

C 14832

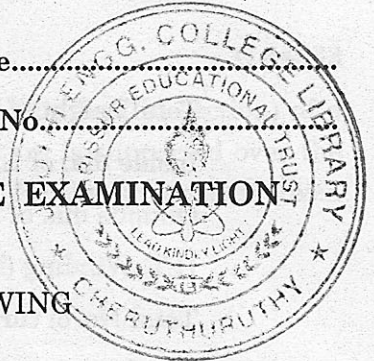
(Pages : 4)

Name.....

Reg. No.....

SIXTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION
DECEMBER 2010

EE 2K 605—ELECTRICAL ENGINEERING DRAWING



Time : Three Hours

Maximum : 100 Marks

- I. (a) Draw the detailed drawing of each part separately for a 500 kVA, 6600/400 V single phase power transformer, and then full assembled sectional plan and elevation.

Detailed dimensions of parts :

Core : Laminated steel plates of 0.35 mm thickness, core construction cruciform.

Diameter = 33 cm.

Width of the largest stamping = 28 cm.

Width of the smallest stamping = 17.5 cm.

Height of core, H = 43 cm

Centre to centre distance between cores = 49 cm.

Core laminations are fixed by means of two end plates 3 mm thick by a bolt of dia. 1.2 cm,

Yoke : Construction cruciform :

Yoke height = 25 cm.

Yoke length = $49 + 0.85 \times 33$ = 77 cm.

Total height of transformer = 99 cm.

Winding :

L.V. winding (Placed near the core) helical type :

L.V. Winding total turns = 22

No. of turns per limb = 11

L.V. winding conductor cross-section made from 20 square straps of size 5×5 mm and with insulation 5.5×5.5 mm = 500 Sq.mm.

Height of one turn = 28.5 mm.

Radial thickness of one turn = 23 mm.

Turn over

Total height of the core occupied by the L.V. winding	= 36.2 cm.
Inside dia. of L.V. winding	= 33.75 cm.
Outside dia. of L.V. winding	= 38.35 cm.
H.T. Winding (in two layers) "Concentric type".	
Total No. of turns	= 378
No of turns per limb	= 189
Cross-section of H.T. Conductor made from one rectangular size strap of size 3×9 mm	= 27 Sq.mm.
Inside dia. of H.T. 1st layer	= 41.5 cm.
Outside dia. of H.T. 1st layer	= 43.3 cm
Inside dia. of H.T. 2nd layer	= 45 cm.
Out side dia. of H.T. 2nd layer	= 46.8 cm
Tank :	
Width of tank	= 65 cm
Length of tank	= 105 cm
Height of tank	= 150 cm
Total No. of tubes	= 80 (arranged on all sides in two layers)
Dia. 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.

(25 marks)

Or

- (b) Make a proportionate longitudinal cross-section of a limb of a 3 phase, oil-cooled power transformer showing the H.T and L.T windings. Diameter of circumscribing iron core circle = 22.6 cm ; dia. of secondary winding in two concentric layers, inside 25 cm, outside 28.1 cm ; height of Secondary winding 41.2 cm ; dia. of primary winding, inside 32 cm, outside 36.8 cm. Total height of Primary winding, including 10 spacers, 40 cm.

(25 marks)

- II. (a) Draw the layout with suitable dimensions of capacitive power substation. (25 marks)

Or

- (b) Draw the Single line diagram of a distribution centre with suitable dimensions. (25 marks)

III. (a) Draw to a convenient scale the end and longitudinal elevation (top half in section) of a 100 kW, 500 volt, 1250 r.p.m. 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 :

Dia. of armature	=	75 cm.
Length of armature	=	27.8 cm.
No. of slots	=	86
Size of slot	=	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.

Inter Pole :

Breadth = 4.63 cm, Length	=	20 cm.
Air gap length below interpole	=	0.8 cm.

Yoke :

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

Commutator :

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

Shaft :

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

(50 marks)

Or

Turn over

- (b) Draw the half sectional elevation and quarter sectional end of a 3 phase slip-ring motor with the following dimensions :

Inside dia. of stator	=	55 cm.
Slator length	=	20 cm.
Stator overhang on each side	=	10 cm
length of stator frame	=	38 cm.
Diameter of rotor	=	54.6 cm.
Total length of motor at footstep	=	73 cm.
Height of base up to eye bolt	=	93.04 cm.
Width of footstep	=	92.76 cm.
Foot thickness	=	5 cm.
Length	=	14 cm.

Other missing data may be assumed.

(50 marks)