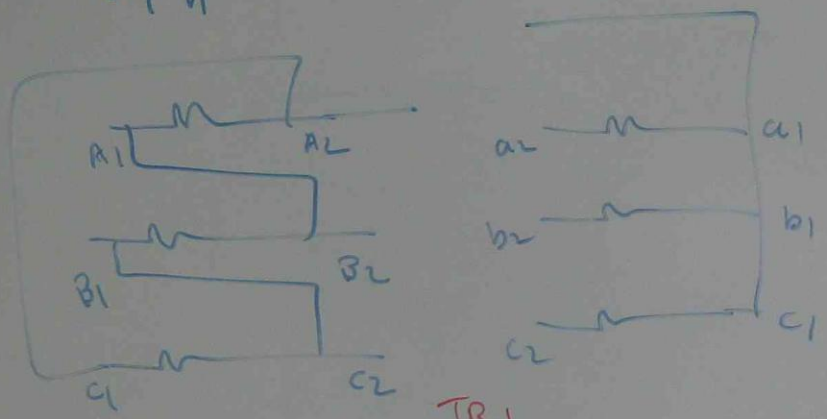
CONNECT (a) $TR_1 = Dy_{11}$, $TR_2 = Dy_1$

(b) $TR_1 = Yy_0$, $TR_2 = Dd_0$

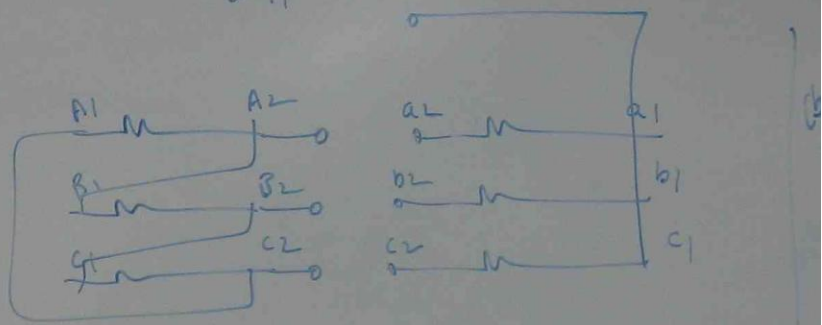
(c) $TR_1 = Dy_{11}$, $TR_2 = Yd_{11}$

(a)

