

## B. Tech Degree VI Semester Examination, April 2010

### EE 604 ELECTRICAL DRAWING (2006 Scheme)

Time : 3 Hours

Maximum Marks : 100

(Answer **ALL** questions)(Each question carries **TWENTY FIVE** marks)

(Assume any additional data needed)

- I. Design and draw a developed winding diagram for a 16 slot double layer, 4 pole dc lap winding. Make provisions for equalizer rings.

**OR**

- II. Draw to quarter scale a half sectional longitudinal view of a 75kw DC generator with main dimensions as given below :

Number of poles	=	4
External diameter of armature stamping	=	41.5 cm
Internal diameter of armature stamping	=	21.5 cm
Length of armature core	=	24cm
Number of slots	=	39
Size of slot	=	3.5 cm x 1.2 cm
Number of coil sides/slot	=	6
Armature winding overhang on each side	=	16cm
Diameter of commutator	=	26.6cm
Length of commutator	=	23.5 cm
Number of commutator segments	=	117
Air gap	=	0.5 cm
Total height of main poles	=	16 cm
Depth of pole winding	=	2.8 cm
Pole arc/pole pitch	=	62%
Interpole section	=	4.4 cm x 16 cm
Thickness of yoke	=	6 cm
Shaft diameter at coupling end	=	8 cm
Total length of shaft	=	144 cm

The machine has end shield bearings and is of protected type with a fan mounted at the back end. The armature stampings are mounted on a cast iron spider keyed to the shaft and clamped between end plates. Other missing data may be assumed.

- III. Draw the full sectional plan of a 500KVA, 6600/400V single phase power transformer.

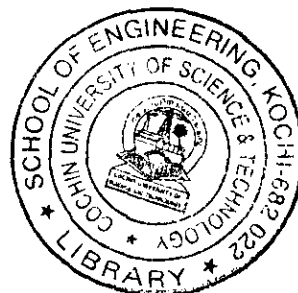
Detailed dimensions of parts:

**Core**

Laminated steel plates of 0.35mm thickness, core construct cruciform.

Diameter	=	33 cm
Width of largest stamping	=	28 cm
Width of smallest stamping	=	17.5 cm
Centre to centre distance between cores	=	49 cm

(Turn Over)



WindingLV winding

Inside diameter	=	33.75 cm
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Outside diameter	=	38.35 cm
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HT winding (In two layers) concentric type

Inside diameter of HT first layer	=	41.5 cm
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Outside diameter of HT first layer	=	43.3 cm
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Inside diameter of HT second layer	=	45 cm
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Outside diameter of HT second layer	=	46.8 cm
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**OR**

- IV. Draw the quarter sectional and view of a  $3\phi$  slip ring induction motor with following dimensions.

Inside diameter of stator	=	55 cm
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Stator length	=	20 cm
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Rotor diameter	=	54.6 cm
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Height of base upto eye bolt	=	93.04 cm
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Width of foot step	=	92.76 cm
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Foot thickness	=	5cm
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Length	=	14 cm
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- V. Draw the winding diagram of a 4 pole 36 slot  $3\phi$  mesh connected armature.

**OR**

- VI. Draw a single layer concentric winding unbifurcated diagram with two plane overhang for a  $3\phi$ , 48 slots, 8 poles ac armature.

- VII. Draw the single line layout of a 220/11KV substation.

**OR**

- VIII. Draw the structural details of a double circuit transmission line tower.