7251

C20-EE–307

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BOARD DIPLOMA EXAMINATION, (C-20)

OCTOBER/NOVEMBER—2023

DEEE - THIRD SEMESTER EXAMINATION

ELECTRICAL ENGINEERING DRAWING—I

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

PART—A 4×5=20

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

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

1. Draw the graphical electrical symbols of the following :

(a) Variable capacitor

(b) MC voltmeter

(c) 3-phase transformer (star-star)

(d) Bell

(e) Thermocouple

2. Draw the guarding system when H.V lines crossing over railway lines.

3. Draw the neat sketch of 3-point starter for DC shunt motor and label the parts.

4. Draw the neat sketch of 132 kV steel tower for single circuit and mark the dimensions.

PART—B

2×20=40

Instructions : (1) Answer *either (a) or (b)* from the questions.

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

5. *(a)* Draw the half sectional end view and elevation of a 50 kW DC generator with the main dimensions as given below : 20

Thickness of yoke	:	50 mm
No. of main poles	:	4
Total height of main pole including pole shoe	:	140 mm
Length of the main pole	:	190 mm
Main pole winding	:	70 mm*30 mm
No. of inter poles	:	4
Inter pole section	:	100 mm*40 mm
Air gap	:	4 mm
Pole arc/pole pitch	:	63%
External diameter of armature stamping	:	380 mm
Internal diameter of armature stamping	:	200 mm
Length of the armature core	:	240 mm
Size of slot	:	35 mm*15 mm
No. of slots	:	32
No. of coil sides per slot	:	6
Armature winding over hangs on each side	:	110 mm
Diameter of commutator up to contact surface	:	220 mm
Diameter of commutator up to riser	:	240 mm
Shaft diameter at coupling end	:	60 mm
Total length of the shaft	:	1200 mm

All dimensions are in mm, assume any missing data.

(OR)

Draw the half sectional elevation and side view of a commutator assembly with the following dimensions. 20

Diameter of shaft	: 40 mm
Dimeter of commutator	: 135 mm
Length of commutator	: 120 mm
Width of the riser	: 7 mm
Depth of the commutator segment	: 30 mm
Height of riser	: 7 mm
No. of segments	: 76

Assume the missing data.

6. *(a)* *(i)* Develop a simple single layer lap winding for a DC machine having 24 slots and 2 poles. Show the brush positions. 10

(ii) Draw a neat sketch of plate earthing with standard dimensions. 10

(OR)

(b) *(i)* Develop a double layer wave winding for a DC machine having 17 armature slots and 4 poles. Show the brush positions. 10

(ii) Draw a neat schematic diagram of a 33/11 kV substation earthing system and label the important parts. 10

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