C09–EE–408

3479

BOARD DIPLOMA EXAMINATION, (C–09)

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) Each question carries **five** marks.
(3) Drawing should be neat with necessary dimensions.

1. Draw the elevation and side view of roller bearing.

2. Draw the half-sectional elevation and side view of a commutator assembly with the following data :

Diameter of the shaft	:	46 mm
Diameter of the commutator	:	111 mm
Height of the riser	:	9·9 mm
Length of the V-notch	:	50·8 mm
Length of the commutator	:	88·9 mm
Thickness of the mica sheet	:	0·8 mm
Distance between two mica sheets	:	3·5 mm

3. Draw the 132 kV double-circuit steel tower and mark its dimensions.

4. Draw the single-line diagram of 220 kV/33 kV substation.

PART—B

20×2=40

Instructions : (1) Answer *any* **two** questions.
(2) Each question carries **twenty** marks.
(3) Drawing should be neat with necessary dimensions.

5. *(a)* Draw the right half-sectional end elevation looking from the shaft end of a DC generator with the following data :

External diameter of the armature stampings	: 40·64 cm
Internal diameter of the armature stampings	: 18·64 cm
Size of the slot	: 4×1·2 cm
No. of slots	: 39
Height of the pole	: 17 cm
Width of the pole	: 15·24 cm
Inter pole size	: 4·41×16 cm
Air gap at main pole	: 0·38 cm
Air gap at inter pole	: 0·58 cm
Thickness of yoke	: 6·8 cm

Assume any missing data.

(b) Develop simple wave winding for a DC machine having 42 armature conductors and 4 poles.

6. Draw the sectional elevation and plan of a single-phase 220/660 V, 10 kVA transformer (LT winding is in two layers and HT winding has 4 coils per limb) with the following data :

Cross section of the core	: 3 stepped core
Diameter of the circumcircle	: 6·5 cm
Distance between the core centres	: 18·5 cm
Total height of the yoke	: 8 cm
Outer diameter of 1st layer	: 9·25 cm
Inner diameter of 1st layer	: 7 cm
Outer diameter of 2nd layer	: 12·1 cm
Thickness of each layer	: 1·2 cm
No. of turns per limb per layer	: 25

Height of LT winding	:	20 cm
Outer diameter of HT winding	:	17 cm
Inner diameter of HT winding	:	12·5 cm
No. of coils per limb	:	4
No. of turns per coil	:	750
Height of HT winding	:	20 cm
Total height of the transformer	:	36 cm

Use five bakelite rings each of 5 mm thickness at top and bottom. Assume any missing data.

7. Draw the half-sectional elevation and end view of a 5 HP squirrel cage induction motor assembly with the following dimensions :

Inside stator diameter	:	150 mm
Air gap	:	0·45 mm
No. of stator slots	:	36
Length of stator	:	90 mm
Outer diameter of stator	:	240 mm
Type of slot	:	Taper
Size of slot	:	24 mm
Width of teeth	:	6 mm parallel
No. of rotor slots	:	30
Type of rotor slots	:	Rectangle
Size of rotor slots	:	10·5×5·75 mm
Width of foot rest	:	70 mm
Distance between foot rest	:	174 mm
Size of bolt holes	:	16 mm dia
Outer diameter of lifting eye	:	46 mm
Inner diameter of lifting eye	:	30 mm

The shaft is supported by two ball bearings. The end rings also serve as fan. Assume missing data and draw to a suitable scale.

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