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Total Number of Pages : 02

B.Tech  
PEL41104

4<sup>th</sup> Semester Regular / Back Examination 2018-19  
ELECTRICAL POWER TRANSMISSION & DISTRIBUTION

BRANCH : EEE

Max Marks : 100

Time : 3 Hours

Q.CODE : F684

Answer Question No.1 (Part-1) which is compulsory, any EIGHT from Part-II and any TWO from Part-III.

The figures in the right hand margin indicate marks.

Part- I

Q1 Only Short Answer Type Questions (Answer All-10) (2 x 10)

- What is the difference between single and double circuit line?
- Why the transmission line is transposed?
- What is stringing chart?
- Resistance in AC is more than DC Justify.
- Draw the Phasor diagram for nominal-T network of medium transmission line.
- How to reduce the conductor vibration?
- What is Ferranti effect?
- State the factors affecting sag?
- What are the types of primary and secondary distribution systems?
- What factors decide the rise in temperature in underground cable?

Part- II

Q2 Only Focused-Short Answer Type Questions- (Answer Any Eight out of Twelve) (6 x 8)

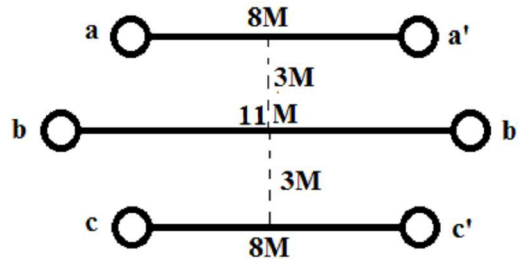
- Derive the expression for capacitance of a 3-phase overhead line with unsymmetrical spacing.
- Derive the power flow through transmission line.
- Discuss the testing of insulators?
- Explain voltage regulation of transmission line? Deduce an expression for voltage regulation of a short transmission line.
- What is string efficiency? Explain the methods of improving string efficiency.
- Explain reactive compensations of a Transmission line?
- State and explain kelvin's law. Illustrate the limitations.
- Calculate the string efficiency and voltage of the conductor of a 3-phase transmission line is being supported by three disc insulators. The Potential across top unit (i.e., near to the tower) and middle unit are 8 kV and 11 kV respectively.
- Compare various distribution systems.
- Classify three phase underground cables? Discuss various methods of grading of cables.
- Distinguish touch and step potential and explain the use of grounding.
- The insulation resistance of a single-core cable is 495 MΩ per km. If the core diameter is 2.5 cm and resistivity of insulation is  $4.5 \times 10^{14} \Omega\text{-cm}$ , find the insulation thickness.

**Part-III**

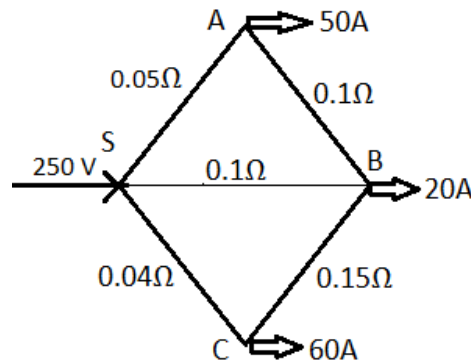
**Only Long Answer Type Questions (Answer Any Two out of Four)**

**Q3** Classify overhead transmission line and derive the A, B, C, D constant of long transmission line. **(16)**

**Q4** Find the expression for flux linkages due to a single current carrying conductor and evaluate the inductance per phase per km of a double circuit 3 phase line as shown in the fig. The conductors are transposed and are of radius 0.75 cm each. Where a, b & c are go conductor and corresponding a', b' and c' are return conductor for corresponding a, b and c Phase. **(16)**



**Q5** Describe the different types of D.C distributors and find the voltages at load points A, B, C... of a substation S, supplies three loads at points A, B, C through 2-wire dc feeders. Resistances SA, SB, and SC are 0.05 Ω, 0.1 Ω and 0.04 Ω respectively. The load points A and B and C are 50A, 20A, and 60A interconnected through resistances of 0.1 Ω, and 0.15 Ω respectively. If voltage at S is 250V, **(16)**



**Q6** Derive the equation of sag when supports are at equal levels and discuss the effect of ice loading and wind pressure on sag. **(16)**