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C16–EE–**407**

# 5660

## BOARD DIPLOMA EXAMINATION, (C–16)

## MARCH/APRIL—2018

## 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 HRC fuse and label the parts.

**2.** Draw the end view of protected flange coupling.

**3.** Draw 220 kV double-circuit steel tower.

**4.** Draw the single-line diagram of 33 kV/11 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.** Develop a single-layer lap winding for a three-phase AC machine having 24 slots, one conductor per slot and 4 poles. 20

**6.** Draw the half-sectional elevation and side view of a commutator assembly with the following data : 20

| | | |
|---|---|---|
| Diameter of the commutator | : | 3090 mm |
| Width of riser | : | 240 mm |
| Height of riser | : | 140 mm |
| Length of the V-notch | : | 1380 mm |
| Length of commutator | : | 1390 mm |

**7.** Draw the sectional elevation and plan of a three-phase transformer with the following data. The detailed dimensions of the parts are as follows : 20

| | | |
|---|---|---|
| Cross-section of the core | : | 3 stepped core |
| Diameter of the circumcircle | : | 24 cm |
| Distance between core centres | : | 42·5 cm |
| Size of first core | : | 21·6 cm |
| Size of second core | : | 16·8 cm |
| Size of third core | : | 10 cm |
| Height of yoke | : | 25 cm |
| Overall height of yoke and core | : | 110 cm |
| Length of core | : | 108 cm |
| Outer dia of LT winding | : | 28·3 cm |
| Inner dia of LT winding | : | 25 cm |
| Height of LT winding | : | 53·5 cm |
| Number of turns per phase | : | 12 |
| Outer dia of HT winding | : | 41·5 cm |
| Inner dia of HT winding | : | 34·3 cm |
| Height of HT winding | : | 53·5 cm |
| Number of turns per phase | : | 572 |

Assume any missing dimensions.

**8.** Draw the following views of a 5 hp 400 V 1440 r.p.m. 3-phase squirrel cage induction motor : 20

*(a)* Half-sectional front elevation

*(b)* Half-sectional end view

The main dimensions have been given below :

| | | |
|---|---|---|
| Outside diameter of the stator stampings | : | 230 |
| Inside diameter of the stator stampings | : | 164 |
| Stator core length | : | 120 |
| Thickness of the stator frame | : | 25 |
| Slots : | | |
| *(i)* Type | : | open |
| *(ii)* Number | : | 36 |
| *(iii)* Size | : | 15 × 8 |
| Airgap | : | 2 |
| Outer diameter of the rotor stampings | : | 160 |
| Inside diameter of the rotor stampings | : | 35 |
| Shaft diameter : | | |
| *(c)* At centre | : | 35 |
| *(d)* At bearing | : | 30 |

The rotor has totally closed-type slots and contains bare conductors which are short circuited at both sides.

Other missing data may be assumed. All dimensions are in mm.

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