Dy 11



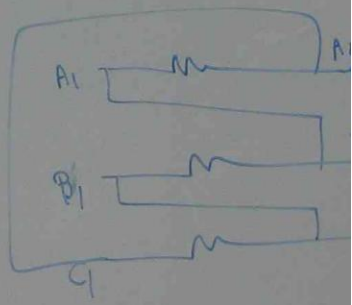
Dy1

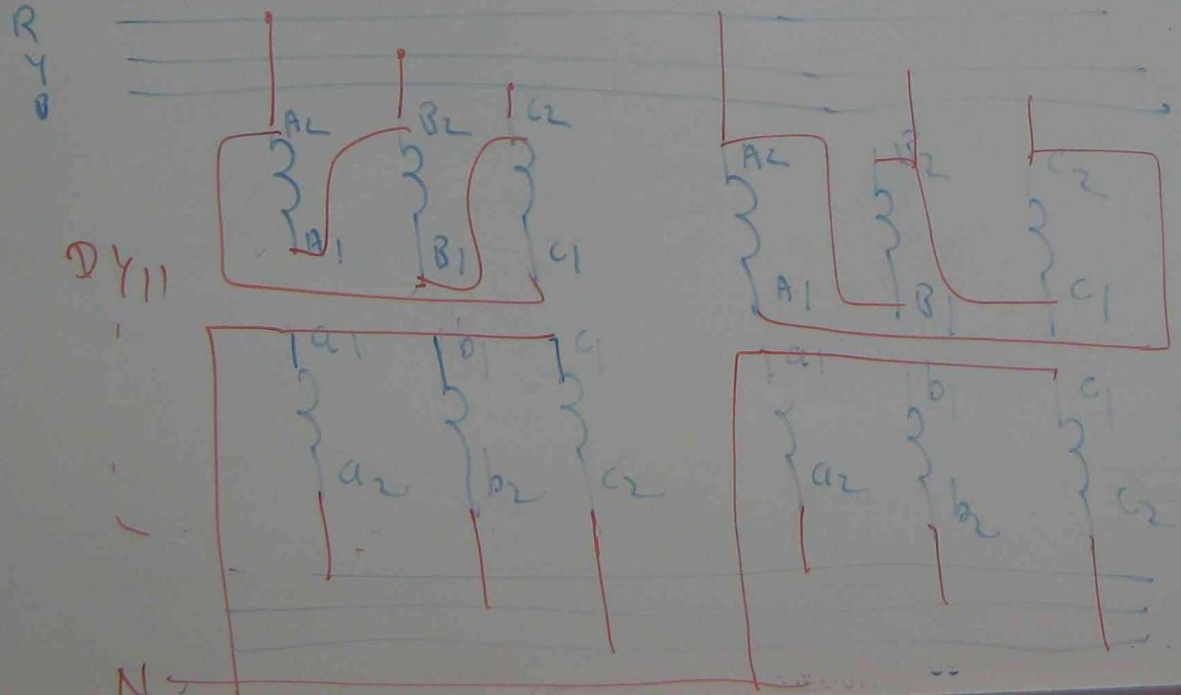


TR1

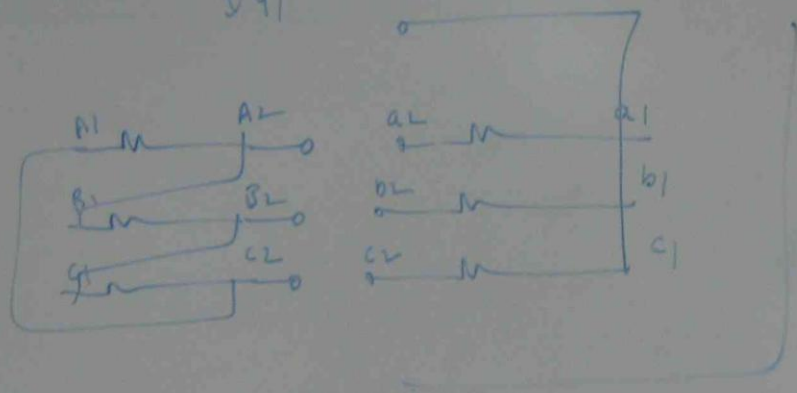
TR2

Ddo

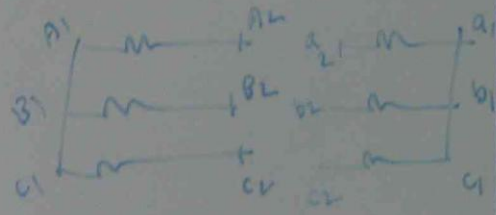




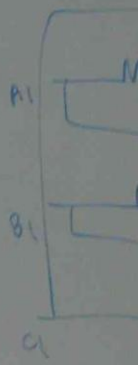
D41



(b) Yyo

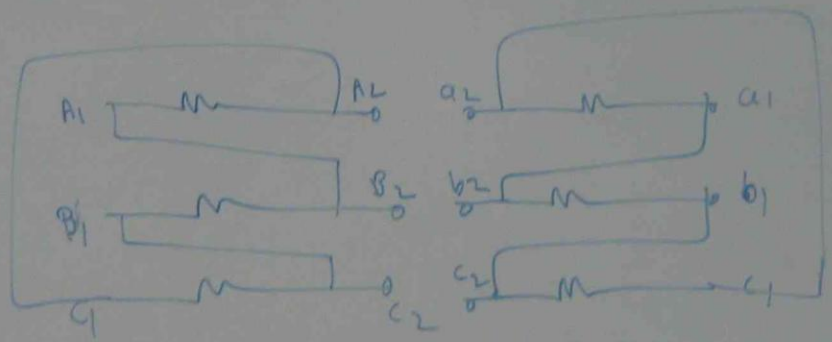


