Seventh Semester B.Tech. Degree Examination, February 2017
(2008 Scheme)
08.705 : ELECTRICAL DRAWING (E)

Time : 3 Hours
Max. Marks : 100

PART - A

Answer any two questions:

1. Draw the sectional elevation and end view of the dc machine pole core with the yoke assembly for the given below dimensions:
   DC Machine, 6-pole, 150 HP motor
   Armature dia. : 55 cm
   Air gap length : 0.5 at main poles, 0.6 at inter poles
   Main pole laminated : breadth 14 cm, arc 20 cm, height with the shoe 21 cm.
   Inter pole breadth : 4 cm, outside dia. of yoke. 115 cm.
   Clearly show the method of fixing the pole to yoke. Assume any additional data necessary.

2. a) Draw 220 kV double circuit transmission tower and mark the dimensions.
   b) Sketch neatly the half sectional view of a 33 kV pin insulator.

3. Draw the detailed sketch of a shell type single phase 100 kVA, 2000/400 V transformer for the given below details.
   Core size : Width – 13 cm, Depth – 36 cm
   Window : Width – 14 cm, Height – 24 cm, Overall height of trans. – 37 cm,
   Overall length – 54 cm, overall depth – 36 cm.
   HT coil : Total no. of coils – 4 nos., No. of turns per coil – 48 nos.,
   Total no. of layers – 12 nos.
   LV coil : Total no. of coils – 4 nos., No. of turns per coil – 10 nos.,
   Total no. of layers – 5 Nos. HT/LT strip coils of suitable size can be used.
   Assume necessary missing data.

P.T.O.
PART – B

Answer any one full question:

4. a) Draw a neat sketch of a generating station switch yard of rating 11 kV/110 kV. Mark all the equipments used in the switch yard with specification.

b) Draw the half sectional end view of a salient pole synchronous motor. Show clearly the method of fixing the poles with rotor spider and stator core with the frame.

Stator:
Air gap dia. of stator – 40 cm, outside dia. – 56.5 cm, length of stator – 13.3 cm,
Length of yoke – 31.75 cm, Overhang of stator coil in each side – 11.5 cm,

Rotor:
Outside dia. – 38.5 cm, Pole width – 7.6 cm, pole height – 7.6 cm, Pole arc – 14 cm,
No. of poles – 6, Overall length of machine – 57 cm. Assume all other necessary data.

5. a) Draw a half sectional longitudinal elevation of the armature and commutator fixed to the shaft, showing the radial ventilating ducts, armature and flanges, the method of fixing the armature, the commutator and the segments.

Armature:
Armature dia. – 45 cm, Shaft dia. – 10 cm, Armature core length – 22.5 cm,
No. of armature slots – 51, Armature winding overhang – 15 cm.

Commutator:
Commutator dia. – 28 cm, No. of commutator segments – 153, Length of commutator segment (face) – 10 cm.
The commutator is mounted on a separate cast iron sleeve (keyed to the shaft) and is supported between V-shaped clamp hinges.
b) Draw to suitable scale a half sectional elevation and end view of the squirrel cage induction motor with the following dimensions:

External diameter of stator stamping: 69 cm
Inside diameter of stator stamping: 45 cm
Stator core length: 20 cm

The stator has 54 slots, each of 6 cm × 1.5 cm. Section, and the winding overhang 5 cm, on each side.

External diameter of rotor stamping: 44.75 cm
Inside diameter of rotor stamping: 25 cm

Rotor has 43 slots, each carrying a bar of 1.5 cm × 3.5 × 1.2 cm. Section.

The end rings have a section of 0.75 × 3.5 cm.

The rotor is mounted on a spider fixed to the shaft by a key.

Shaft diameter: 5 cm.
Total height of the motor: 81 cm

The motor has ball-bearings carried by the end shield. Assume necessary missing data.