THREE POINT STARTOR

FOUR POINT STARTOR

NAME OF THE INSTITUTE	GOVT. POLYTECHNIC, BARGARH		
NAME	TANKADHAR SAHU		
TITLE	THREE & FOUR POINT STARTOR		
BRANCH	ELECTRICAL	ROLL NO	FH22002053
SCALE		SHEET NO	01
DATE	01/08/2019	CHECKED BY	

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DOL STARTOR WITH MOTOR CONNECTION

06/08/19

Y-Δ STARTER

NAME OF THE INSTITUTE	GOVT. POLYTECHNIC, BARGARH		
NAME	TANADHAR SAHU		
TITLE	DOL AND Y-Δ STARTER		
BRANCH	ELECTRICAL	ROLL NO	F1H22002055
SCALE		SHEET NO -	02
DATE	08 - 08 - 2019	CHECKED BY -	

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AUTO TRANSFORMER STARTER

NAME OF THE INSTITUTE	GOVT. POLYTECHNIC, BARGARH		
NAME	TANKADHAR SAHU		
TITLE	AUTO TRANSFORMER STARTER		
BRANCH	ELECTRICAL	ROLL NO	F17/22.002055
SCALE		SHEET NO-	03
DATE	20-08-19	CHECKED BY -	20/08/19

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ROTOR RESISTANCE STARTER

NAME OF THE INSTITUTE	GOVT. POLYTECHNIC, BARGARH		
NAME	TANKADHAR SAHU		
TITLE	ROTOR RESISTANCE STARTER		
BRANCH	ELECTRICAL	ROLL NO	F1H22000055
SCALE		SHEET NO	04
DATE	10/09/19	CHECKED BY	10/09/19

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A simple develop lap winding a 2 layer 4 pole DC generator with 16 coil

GIVEN DATA

coil – 16

conductor(Z) = 32

pole(p) = 4

$Y_B + Y_F = \frac{Z}{2} = 32$

$Y_B = \frac{Z}{P} + 1 = \frac{32}{4} + 1 = 9$

$Y_F = \frac{Z}{P} - 1 = \frac{32}{4} - 1 = 7$

NAME OF THE INSTITUTE	GOVT. POLYTECHNIC, BARGARH		
NAME	TANKADHAR SAHU		
TITLE	SIMPLE LAP WANDING		
BRANCH	ELECTRICAL	ROLL NO	F1712200 2085
SCALE		SHEET NO.	05
DATE	12.09.19	CHECKED BY	

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Q- Draw a develop armature wave diagram having 4 pole 30 no. of conductors

solution -

$Z = 30$

$P = 4$

$Y_{avg} = \frac{Z+2}{P} = \frac{Y_B + Y_F}{2}$

$Y_{avg} = Y_B = Y_F = \frac{30+2}{4} = 8$ or 7

$Y_B = Y_F = 7$

connection:-

1 — 8
15 — 22
29 — 36(6)
13 — 20
27 — 4
11 — 18
25 — 2
9 — 16
23 — 30
7 — 14
21 — 28
05 — 12
19 — 26
03 — 10
17 — 24
1

SIMPLE WAVE WINDING

RING DIAGRAM

NAME OF THE INSTITUTE	GOVT. POLYTECHNIC, BARGAR H		
NAME	TANKADHAR SAHU		
TITLE	SIMPLE WAVE WINDING		
BRANCH	ELECTRICAL	ROLL NO.	F17-0209
SCALE		SHEET NO.	06
DATE	19.09.19	CHECKED BY	

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Sl. No	DESCRIPTION	SYMBOL
01	RESISTOR (FIXED)	
02	RESISTOR (VARIABLE)	
03	RESISTOR (TAPPED)	
04	CHOCK COIL (IRON CORE)	OR
05	INDUCTOR OR CHOCK (AIRCORE) (INDUCTIVE COIL OR REACTOR)	
06	AMMETER	OR
07	ARMATURE	OR
08	BELL	
09	BATTERY	
10	BELL CONNECTION TO FIX ML	
11	BELL PUSH	
12	BELL RINGING TRAEFORMER	
13	BRACKET POINT LIGHTING	
14	BUZZER	
15	CAPACITOR	