Dg41

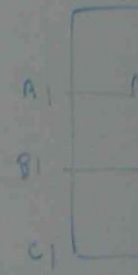


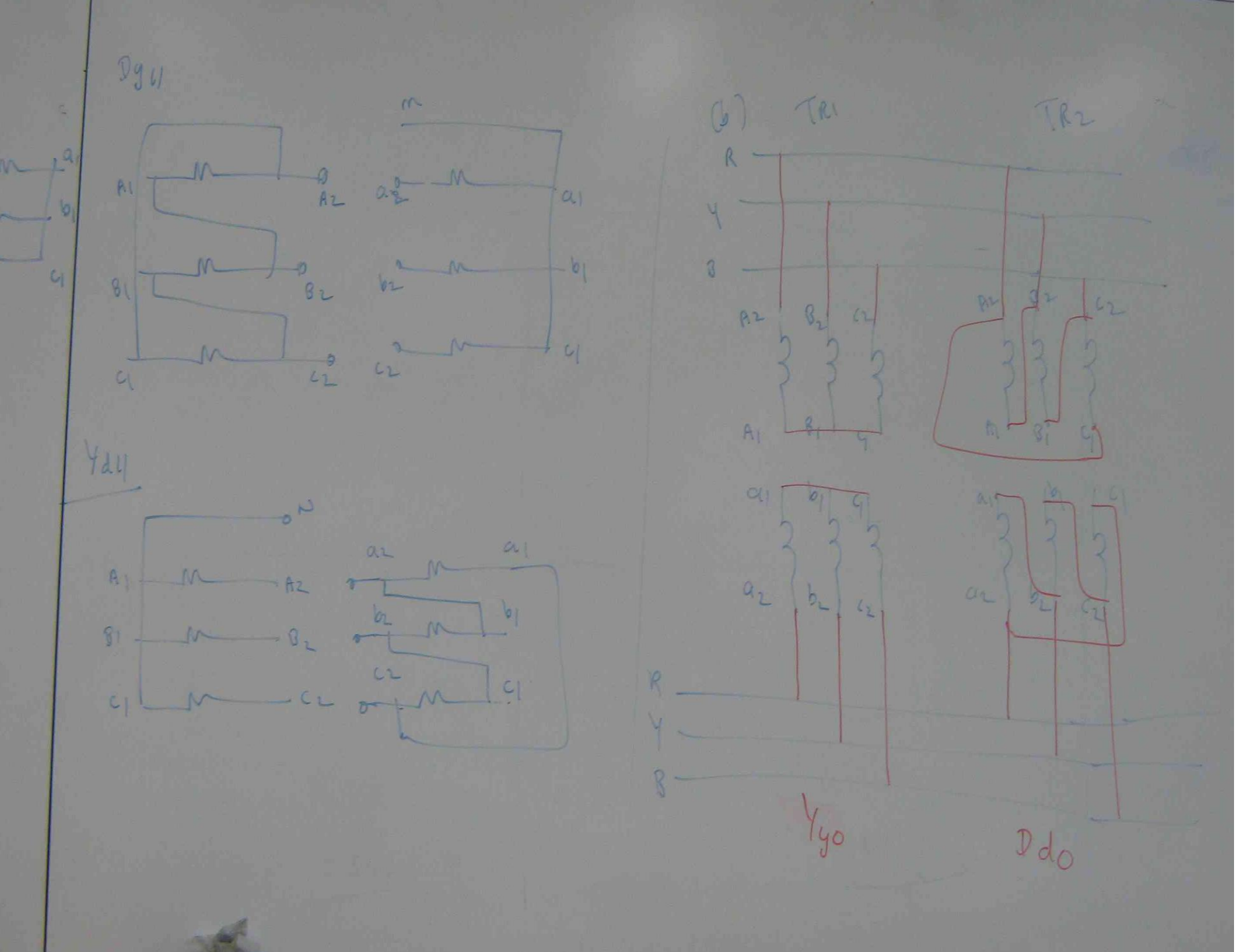
TR2

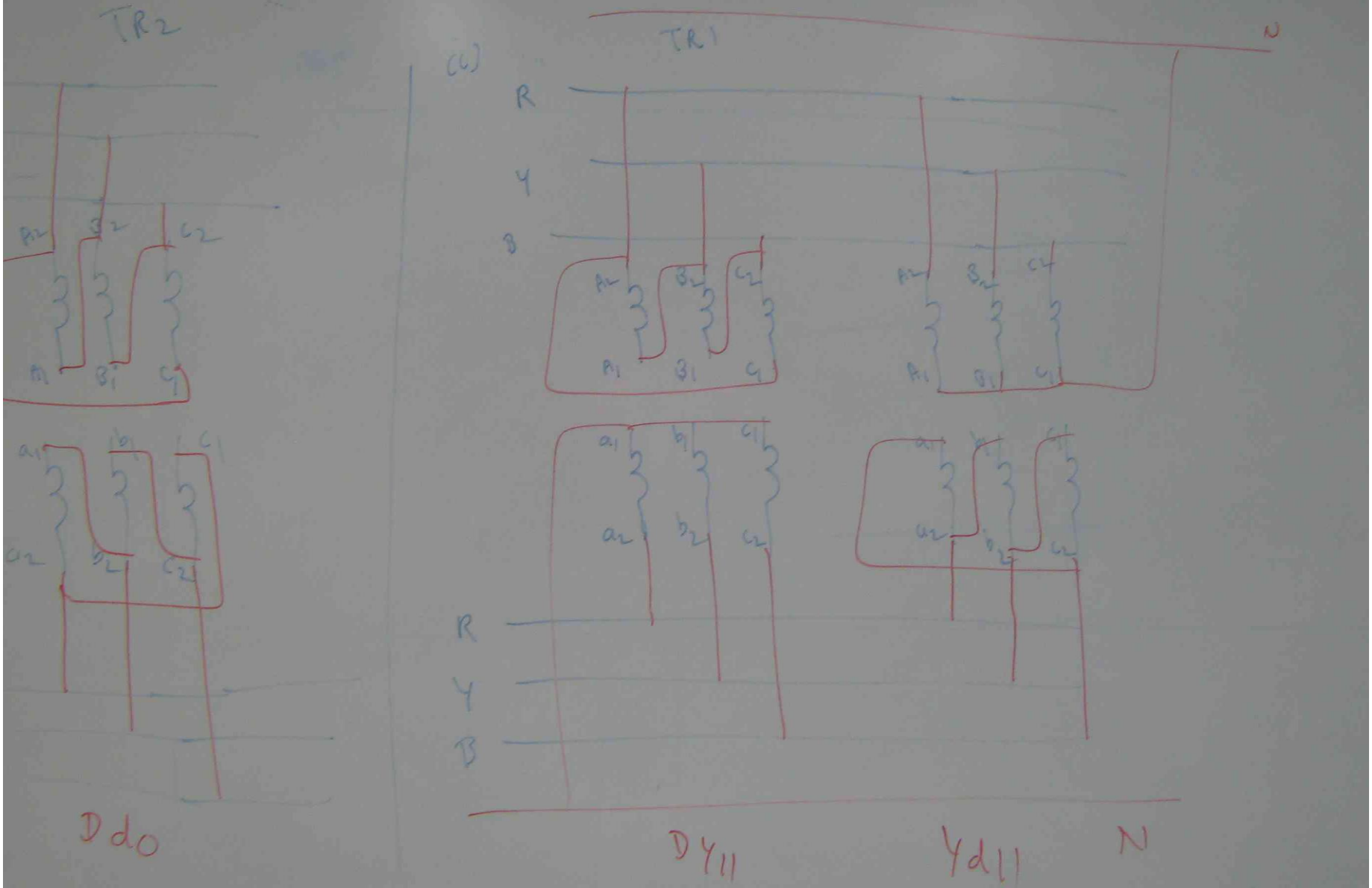
Ddo



Ydd1




Dgll
A1
A2
B1
B2
C1
C2
a1
b1
c1
a2
b2
c2
Ydll
N
(b)
TR1
TR2
R
Y
B
Yyo
Ddo


TR2
TR1
N
R
Y
B
R
Y
B
Ddo
DYll
Ydll
N

TR1

