U.S.N | | | | | | | | | | |

P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belgaum)

Seventh Semester, B.E. - Electrical and Electronics Engineering

Semester End Examination; Dec. - 2014

Electrical Engineering Drawing

Time: 3 hrs *Max. Marks: 100*

***Note**: Answer any **FIVE** full questions, selecting at least **TWO** full questions from each part.*

PART - A

1. a. Draw a neat schematic arrangement of a nuclear power plant 8

   b. Draw the single line diagram of a 66 kV/ 11 kV substation with the following details:

   i) 66kV incoming line – 2 Nos.

   ii) Line OCB's 66 kV – 2 Nos.

   iii) Stepdown transformer 66 kV / 11 kV – 2 Nos.

   iv) Bus coupler for HT side only 12

   v) Feeders 11 kV radiating from LT bus – 4 Nos.

   vi) LT circuit breakers for feeders – 4 Nos.

   vii) Duplicate bus bar for HT and LT to be provided

   viii) Position's of lightening arrestors, CT's and PT's.

2. Draw the half scale, the sectional end elevation and front elevation of the pole.

   Width of the pole = 168 mm; Pole arc = 240 mm;

   radius of pole arc = 336 mm ; Height of pole with shoe = 228 mm;

   Diameter of rivet used = 9 mm; eight of pole core = 192 mm; 20

   Axial length of pole arc = 216 mm; Thickness of yoke = 114 mm;

   Shown the arrangement of fixing pole to yoke.

3. Draw the sectional plan of one limb showing the winding of an oil immersed 11000 / 440 V, 1 ϕ transformer with the following data,

   Core – cruciform, diameters of circumscribing circle = 33 cm, thickness of lamination = 0.35 mm, core laminations are fixed by means of two end plates 3 mm thickness by a bolt of 20 diameter of 1.2 cm. Inside and outside diameter of a LV and HV windings are 35 cm, 39 cm, 44 cm and 49 cm respectively. Show the arrangement for keeping coils in position and the coil duct.

4. Draw to a suitable scale a) End view and b) Longitudinal elevation both top half in section for a D.C. motor.

   Details of Yoke : Outer diameter = 49.6 cm ; Inner diameter = 40 cm; Length = 16 cm; 20

Contd….2

Details of main pole : Number = 4; Width = 6.08 cm; Height = 9.6 cm;
Length = 12.8 cm ; Airgap length = 1.6 mm

Details of inner pole : Number = 4; Width = 9.5 cm; Height = 11 cm; Air gap = 2.5 mm

PART - B

5. Draw the half sectional end view (with top half in section) of a 6 poles alternator with following dimensions. Show clearly the method of fixing the pole with rotor spider and stator core with the frame:
   Air gap dia of stator = 39.72 cm; Outer dia of stator = 56.61 cm
   Outer dia of rotor = 38.48 cm
   Coil winding in 3 steps of width = 4.89, 3.47 and 1.53 each of 2.36 cm in height.
   Width of pole = 7.68 cm; Height of pole = 7.68 cm with shoe pole arc = 15
   No. of poles = 6
   All dimensions are in cms, missing data may be suitably assumed. 20

6. Design and draw the duplex winding diagram of a DC machine with 32 conductors and 4 poles. 20

7. Design and draw the developed winding diagram of an A.C. machine with following details.
   Nos. of poles = 4; Nos. of slots = 36; Nos. of phases = 3;
   Single layer lap, star connected. 20

8. Draw the developed winding diagram for an A.C. motor having the following details,
   Nos. of phases = 3; Nos. of poles = 4; Nos. of slots = 24;
   Double layer wave, delta connected. 20

* * * * *