



USN

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

10EE65

Sixth Semester B.E. Degree Examination, December 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. Draw the simplex retrogressive wave winding for a 4 pole DC machine having 42 armature single layered conductors. Show the placement of poles, direction of current and position of brushes. Also write the concerned winding table and sequence diagram. **30 Marks**

OR

Design and draw the developed winding diagram for an alternator with following details

No. of poles = 2

No. of phase = 3

No. of slots = 15

Winding = double layer, lap short pitched by one slot.

30 Marks

2. Draw the Single line Diagram of a typical substation having the following equipment. **20 Marks**
 - a) Incoming lines: 66KV, 50 Hz, Two
 - b) Outgoing lines: 66KV, 50 Hz, one
11KV, 50 Hz, Eight
 - c) Transformer: 66/11KV, 3 phase, Δ / Δ , Two
 - d) Auxiliary station transformer: 500KVA, 11KV/400V, Δ / Y , One.

Show the positions of CT, PT, Isolating Switches, Lightning arrestors, circuit breakers.

Part B

3. Following are the details of 3 phase, core type transformer draw to suitable scale **50 Marks**

- a) Front elevation of transformer assemble right half in section
 b) Plan of transformer assemble showing right half in section

Core: Laminated steel plates of 0.35 mm

Cross section of the core = 3 stepped core

Diameter of circumscribing circle = 230 mm

Overall Width = overall height of the core = 980 mm

Window height = 470 mm

Secondary winding (L.T):

Number of turns = 25

Inside diameter & outside diameter are 250 mm & 271 mm respectively.

Secondary conductor = 6 strips in parallel, 3 axially and 2 radially, each 9.5 mm x 3.2 mm

Tape insulation = 0.5 mm

Primary winding(H.T):

Number of turns = 750

(8 coils of 83 turns each, arranged in 7 layers, height 37.5mm, 2 coils of 43 turns each, height 23.5 mm)

Inside diameter = 320 mm

Outside diameter = 370 mm

Primary conductor = 2.64 .mm, dia: 3 mm with insulation

OR

4. Draw the half sectional end view and half sectional elevation, showing the General Assembly of the DC Generator, rated as 30 kW, 4 Pole, 1200 rpm **50 Marks**

Shaft radius = 35 mm,

Armature radius = 110 mm,

Armature core length = 210 mm,

Inner radius of the yoke = 168 mm,

Outer radius of yoke = 195 mm,

• Pole width = 65 mm, pole height = 66 mm, Pole arc / pole pitch = 2/3,

Steel rod in the main pole = 40 x 40 mm,

• Inter pole dimension = 20 x 52 mm,

• No. of armature slots = 32,

• slot dimension = 8 x 22 mm,

• Vent holes = 6 of 10 mm dia,

• Axle height = 200 mm

• Commutator dia = 110 mm

• Commutator length = 90 mm