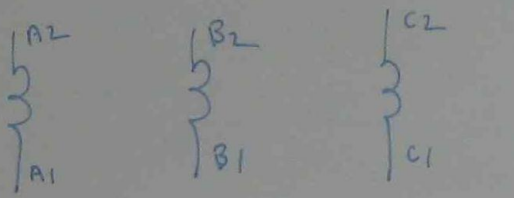
TR2

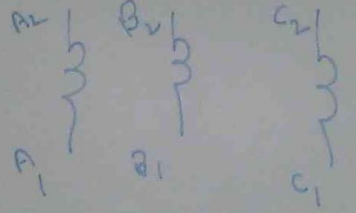
R

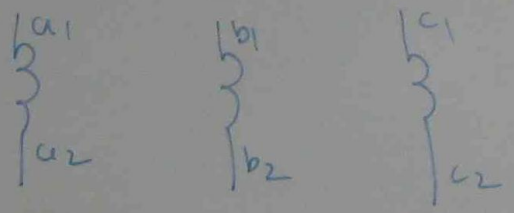
Y

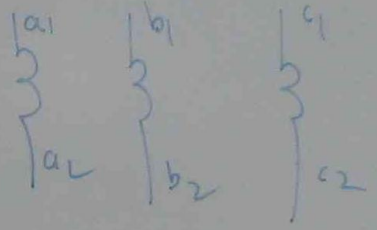
B

CONNECTION	PERSON
(1)(2)	1
(3)(4)	2
(5)(6)	3
(1)(2)	4
(3)(4)	5
(5)(6)	6
(1)(2)	7
(3)(4)	8
(5)(6)	9









(1) (2)