Sl. No	DESCRIPTION	SYMBOL
16	CEILING POINT LIGHTING	
17	CEILING POINT POWER	
18	CHILING ROSE 2-PLATE	
19	CHILING ROSE 3-PLATE	
20	CIRCUIT BREAKER TRIPLE	
21	CONNECTED CONDUCTOR	
22	CROSSING CONDUCTOR	
23	DELTA CONNECTION	
24	DISTRIBUTION FUSE BOARD W/O SWITCHES (L)	
25	DISTRIBUTION FUSE BOARD WITH SWITCHES (L)	
26	DISTRIBUTION FUSE BOARD WITH SWITCHES (P)	
27	DISCHARGE LAND	
28	DISTRIBUTION FUSE BOARD W/O SWITCHES (P)	
29	EARTH	
30	EARTH FUSE	

Sl. No	DESCRIPTION	SYMBOL
31	ELECTRIC UNIT HEALTH	
32	FAN POINT	
33	FIRE FUSE	
34	FLY ALARM INDUCTOR (N = NO OF WAVES)	N
35	FLOOR POINT LIGHTINLY	
36	FLOOR POINT POWER	
37	FUSE	
38	INDICATOR (N = NO OF WAYS)	N
39	IMMERSION HEATER	
40	INDICATOR AND BELL	
41	INSTRUMENT POTENTIAL TRANSFORMER	
42	INSTRUMENT CURRENT TRANSFORMER	

NAME OF THE INSTITUTE	GOVT. POLYTECHNIC, BARGARH		
NAME	TANRADHAR SAHU		
TITLE	SYMBOL		
BRANCH	ELECTRICAL	ROLL NO.	F17122002055
SCALE		SHEET NO.	07
DATE	24.09.19	CHECKED BY	05/10/19

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S/No	DESCRIPTION	SYMBOL						
43	INTER MEDIATE SWITCH		55	MAIN CUT-OUT LIGHTING		67	RECTIFIER	DC AC
44	LIGHNTING WALL SOCKET		56	MAIN CUT-OUT POWER		68	RECTIFIER(METAL)	
45	LIGHNTING INALL SOCKET SWITCH		57	MECHANICAL CONNECTION		69	RELAY	
46	LIMIT SWITCH		58	MERCURYARC RECTIFIER		70	SERIES WINDING	
47	LIGHTINING ARRISTOR		59	METER		71	SQUIRREL CAGE MOTOR	
48	LINK		60	ONE WAY SWITCH		72	SPECIAL PURPOSE POINT	
49	MAIN FUSE BOARD WITH OUT SWITCHES(L)		61	OVER CURRENT RELAY SINGLE(ELEMENT)		73	SIREN	
50	MAIN FUSE BOARD WITH OUT SWITCHES (P)		62	PEAR SWITCH FOR LINTING		74	STAR CONNECTION	
51	MAIN FUSE BOARD WITH OUT SWITCHES(P)		63	PUSH BUTTON	OPEN CLOSE	75	SWITCH	
52	MAIN FUSE BOARD WITH SWITCHES(P)		64	PLUG CONNECTION		76	SHUNT WINDING	
53	MAIN SWITCH LIGHTING		65	POWER WALL SOCKET				
54	MAIN SWITCH POWER		66	POWER WALL SOCKET AND SWITCH				

NAME OF THE INSTITUTE	GOVT POLYTECHNIC, BARGARH		
NAME	TANKADHAR SAHU		
TITLE	SYMBOL		
BRANCH	ELECTRICAL	ROLL NO	F1H22002052
SCALE		SHEET No.	08
DATE	24.09.19	CHECKED BY	

