PART - A

Answer any two questions:

1. a) Sketch the yoke and pole assembly of a typical D.C. Machine. 15
   b) Draw the half sectional view of a pin insulator. 10

2. Draw the single line diagram of 220 KV substation with all equipments and specifications. 25

3. Draw the full sectional elevation and plan of a 3 phase transformer for the dimensions given below:
   Core dia – 22 cm  
   Height of core – 48 cm  
   Height of yoke – 25 cm  
   Centre to centre distance between the cores – 35 cm  25

PART - B

Answer any one question:

4. Draw the longitudinal and end views (upper half in section) of a 60 HP, 4 pole DC shunt machine having the following dimensions. All dimensions are in cm.
   Armature:
   Outside diameter – 18.5, Length – 13.5, No. of slots – 24, Size of slot – 0.7 x 2
   Main pole:
   Length – 14, Width – 7, Pole arc – 10, Height – 11
   Inter pole:
   Size – 2 x 10.8, Length – 11, Air gap – 0.5
   Commutator:
   Diameter – 13, Length – 10
   Brushes:
   No. of spindles – 4
   Winding thickness:
   Main pole – 2, Inter pole – 1
   Armature is directly mounted on the shaft and is held between two end plates. Missing data, if any may be appropriately assumed. 50

P.T.O.
5. Draw the following views of a 25 KVA, 400V, 1500 rpm, 50 Hz. Three phase salient pole alternator.

a) Half sectional elevation (top half in section)

b) End view.

Stator: Outside diameter – 400 mm
Inside diameter – 290 mm
Thickness of frame – 36 mm
Core length – 135 mm
Slots open type 48 nos. – (32 x 12 mm) size
Air gap length – 2 mm
Rotor pole length – 135 mm
Width – 70 mm
Height with pole shoe – 75 mm
Shaft diameter – 70 mm

Assume reasonable values for other missing data.