KING FAHD UNIVERSITY OF PETROLEUM & MINERALS
ELECTRICAL ENGINEERING DEPARTMENT
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EE-465

Key Solution

Quize # 1   Serial #   Name: I.D.#

Circle the correct answer.

1) The resistance of a hard-drawn copper transmission line conductor is affected by the following factors: (1 point)
a.   temperature, skin effect, and type of materials used.
b.   temperature, skin effect, and constuction configurations.
c.   temperature, skin effect, and its resistivity.
d.   all above

2) An ACSR conductor with diameter D in = 1000 D mil = d mil. This conductor will have an area of (-----) cmil :   (1 point)
a. $0.1\ d^2$.
b. $1.0\ d^2$.
c. $\pi\ d^2$.
d. $10\ d^2$.

3) The internal inductance of a balanced, 3-phase, equal-spaced, solid cylinderical, unbandeled conductor is calculated as: (1 point)
a. 0.5×10^{-7}
b. $2 \times 10^{-7} \ln (D / 0.7788r)$
c. $2 \times 10^{-7} \ln (D_s / D_{eq})$
d. $2 \times 10^{-7} / \ln (D / r)$

4) The line-to-line single-phase capacitance of two 636000 54/3 ACSR conductors with 5 feet between the conductor centers is   (2 points)
a. 5.782×10^{-12} F/m.
b. 5.537×10^{-12} F/m.
c. 4.866×10^{-12} F/m.
d. 0.119×10^{-12} F/m.

5) The effective cross sectional area of AC resistance is higher than its DC resistance: (1 point)
a.   True
b.   False

6) For a perfect conducting earth plane, the effect of earth plane is accounted for by the conductor's images (1 point)
a. True
b. False

7) The figure below shows (1 point)
a. a three-phase line of a transmission line.
b. a three circuitc of a transmission line.
c. a 3-bundel conductor of a transmission line.

8) Find the GMD of conductor A, for a single-phase two-composite conductor. The number of sub-conductors in composite conductor A is 3 and in B is 2 (2 points)

$$D_{AB} = \sqrt[6]{\prod_{i=1}^{3}\prod_{j'=1'}^{2} D_{ij'}} = \sqrt[6]{\prod_{i=1}^{3} D_{i1'}D_{i2'}}$$

$$= \sqrt[6]{(D_{11'}D_{12'})(D_{21'}D_{22'})(D_{31'}D_{32'})}$$