

Reg. No. 

## Sixth Semester B.E. Degree Examination, January/February 2006

Electrical & Electronics Engineering  
Electrical Drawing and CAD

Time: 3 hrs.)

(Max.Marks : 100)

- Note:** 1. Answer any FOUR questions from Part - A  
and any ONE question from Part - B.  
2. Assume any missing data.

## PART - A

- Draw the single line diagram of a hydro electric station having the following details:
  - AC generators  $3\phi$ , 6 nos of 12MVA, 11KV, 50Hz, Y
  - Transformers : 6 nos, 15 MVA, 11/110kV,  $\Delta/Y$
  - Bus details : Double bus for 110KV  
single bus for 11KV
  - Outgoing transmission lines. Two of 110kV
  - Station auxiliary transformers :  
Two nos. 0.75MVA,  $3\phi$ , 50Hz, 11KV/400V  $\Delta/Y$

Show the correct positions of GOS, CT'S PT'S, lightning arrestors, CB'S etc.  
(20 Marks)
- Draw the developed winding diagram of a dc machine with the following data :
 

Number of armature coils = 20  
Number of poles = 4

The winding is to be progressive duplex lap. Show the correct positions of the poles, commutator segments and brushes and also the direction of rotation. (20 Marks)
- Draw the developed winding diagram of a three phase machine having the following details :
 

Number of poles = 6  
No. of slots = 36  
Type of winding = single layer concentric type  
Phase sequence = R YB

Show all the details on the diagram. (20 Marks)
- Draw a neat proportionate longitudinal cross section of one limb of a three phase oil cooled power transformer with the following details showing the HV and LV windings.  
Core = 2 stepped.

Diameter of the circumscribing circle	= 22.6cm
Diameter of the LV winding	
in two concentric layers	= 25cm (inside)
Outside diameter of LV winding	= 28.1cm
Inside diameter of HV winding	= 32cm
Outside diameter of HV winding	= 36.8cm
Height of LV winding	= 41.2 cm
Height of HV winding	= 40 cm

The LV winding is 12 sections with insulation between them and the HV winding is in 09 sections with insulation between them.

Show the complete details of the coil and insulation, Duct if any between LV and HV coils by assuming any missing data. **(20 Marks)**

5. Draw to a suitable scale the half sectional end elevation and longitudinal elevation (without section) of the armature of a 100kW dc generator with the main dimensions given below.

No. of poles	= 6
External diameter of armature	= 41.5 cm
Inside diameter of armature	= 21 cm
No. of slots	= 36
Dimension of slots	= 3.5cm x 1.2cm
Length of the armature	= 62cm

The armature stampings are mounted over a spider having 8 legs.

The slots are having provision to brace the conductor with a fibre wedge.

The spider is directly mounted on a shaft of diameter of 9cm with a shaft key.

The over hang of the winding in each side is 6cm. **(20 Marks)**

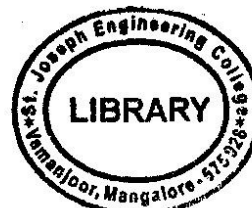
6. Draw the top half sectional elevation and end view of a squirrel cage rotor with the following details.

Outer diameter	: 155mm
Shaft diameter	: 32mm
End ring	: Inner diameter : 130mm
(2 nos.)	: Outer diameter : 155mm
	: Thickness : 7mm

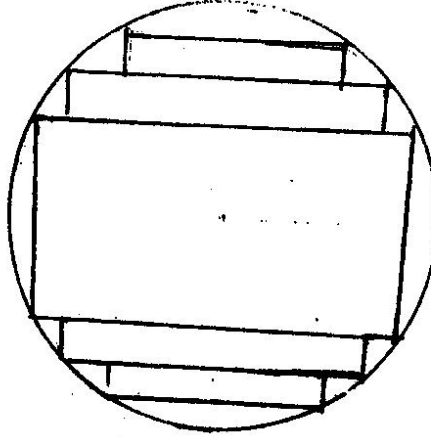
Rotor conductors : 36 nos. each of diameter 6mm. There are four fan blades of thickness 1.5mm on each end fixed on to a collar of diameter 83mm and thickness 5mm. Length of the rotor including the end rings = 128mm. **(20 Marks)**

### PART - B

7. Explain the different co-ordinate systems used for specifying 2D points in auto CAD using an example of obtaining a rectangle. **(20 Marks)**



8. Write the prompt response columns to draw the plan of a transformer limb shown below to a suitable scale. Circumscribing radius 25cm. (20 Marks)



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