



R – 979

Seat No.	
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**T.E. (Electrical) (Semester – V) (New) Examination, 2009
POWER SYSTEM ANALYSIS**

Day and Date : Thursday, 26-11-2009
Time : 10.30 a.m. to 1.30 p.m.

Total Marks : 100

- Instructions:* 1) Attempt any three questions from each Section.
2) Figures to the right indicate full marks.
3) Make suitable assumptions whenever necessary.

SECTION – I

1. A) Derive an expression for flux linkage due to single current carrying conductors. 8
B) Calculate the capacitance of a 100 km long 30, 50 Hz overhead transmission line consisting of 3 conductors, each of diameter 2cm and spaced 2.5 m at the corners of an equilateral triangle. 8
2. A) Explain the following terms with reference to corona. 8
 - i) Critical disruptive voltage
 - ii) Visual critical voltage
 - iii) Power loss due to corona.B) Explain various methods of improving string efficiency. 8
3. A) 132 kv transmission line has following data span length 260m, weight of conductor 680 kg/m² ultimate stress 3100 kg, factor of safety 5 calculate the sag. 8
B) Explain various methods improving string efficiency. 8
4. Write a short notes (any three) : 18
 - a) Ring main distribution system
 - b) Pin type insulators
 - c) Skin and proximity effect
 - d) Various type of line supports.

P.T.O.



SECTION – II

5. A) Derive an expression for sending end voltage and current for long transmission line. 8
- B) Estimate the distance over which a load of 15 MW at a p.f 0.8 lagging can be delivered by a 3-phase transmission line having conductors each of resistance 1Ω per kilometer. The voltage at the receiving end is to be 132 kv and the losses in the transmission is to be 5%. 8
6. A) Draw a neat sketch of the cross-section and explain 3-core belted cable. 8
- B) Explain intersheath grading method of cable grading. 8
7. A) Derive the equation for load flow using Gauss-Seidal method. 8
- B) A single phase motor connected to 400 V, 50Hz supply takes 31.7 A at a power factor of 0.7 lagging. Calculate the capacitance required in parallel with the motor to raise the power factor to 0.9 lagging. 8
8. A) Derive the expression of complex power flow through a transmission line. 6
- B) Discuss any one method of voltage control. 6
- C) Discuss any one method for power factor improvement. 6

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