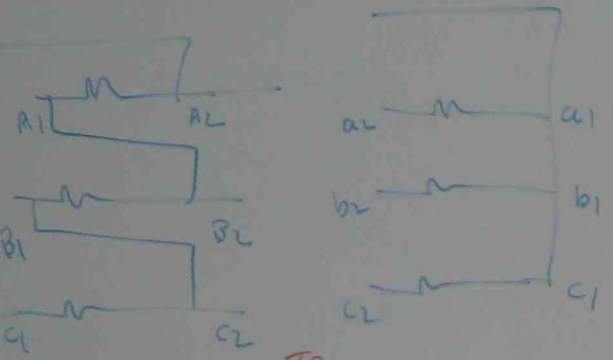
CONNECT (a) $TR_1 = Dy_{11}$, $TR_2 = Dy_1$

(b) (3) $TR_1 = Yy_0$, $TR_2 = Dd_0$ (4)

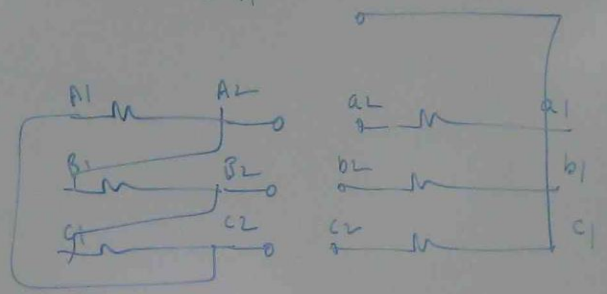
(c) $TR_1 = Dy_{11}$, $TR_2 = Yd_{11}$

5 6

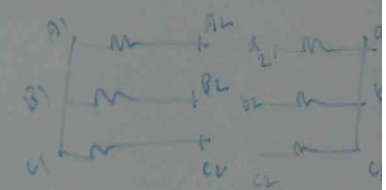
DY 11



DY1

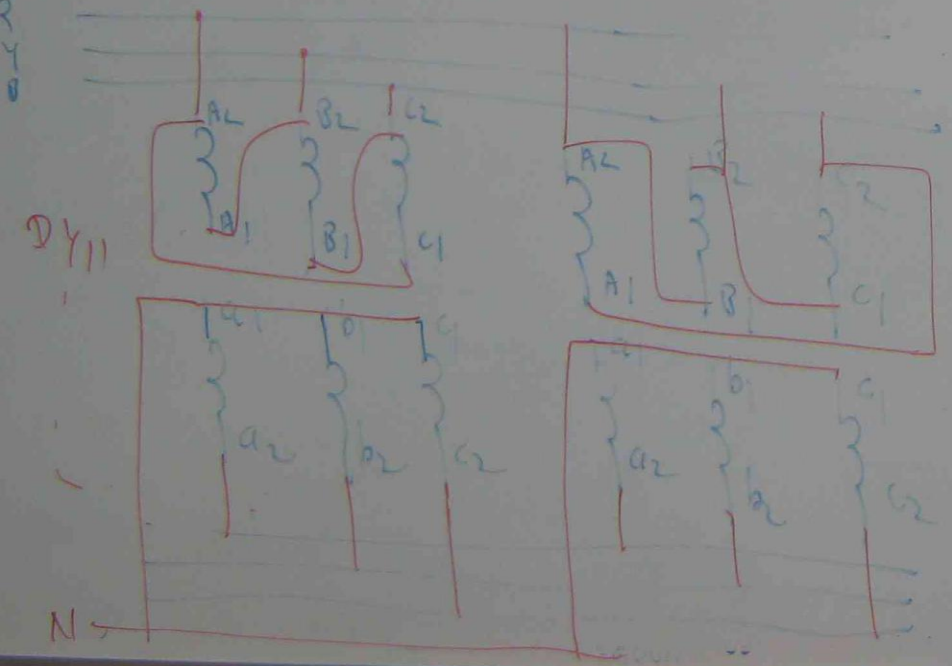


(b) Y_{yo} :



