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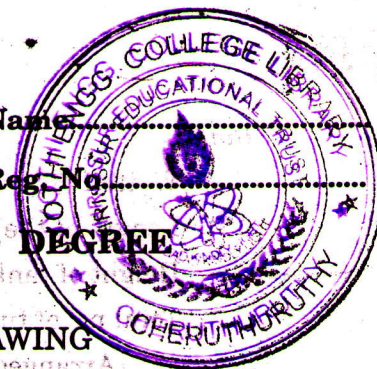
Reg. No.

**SIXTH SEMESTER B.TECH. (ENGINEERING) DEGREE
EXAMINATION, JUNE 2006**

EE 2K 605—ELECTRICAL ENGINEERING DRAWING

Time : Three Hours

Maximum : 100 Marks



- I. (a) Draw the sectional elevation of a single phase 100 kVA, 2000/400 volts shell type transformer for the given below details. Coil to be arranged for medium reactance.

Core :

Width = 13 cm.

Depth = 36 cm.

Window :

Width = 14 cm.

Height = 24 cm.

Overall height of transformer = 37 cm.

Overall length = 54 cm.

Overall depth = 36 cm.

H.T. coil :

Total no. of coils = 4 nos.

No. of turns per coil = 48

Cross-section of conductor = 24 sq.mm.

L.T. coil :

Total no. of coils = 4 nos.

No. of turns per coil = 10

Across-section of conductor = 112 sq mm.

Any other missing data may be assumed.

Or

- (b) Draw the sectional plan and elevation of a 500 kVA, 6600/400 V single phase distribution transformer tank. Detailed dimensions given below :

Core : Cruciform construction

Diameter = 33 cm.

Width of largest stamping = 28 cm.

Width of smallest stamping = 17.5 cm.

Height of core = 43 cm.

Centre of centre.distance between cores = 49 cm.

Turn over

Tank :

Width of the tank	= 65 cm.
Length of the tank	= 105 cm.
Height of tank	= 150 cm.
Total no. of tubes	
(Arranged on all sides in two layers)	= 80
Diameter of tube	= 5 cm.
Centre to centre distance between tubes	= 7.5 cm.
No. of tubes lengthwise in one side in two layers	= 25
No. of tubes widthwise in one side in two layers	= 15
Height of largest tube	= 132.5 cm.
Height of smallest tube	= 102 cm.

Any missing data may be assumed.

(25 marks)

2. (a) Draw the typical layout of an 11 kV/415 V indoor substation with two 500 kVA transformers for parallel operation. Show the details of busbar connections with protective devices on h.t. and l.t. side.

Or

- (b) Draw the complete earthing layout of a distribution substation. Name all the parts and show all dimensions in the figure.

(25 marks)

3. (a) Draw to a convenient scale the end and longitudinal elevation (top half in section) of a 100 kW, 500 volt, 1250 rpm, 6 pole shunt generator. The armature is supported over the spider and the shaft is supported by means of pedestal bearing, for the dimensions given below :

Diameter of armature	= 75 cm.
Length of armature	= 27.8 cm.
No. of slots	= 86
Size of slots	= 1.11×5.24 cm
Depth of iron behind the slot	= 9.26 cm
Ventilating ducts No. 3, each 1 cm wide	
Air gap length below main pole	= 0.5 cm.

Main pole :

Breadth	= 17.75 cm.
Height	= 24 cm with shoe.
Length	= 25.7 cm.

Interpole :

Breadth	= 4.63 cm.
Length	= 20 cm.

Air gap length below interpole	= 0.8 cm.
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**Yoke :**

Thickness of yoke = 7.5 cm.
Length of yoke = 40 cm.

Commutator :

No. of commutator segments = 344
Diameter of commutator = 56 cm.
Segment pitch = 0.51 cm.
Length of commutator = 12.35 cm.
No. of brushes per spindle = 3

Shaft :

Shaft diameter below armature = 9 cm.
Shaft length between bearing centres = 120 cm.

Or

- (b) Draw a half sectional elevation of a salient pole alternator of 500 kVA. Also draw the half sectional end view. The dimension details given below :

Laminated stator 24 cm long has 5 radial ducts and the laminations are held in position by means of two end plates bolted together :

Inside diameter of stator = 108.4 cm.
Outside diameter of stator = 140.4 cm.
Overhang of stator coil on each side = 16 cm.

Frame is of box type. Rotor salient pole type, made from laminations and fixed with the spider by means of bolts inwardly :

Diameter of rotor = 107.2 cm.

The alternator is driven at 1000 rpm at 50 Hz. The shaft is supported by means of two pedestal bearings 160 cm. apart.

Show clearly in the drawing :

- (i) Method of fixing the rotor pole over the spider.
- (ii) Stator and frame construction.

Other missing data may be assumed.

(50 marks)