

Code: R7310203

R07

B.Tech III Year I Semester (R07) Supplementary Examinations December 2015

POWER SYSTEMS – II

(Electrical and Electronics Engineering)

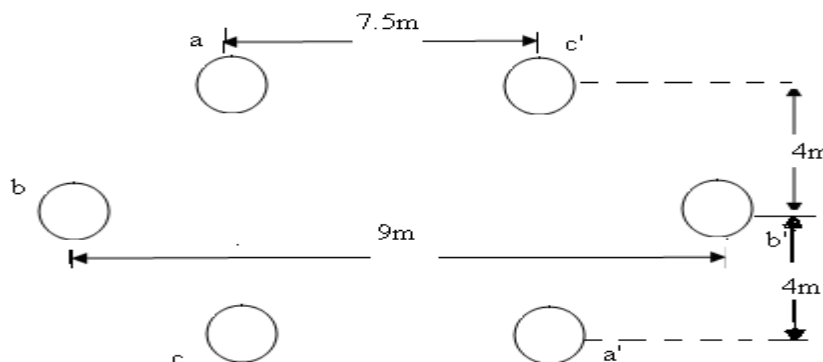
(For 2008 regular admitted batch only)

Time: 3 hours

Max Marks: 80

Answer any FIVE questions
All questions carry equal marks

- 1 (a) What is the effect of earth on the calculation of capacitance?
- (b) Determine the inductance per km of a transposed double circuit 3 – ϕ line shown in below figure. Each circuit of the line remains on its own side .The diameter of the conductor is 2.532 cm.



- 2 Derive the expressions for efficiency and regulation and A, B, C, D parameters of a nominal-T medium length transmission line by using its phasor diagram.
- 3 A 250 km 132 kV three phase overhead line has a total series impedance of $(50+j180)$ ohms per phase and a total shunt admittance of $j1.8 \times 10^{-3}$ Siemens per phase to neutral. The line is supplying 50 MVA at 0.8 pf lagging at 132 kV. Find sending end voltage, current power factor and power.
- 4 What is Bewley's lattice diagram? Explain the procedure for developing the Bewley's lattice diagram.
- 5 Write short notes on:
 - (a) Skin effect.
 - (b) Proximity effect.
 - (c) Ferranti effect.
- 6 Write short notes on:
 - (a) Static shielding.
 - (b) Suspension type insulator.
- 7 (a) Derive the expression for length of the conductor strung between the two towers at equal heights.
- (b) A 132 kV transmission line has the following data: Weight of conductor = 1000 kg/km; Length of span = 500 m, Ultimate strength = 2700 kg, Safety factor = 2. Calculate the height above the ground at which the conductor should be supported. Ground clearance required is 10 meters.
- 8 (a) Briefly explain what is meant by Capacitance grading of a cable.
- (b) The capacitance per kilometer of a 3-phase belted cable is $0.18\mu\text{F}$ between two cores with the third core connected to sheath. Calculate the KVA taken by 20 km long cable when connected to 3-phase, 3300 V supply.