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Sixth Semester B.E. Degree Examination, May/June 2010
Electrical Drawing and CAD

Time: 3 hrs.

Max. Marks:100

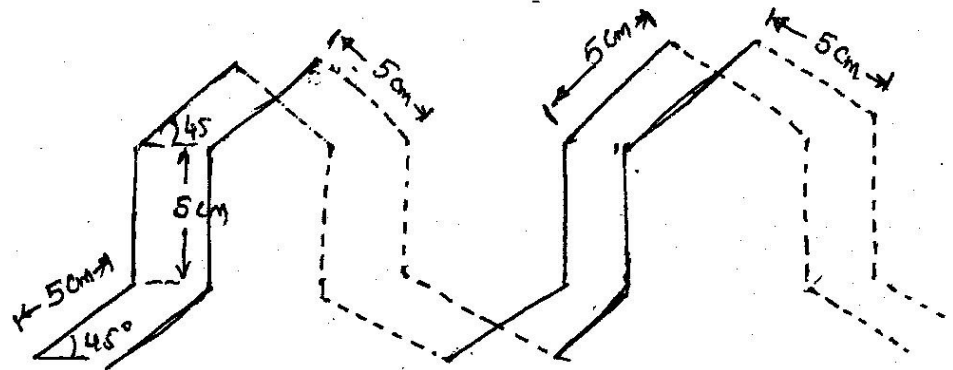
**Note: Answer any TWO full questions from Part-A
and any THREE full questions from Part-B.**

PART - A

- 1 a. Draw a neat schematic arrangement of a thermal power plant. (08 Marks)
b. Draw the single line diagram of a typical substation having the following equipments:
i) Two transformers 66/11 kV, 3 phase Δ/Δ 5 MVA.
ii) One auxiliary station transformer 11 kV/400 V, 3 phase Δ/Y 500 kVA
iii) Two incoming lines 66 kV
iv) One outgoing line 66 kV
v) Eight outgoing lines at 11 kV.
Arrange the buses and circuit breakers, disconnecting switches, current and potential transformers. Also, show the lightning arrestors. (12 Marks)
- 2 Draw to a suitable scale, the half sectional elevations (Right half in section) of a 125 kVA, 2000/440 V, 50 Hz single phase shell type transformer, with the following data:
Dimensions of the core: Central leg = 14cm×35cm Outer leg = 7cm×35cm
Yoke = 7cm × 35cm Window = 28cm×14cm
LV winding: Type of winding = Sandwich
Dimension of conductor = 4 strips each of 5mm in parallel wound with 1.0mm strip of press board between each set of 4 strips.
Turns per phase = 36 No. of coils = 4
Turns per coil = 9 Number of layers = 1
Coil dimensions = 1.8cm×10cm
HV winding: Type of winding = Sandwich
Dimension of conductor = Two paper covered strips 8mm×0.6mm (base) in parallel
Turns per phase = 558 No. of coils = 4
Turns per coil = 2-150, 2-129 Number of layers = 1
Coil dimensions = 2.0cm×10cm
Insulation : Between end coils and iron 10 mm, Spacers between LV and HV 20mm
Spacers between HV coils 10mm Spacers between LV coils 5mm (20 Marks)
- 3 Draw to half scale the sectional end elevation and front elevation of the yoke and pole assembly with the following data:
Width of the pole = 14 cm, Pole arc = 20 cm,
Height of the pole with shoe = 20cm, Radius of pole arc = 28 cm,
Thickness of yoke = 7.5 cm, Thickness of end plate = 3 mm
Show clearly the method of fixing the pole core laminations and pole. Take pole length = 18 cm. (20 Marks)
- 4 Draw to a suitable scale, half sectional end view of the alternator, with the following details:
Diameter of the shaft = 7.6 cm Inside diameter of stator = 47.5 cm
Outside diameter of the stator = 76 cm External diameter of the supporting frame = 92 cm
Total number of stator slots = 30
Overall distance of the base plate from the centre line of the alternator to the ground level=50cm. (20 Marks)

PART - B

- 5 Draw a neat developed winding diagram for a dc machine, with the following details:
 Slots = 13, number of poles = 4, number of commutator segments = 13, winding type = simplex double layer wave, progressive. Show the position of poles, mark the position and polarity of brushes. Also draw the sequence diagram. (20 Marks)
- 6 Draw the developed winding diagram for an AC motor, with the following data:
 Type of winding = lap number of poles = 4
 Number of slots = 24 number of coil sides/slot = 2
 The winding is arranged to eliminate third harmonic. Show the winding in star connection. (20 Marks)
- 7 a. Explain the following Auto Cad commands, with examples:
 i) Mirror ii) Trim iii) OFFset iv) Array v) Rotate (10 Marks)
 b. Fig.Q7(b) shows two waves of a wave winding of a dc machine. Write prompt and response columns to obtain the waves.

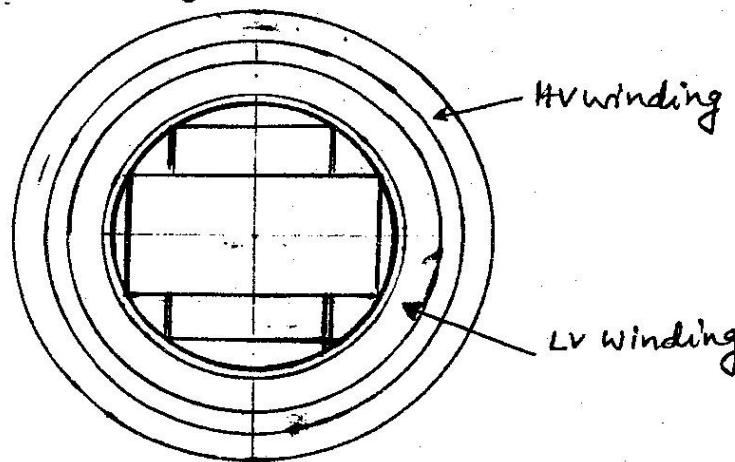


The distance between adjacent waves is 1cm.

Fig.Q7(b)

(10 Marks)

- 8 Write the prompt and response columns to draw the plan of a transformer limb shown in Fig.Q8, to a suitable scale. Circumscribing circle radius is 25cm.



Assume suitable dimensions for LV and HV windings.

Fig.Q8

(20 Marks)