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S/NO	DESCRIPTION	SYMBOL
77	SWITCH SINGLE POLE	
78	SWITCH SINGLE POLE	
79	SYNC-RONOUS CLOCK POINT	
80	SYNCHRONOUS MOTOR	
81	TIME DELAY OPEN CONTACT	
82	TIME DLELAY CLASED CONTACT	
83	TRANSFORMER WINDING	
84	TRANSFORMER IRON CORE	
85	TUBELAL HEATER (N = NO OF TUBES)	A
86	TWO WAY SWITCH	
87	TOW WAY SWITCH W/O OFF POSITION	
88	VOLTMETR	V OR

S/NO	DESCRIPTION	SYMBOL
89	NOUND ROTOR INDUCTION MOTOR	
90	CAPACITOR CELECTROLYTIC	+ +
91	CAPACITOR (VANGLE = 0)	
92	ELECTROMAGNETIC RELAY OR CONTACTOR	
93	RELAY WITH INDICATING FLAG	
94	NC CONTACT OF THERMAL RELAY	
95	FAN REGULATOR	
96	MICRO PHONE	
97	HEAD PHONE	
98	STARTER	
99	MOVING IRON INSTRUMENT	
100	MOVIONG COIL INSTRUMEN	

S/NO	DESCRIPTION	SYMBOL
101	SOCKET OUT LETAND SWITCH COMBINED 2 PIN	
102	CABLE BOX	
103	CHASSIS	
104	SHIELDED CONDUCTOR	
105	THERMOSTAR	
106	EXHUST FAN	
107	BRACKET FAN	
108	MULTIMETER	V-A5
109	PHASE INDUCTION MOTOR	
110	THERMO COUPLE	

NAE OF THE INSTITUTE	GOVT POLYTECHNIC BARGARH		
NAME	TANKADHAR SAHU		
TITLE	SYMBOL		
BRANCH	ELECTRICAL	ROLL NO	17N2200305S
SCALE		SHEET NO	09
DATE	24.09.19	CHECKED BY	25/10/19

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Q/ Draw the following views of a single phase 230/110 5kV T/F
(a) Front elevation full in section
(b) plan full in section
The detail dimension of the parts are as follows core
(a) cross-section of the core are step core.
(b) Diameter of the circum circle = 7.5cm
(c) Distance betn between core core centres = 15cm
Yoke yoke HEIGHT = 8CM
L.T winding (i) outside diameter of L.T coil = 9cm
(ii) Inside diameter of L.T coil = 8cm
(iii) Height of L.T winding = 23cm
(iv) Number of turn per time = 50
H.T winding (i) out side diameter of H.T coil = 13.5 cm
(ii) Inside diameter of H.T coil = 11cm
(iii) Height of H.T winding = 23cm
(iv) Number of turn per time = 100cm
Total has equal of the transformer = 40 cm
where missing data may be assumed

NAME OF THE INSTITUTE	GOVT. POLYTECHNIC, BARGARH		
NAME	TANKADHAR SAHU		
TITLE	SINGLE PHASE TRANSFORMER		
BRANCH	ELECTRICAL	ROLL NO -	F17/22002055
SCALE	1:2	SHEET NO -	10
DATE	24.09.19	CHECKED BY -	

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Q specification of transformer core

(i) C.S of the core 3 step core
(ii) Diameter of the circum circle = 24cm
(iii) Distance between adjacent center of core = 42.5cm

Yoke height = 25cm

L.T winding

(i) out side diameter of L.T coil = 28.3 cm
(ii) In side diameter of LT coil = 25cm
(iii) Height of LT winding = 43.65cm
(iv) No. of turn per phase = 12

H.T winding

(i) out side diameter of HT coil = 41.3cm
(ii) In side diameter of HT coil = 34.3cm
(iii) Height of H.T. winding = 43.65cm
(iv) No. of turn per phase = 372

Total height of the transformer = 100cm
other missing data may be assumed.

