

CBCS Scheme

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15EE651

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

(ELECTRICAL & ELECTRONICS ENGINEERING)

COMPUTER AIDED ELECTRICAL DRAWING

Time: 3 Hours

Max. Marks: 80

Instruction:

1. Answer Question 1 or 2 and 3 from PART-A.
2. Answer Question 4 or 5 from PART-B.
3. Use of CAD tool that satisfies that requirement of the syllabus is permitted. Suitable data may be assumed if not given.

PART-A

1. Design and draw a duplex winding diagram of a DC machine with 32 conductors and 4 poles. Draw the sequence diagram. Fix the position and polarity of brushes.

(25 marks)

OR

2. Design and draw developed 3 phase full pitched AC lap winding for 24 conductors, double layer, 4 poles, also show winding in star connection.

(25 marks)

3. Draw the Single line Diagram of a substation having the following equipment.

- a) Incoming lines: 110KV, 50 Hz, Two
- b) Outgoing lines: 110KV, 50 Hz, One
11KV, 50 Hz, Eight
- c) Transformers: 5MVA, 110/11 KV, 3 phase, Δ / Δ , Two
15MVA, 110/220 KV, 3 phase, Δ / Δ , One
500KVA, 11KV/400 V, 3 phase, Δ / Y , One Auxiliary station transformer
- d) The station is connected to another substation through the 15MVA transformer of 110/220KV.

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

(15 marks)

PART – B

4. Following are the details of 3 phase, core type transformer draw to suitable scale :

- 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 and 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 37.5 mm, 2 coils of
 43 turns each, height 23.5 mm)
 Inside diameter = 320 mm
 Outside diameter = 370 mm
 Primary conductor = 2.64 mm, diameter: 3 mm with insulation.

(40 marks)

5. Draw to scale a) half sectional end view b) front view of alternator with the following data:

Diameter of shaft = 7.6 cm
 Height of pole = 7.6 cm
 Diameter of frame (outer) = 92 cm
 Length of yoke = 22 cm
 Diameter of the rotor = 46 cm
 Outer diameter of the stator = 76 cm
 Number of poles = 10
 Length of stator = 16 cm.

(40 marks)