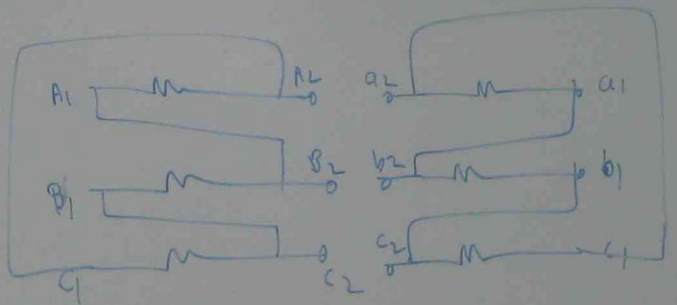
TR1

TR2



DY11

Ddo



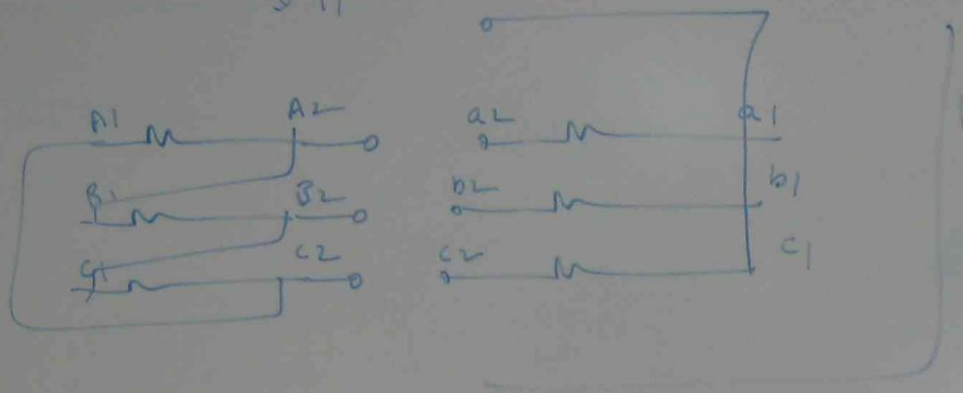
(1) (2) - 10

(3) (4) - 11

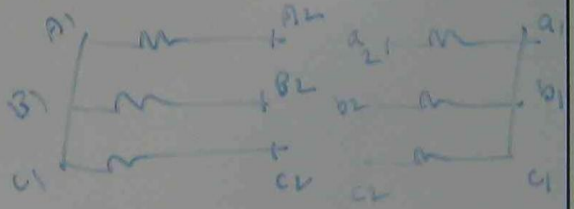
(5) (6) - 12

(1) (2) - 13

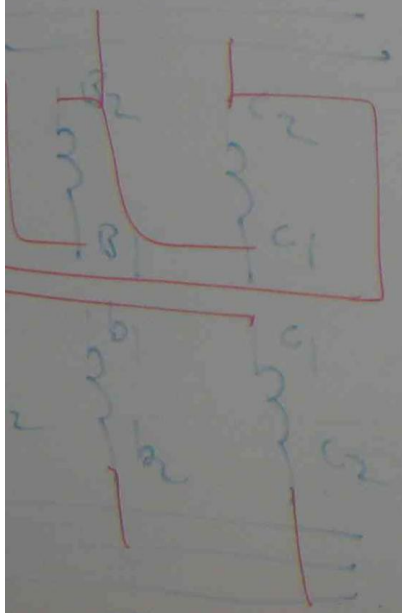
D 41



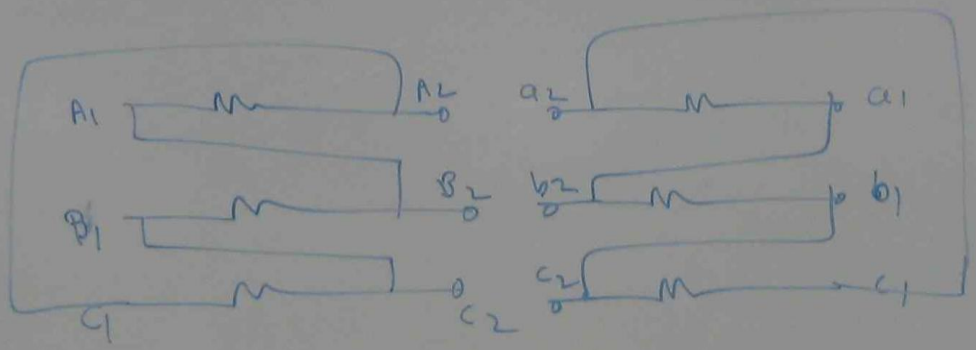
(b) Y go =



TR2



D do



(1) (2) - 10
(3) (4) - 11
(5) (6) - 12
(1) (2) - 13