NAME OF THE INSTITUTE	GOVT POLYTECHNIC, BARGARH		
NAME	TANKADHAR SAHU		
TITLE	THREE PHASE TRANSFORMER		
BRANCH	ELECTRICAL	ROLL NO-	17H22002055
SCALE	1:5	SHEET NO-	11
DATE	01.10.19	CHECKED BY	01/10/19

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A = CI cover hinged to CI Frame
B = Funnel with wire mesh
C = GI Nut and check nut
D = ϕ 19mm GI pipe
E = 38x19mm reducing socket
F = charcoal layer
G = ϕ 38mm GI pipe (earth electrode)
H = salt layer
J = ϕ 12.7mm GI pipe
K = copper or GI wire (main earth lead)
L = cement concrete

B = CI cover hinged to CI Frame
C = Funnel with mesh
D = charcoal
E = ϕ 19mm GI pipe
F = 60x60cm x 6.3mm GI plate or 60x60cm 3.15mm copper plate (earth electrode)
H = copper or GI wire (main earth lead)
J = Bolt, Nut, check Nut and washer to be copper for copper plate and GI for GI plate

NAME OF THE INSTITUTE	GOVT POLYTECHNIC, BARGARH		
NAME	TANKADHAR SAHU		
TITLE	PIPE EARTHING / PLATE EARTHING		
BRANCH	ELECTRICAL	ROLL NO	F17/22002055
SCALE		SHEET NO	12
DATE	01.10.2019	CHECKED BY -	

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NAME OF THE INSTITUTE	GOVT. POLYTECHNIC, BARGARH		
NAME	TANKADHAR SAHU		
TITLE	STAY WIRE		
BRANCH	ELECTRICAL	ROLL NO	17122002053
SCALE		SHEET NO.	13
DATE	01.10.19	CHECKED BY	05/10/19

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(SINGLE LINE DIAGRAM OF 33/11kV DISTRIBUTION SUB-STATION)

SYMBOL

EARTHING

CURRENT TRANSFORMER (C.T)

POTENTIAL TRANSFORMER (PT)

CIRCUIT BREAKER

LIGHTING ARRESTOR

NAME OF THE INSTITUTE	GOVT. POLYTECHNIC BARGARH		
NAME	TANKADHAR SAHU		
TITLE	33/11kV SUBSTATION		
BRANCH	ELECTRICAL	ROLL NO-	F17/22002055
SCALE		SHEET NO-	14
DATE	03.10.19	CHECKED BY	

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SYMBOL

SINGLE LINE DIAGRAM OF 132/33kV SUB-STATION

NAME OF THE INSTITUTE	GOVT POLYTECHNIC, BARMARH		
NAME	TANKADHAR SAHU		
TITLE	132/33 kV SUB-STATION		
BRANCH	ELECTRICAL	ROLL NO	F1712200 2055
SCALE		SHEET NO	15
DATE	03.10.19	CHECKED BY	15/10/19

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(SINGLE LINE DIAGRAM OF 11kV/0.4kV DISTRIBUTION SUB STATION)

NAME OF THE INSTITUTE	GOVT. POLYTECHNIC, BARGARH		
NAME	TANKADHAR SAHU		
TITLE	11kV/0.4kV SUB-STATION		
BRANCH	ELECTRICAL	ROLL NO	F17/210020SE
SCALE		SHEET NO	16
DATE	03.10.19	CHECKED BY	15/10/19

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POLE & POLE SHOE

NAME OF THE INSTITUTE	GOVT. POLYTECHNIC BARGARH		
NAME	TANKADHAR SAHU		
TITLE	POLE AND POLE SHOE		
BRANCH	ELECTRICAL	REGD NO-	F17/2000 2055
SCALE		SHEET NO	17
DATE	15.10.19	CHECKED BY-	

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FRONT ELEVATION HALF IN SECTION

END VIEW

NAME OF THE INSTITUTE	GOVT POLYTECHNIC, BARGARH		
NAME	TANKADHAR SAHU		
TITLE	COMMUTATOR		
BRANCH	ELECTRICAL	REGD NO	F1H22002855
SCALE		SHEET NO -	18
DATE	24.10.19	CHECKED BY	

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