

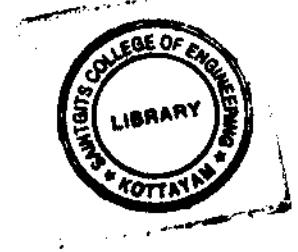
B.TECH. DEGREE EXAMINATION, MAY 2014**Seventh Semester**

Branch : Electrical and Electronics Engineering

ELECTRICAL DRAWING (Elective I) (E)

(Old Scheme - Prior to 2010 Admissions)

[Supplementary]



Time : Three Hours

Maximum : 100 Marks

*Answer two questions from Part A and two questions from Part B.**All questions carry equal marks.**Assume any missing data suitably.***Part A**

1. A 4 pole simplex wave wound armature has 25 slots and 25 coils. The commutator has 25 segments. Work out the winding details and draw the winding diagram. Also draw the sequence diagram to show the position of the brushes.
2. Draw to a suitable scale a neat and sectional view of the following as per main dimensions given below in centimeter scale. Winding of the field and armature need not be shown :

DC, 6 pole, 150 H.P. motor

Armature diameter = 55

Number of slots = 61

Size of slot = 1×4.5

Slot one type

Depth below slot = 9

Commutator diameter = 42

Number of commutator bars = 244

Air gap length (radial) = 0.5 at main pole and 0.6 at inter pole

Main pole laminated, breadth 14cm, arc 20, height with shoe 21, Inter pole breadth = 4

Outside diameter of yoke = 115

Shaft diameter at bearing = 10

The method of fixing the pole lamination and the pole to the yoke should be clearly shown.

Turn over

3. Sketch the sectional plan and elevation of the core and yoke assembly of 15 KVA, 3-1000/415-V core type transformer. The main dimensions are given below :

Core diameter = 22 cm

Height of core = 50 cm

LV winding in one layer with height = 42.5 cm

HV winding in one layer with height = 42.5 cm

Show suitable spacers and position for L.V and H.V. winding arrangement.

(2 × 25 = 50 marks)

Part B

4. A double layer lap winding is to be made for a three-phase 4 pole machine having 24 slots in its armature. The coil span is reduced by one slot. Draw the developed winding diagram.
5. Draw to a suitable scale the half sectional front and elevation views of a 20 kVA, 4 pole, 3-phase salient pole alternator with following main dimensions :

Outer diameter of the motor = 50 cm

Stator inner diameter = 25 cm

Number of stator slots = 48

Yoke width = 3 cm

Rotor diameter = 24 cm

Rotor length = 16 cm

Shaft = 3 cm dia with ball bearing, rotor is provided with damper winding ; motor height = 52 cm, motor length = 28 cm.

6. Draw to quarter scale a half sectional longitudinal view and half sectional end view of the squirrel cage motor with the following main 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 stampings = 44.75 cm

Inside diameter of rotor stamping = 25 cm

Rotor has 43 slots, each carrying a bar of 1.5 × 1.2 cm section

The end rings have a section of 0.75 × 3.5 cm

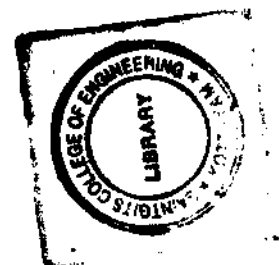
The rotor is mounted on a spider fixed to the shaft by a key.

Shaft diameter = 5 cm.

Total height of the motor = 81 cm

The motor has ball-bearings carried by end shield.

Assume dimensions of the motor frame.



(2 × 25 = 50 marks)