C14–EE–407

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BOARD DIPLOMA EXAMINATION, (C–14)

OCT/NOV—2016

DEEE—FOURTH SEMESTER EXAMINATION

ELECTRICAL ENGINEERING DRAWING

Time : 3 hours] [*Total Marks* : 60

PART—A

5×4=20

Instructions : (1) Answer **all** questions.

(2) Assume suitable values for any other missing data.

(3) The scale should be mentioned for dimensional drawings.

1. Draw the sectional elevation of protected flange coupling assuming the shaft diameter 25 mm.

2. Draw neatly the wiring diagram of DOL starter used for 3-phase induction motor (not to scale).

3. Draw the neat sketch of bulk oil circuit breaker and label the parts (not to scale).

4. Draw the neat sketch of bow stay arrangements for LT pole with strain insulator (not to scale).

PART—B

20×2=40

Instructions : (1) Answer *any* **two** questions.

(2) Each question carries **twenty** marks.

(3) The scale should be mentioned for dimensional drawings.

5. *(a)* Develop a simple lap winding for a DC machine having 6 poles, 36 armature slots and single-turn coil. 10

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(b) Taking a suitable scale, draw the assembled sectional view (only sectional elevation) of armature core, hub and shaft of a DC machine with the following dimensions : 10

Diameter of the shaft (at the bearings)—130 mm

Diameter of the shaft (at the centre of the core)—170 mm

Diameter of the core—900 mm

Diameter of the hub—770 mm

Radius from the centre of the axle to the bolt circle—210 mm

Diameter of bolt head—20 mm

Dimension of ventilating duct (towards bolt)—200 mm

(towards axle)—240 mm

Distance of duct from the axle centre—105 mm

Flange thickness—20 mm

Depth of flange—90 mm

Length of core gap equally spaced—230 mm with 10 mm spacer

Total distance between the two hubs—500 mm

Assume suitable any other missing dimensions.

6. (a) Draw the following core sections of a core-type transformer assuming circumference circle diameter 50 mm : 10

(i) Square type

(ii) Cruciform type

(iii) Four stepped cross-sections

(b) Draw the half-sectional end view of a 10 HP, 440 V, 50 Hz, 3-phase and 1450 r.p.m. slip-ring induction motor with the following main dimensions : 10

Outside diameter of the stator stamping : 290 mm

Inside diameter of the stator stamping : 220 mm

Thickness of stator frame : 35 mm

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Number of stator slots (open type)	:	36
Stator slot size	:	18 mm × 12 mm
Air gap	:	2 mm
Inside diameter of rotor stamping	:	38 mm
Number of rotor slots (open type)	:	36
Rotor slot size	:	12 mm × 8 mm
Shaft diameter at the centre	:	38 mm
Shaft diameter at the bearings	:	35 mm
Number of ducts (equally spaced) on the stator frame	:	8
Number of ducts (equally spaced) on the rotor frame	:	4

Take suitable scale and assume any missing dimensions.

7. *(a)* Draw the line diagram (top view of substation layout) of a 33/11 kV substation layout and label the parts. Take two transformers of each having the rating 5 MVA, 33/11 kV and parallel connected in the layout. Assume any other missing data and take suitable scale. 10

(b) Draw the neat schematic diagram of a transformer yard earthing system and label the important parts. 10

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