



USN

--	--	--	--	--	--	--	--	--	--

10EE65

Sixth Semester B.E. Degree Examination, June/July 2019

(ELECTRICAL & ELECTRONICS ENGINEERING)

COMPUTER AIDED ELECTRICAL DRAWING

Time: 3 hrs

Max. Marks: 100

Instructions:

1. Answer Question 1 **and** Question 2 from Part A
2. Answer Question 3 **or** Question 4 from Part B
3. Use of CAD tool that satisfies the requirements of the syllabus is permitted. Suitable data may be assumed if not given.

Part A

1. Design and draw developed duplex winding diagram for an 18 slots, double layer, 4-pole, progressive lap winding. Draw the sequence diagram, show position of brush, direction of current. **30 Marks**

OR

Draw a developed winding diagram for an AC Machine having 24 slots, one conductor per slot, 4 pole delta connected wave winding. **30 Marks**

2. Draw the Single line Diagram of Connections of a hydroelectric station having the following equipment **20 Marks**
 - a) Alternators: 12000KVA, 3Phase, 50hz, 11KV, Y-connected, Five
 - b) Step Up transformers: 5000KVA, 3phase, 50Hz, 11/110KV, Δ/Y . Five
 - c) Bus: 110KV double Bus With a bus coupler.
 - d) Outgoing Transmission Lines: 110KV, Two
 - e) Station Auxiliary Transformers: 750KVA, 3 Phase, 50Hz, 11KV/400V, Δ/Y . Two
 - f) Also indicate positions of CT, PT, Isolating Switches, Lightning arrestors, circuit breakers.

Part B

3. Draw to suitable scale, the sectional elevation and plan of a 10KVA , 50Hz, single phase, 1100/110kV shell type transformer with the following data : **50 Marks**

Magnetic circuit dimensions:

Central leg = 70mm X 94mm, outer leg = 70mm X 46.7mm,
Yoke = 70mm X 57.2mm, window = 200mm X 75mm

HV winding:

Number of turns = 100, dimension of the insulated conductor = 2.1mm x 2.1mm, number of layers = 12, height of the coil = 178.2mm. The HV coil is divided into two sections with 6.35mm duct in between. Depth of each section = 15.6mm.

LV winding

Number of turns = 100, wound in two sections, layer per section = 2 dimensions of the insulated conductor = 4.67mm X 7mm, height of the coils = 182mm, depth of each section = 9.94mm.

Insulation

Between layers = 0.6mm, between core and LV coil = 2.5mm, between HV and LV windings = 3.81mm, between yoke and end coils: for LV coils 4mm mica pad and 5mm pressboard spacer blocks, for HV coils 3.17mm mica pad and 7.575mm pressboard spacer blocks.

OR

4. Draw the suitable scale: **50 Marks**
- End view with quarter half in section
 - Front elevation with top half in section

With following main dimensions of a commutator used for DC machine.

Commutator dia = 83.5

Length of commutator = 86

Length of riser = 10

Width of the riser = 5.1

Thickness of mica = 1.25

Shaft dia = 29.2

Segment pitch with mica = 5

Outer dia of sleeve = 78

Height of segment = 19

Sleeve is fixed by V ring and collar other missing data's may be proportionally assumed

(all dimensions are in mm)

* * * * *