TED (15) -4037 **N20-02490** Reg.No………………..............

(Revision- 2015) Signature. ....

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/
COMMERCIAL PRACTICE – NOVEMBER -2020.

ELECTRICAL ENGINEERING DRAWING

(Maximum Marks: 75) [Time: 2.15 hours]

PART–A

Marks

I. Answer **any three** questions in one or two sentences. Each question carries 2 marks.

1. Draw the symbols of
   (a)Potential transformer (b)Two winding transformer with OLTC.
2. What is the purpose of wave trap in substations?
3. Sketch open type and semi closed type slots.
4. What are the two types of rotors used in induction motors?
5. What are the two basic types of transformer construction? (3x2=6)

PART - B

II Answer **any four** of the following questions. Each question carries 6 marks.

1. Draw a neat sketch of plate earting.
2. Draw single line diagram of 11 KV substation.
3. Draw the neat sketch of Armature lamination of DC machine.
4. Draw the sectional view of salient pole rotor of an alternator having 4 pole.
5. Draw neat sketch of rotor lamination of slip ring induction motor.
6. Draw the sectional plan of one limb of transformer with the following data.

Diameter of the core	: 84 mm
Number of steps	: 3
Internal diameter of LT winding	: 109 mm
External diameter of LT winding	: 139 mm
Thickness of HT winding	: 25 mm
External diameter of HT winding	: 201 mm

7. Draw sectional elevation of core type and shell type transformer. [4x6 =24]

PART - C

(Answer **two** full question from part **C**. **One** full question form Unit I or Unit II and **Second** full question from Unit III or Unit IV. Each full question carries 22 ½ marks)

UNIT I

III Draw single line layout of 220 kv substation with all protective and measuring devices with the following details.

220 kv incoming feeders	:	2 Nos
11 kv outcoming feeders	:	3 Nos
220/11kv power transformer	:	2 Nos
11 kv/415 v station transformer	:	1 No

Draw 220 kv busbar in duplicate bus bar system. (22 ½)

OR

UNIT II

IV Draw the half sectional end elevation of DC machine with the following data. All dimensions are in mm. Missing data may be assume suitably.

Diameter of shaft	:	80
No. of spider legs	:	6
Diameter of spider wheel	:	210
Diameter of armature	:	415
No. of armature slots	:	36
Size of armature slots	:	35 x12
Thickness of yoke	:	40
No. of main poles	:	4
No. of inter poles	:	4
Height of main pole	:	160
Width of main pole	:	120
Height of inter pole	:	150
Width of inter pole	:	44

(22 ½)

UNIT- III

V Draw the half sectional end view of a 3 phase squirrel cage induction motor with The following dimensions.

Outside diameter of the stator stampings	:	230
Inside diameter of the stator stampings	:	164
Thickness of stator frame	:	25
Type of stator slots	:	open
Number of stator slots	:	36
Size of stator slots	:	15 x 8
Air gap	:	2
Out side diameter of the rotor stampings	:	160
Inside diameter of the rotor stampings	:	35
Shaft diameter at center	:	35
Shaft diameter at bearing end	:	30

The rotor has totally closed type slots and contain bar conductors which are short circuited at both ends. Other missing data may be assumed. All dimensions are in mm. (22 ½)

OR

UNIT- IV

VI Draw the sectional elevation and sectional plan of single phase transformer with the following data.

Cross section of the core	:	Three stepped
Diameter of the circum circle	:	65
Distance between core centers	:	181.5
<u>LT winding</u>		
Outside diameter of the first layer	:	92.5
Inside diameter of the first layer	:	70
Outside diameter of the second layer	:	121
Height	:	200

HT winding

Outside diameter of HT winding	:	170
Inside diameter of HT winding	:	125
No. of coils per limb	:	4
Height	:	200
Yoke height	:	60
Total height of transformer	:	360

Other missing data may be assumed. All dimensions are in mm.

(22 ½)

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