Mark Scored:

KATHMANDU UNIVERSITY
End Semester Examination
August/September, 2017

Level : B. E.
Year : III
Course : EPEG 315
Semester : II
Exam Roll No. :
Time: 30 min
F. M. : 20
Registration No.:
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SECTION "A"
[20 Q × 1 = 20 marks]

Encircle the most suitable answer to the following questions:

1. Ferranti effect can be compensated by which of the following?
   a. shunt capacitor
   b. shunt reactor
   c. series capacitor
   d. shunt capacitor and shunt reactor

2. Which of the following produces the radio interference in communication lines?
   a. electromagnetic induction
   b. Ferranti effect.
   c. Skin effect
   d. overvoltage's

3. The skin effect shows that:
   a. the distribution of AC current is uniform through the cross section of the conductor
   b. current density is more at the centre of the conductor
   c. current density is lower at the surface of the conductor
   d. current density is more at the surface of the conductor

4. Transmission lines are transposed to reduce:
   a. Ferranti effect
   b. skin effect
   c. proximity effect
   d. interference with neighboring communication lines

5. The inductance of single phase two wire line is given by
   a. $4\times10^{-7}\times \ln(d/r')$ H/m
   b. $4\times10^{-7}\times \ln(r'/d)$ H/m
   c. $0.4\times10^{-7}\times \ln(d/r')$ H/m
   d. $0.4\times10^{-7}\times \ln(r'/d)$ H/m

6. If we increase the spacing between the phase conductors, the value of line inductance
   a. Decrease
   b. Increase
   c. Remains unaffected
   d. Gradually diminished

7. Inter sheaths in cables are used to
   a. Provide proper stress distribution
   b. Minimize the stress
   c. Provide protection against moisture, current and voltage surges
   d. Improve the insulation

8. A 132 kV transmission line, with the weight of conductor = 680 kg/km, length of span = 160 m, ultimate strength = 3100 kg, safety factor = 2. Calculate the height above ground at which the conductor should be supported. The ground clearance required is 8 m.
   a. 10.01m
   b. 9.40 m
   c. 11.12 m
   d. 12.03m

9. A single core cable 5 km long has an insulation resistance of 0.35 M Ω. The core diameter is 20 mm and the diameter of the cable over the insulation is 50mm. What will be the resistivity of the insulating material?
   a. 13 × 109Ω m
   b. 12 × 109Ω m
   c. 13.5 × 109Ω m
   d. 12.85 × 109Ω m

10. What does capacitance grading of cables mean?
    a. Use of dielectrics in different concentrations
    b. Introduction of capacitance at various lengths of cable to counter the effect of inductance
    c. Use of dielectrics of different permittivity
    d. Grading according to capacitance per km length of the cable

11. What happens in a long transmission lines under no load?
    a. The receiving end voltage is less than the sending end voltage.
    b. The sending end voltage is less then receiving end voltage.
    c. The sending end voltage is equal to receiving end voltage.
    d. The efficiency of line decreases

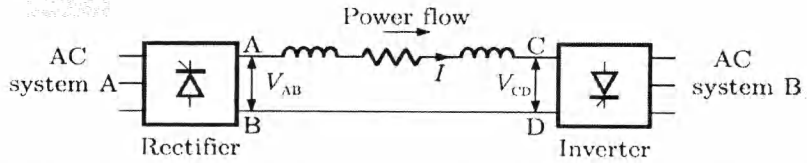
12. What are the A and D parameters in case of medium transmission line (nominal T method)?
    a. $A = D = 1 + (YZ / 2)$ b. $A = D = 1 + (YZ / 2) \times Z$
    c. $A = D = (YZ / 2)$ d. $A = D = (YZ / 2) \times Y$

13. A three phase transmission line has its conductors at the corners of an equilateral triangle with sides 3m. The diameter of each conductor is 1.63 cm. What is the inductance of the line per phase?
    a. 1.232 mH b. 1.184 mH c. 2.236 mH d. 2.68 mH

14. The rating of Circuit Breaker is in terms of
    a. volt – ampere b. current c. voltage d. VAR

15. Which of these given statements is wrong in consideration with bundled conductors?
    a. Control of voltage gradient
    b. Reduction in corona loss
    c. Reduction in the radio interference
    d. Increase in interference with communication lines

16. Power is transferred from system A to system B by an HVDC link as shown in the figure below.



If the voltage V_{AB} and V_{CD} are as indicated in figure, and $I > 0$, then
    a. $V_{AB} < 0, V_{CD} < 0, V_{AB} > V_{CD}$ b $V_{AB} > 0, V_{CD} > 0, V_{AB} < V_{CD}$
    b. $V_{AB} > 0, V_{CD} > 0, V_{AB} > V_{CD}$ d. $V_{AB} > 0, V_{CD} < 0$

17. What is the total resistance in a single phase or 2 – wire dc line?
    a. Equal to the resistance of either conductor b.
    b. Double the resistance of either conductor
    c. Half of the resistance of either conductor
    d. One and Half of the resistance of either conductor

18. A single phase line has two parallel conductors 2 meter apart. The diameter of each conductor is 1.2 cm. What is the loop inductance per km of the line?
    a. 2.423 mH b. 1.234 mH c. 3.267 mH d. 8.632 mH

19. Which of these systems uses the 3 phase 4 wire system?
    a. Primary distribution. b. Secondary distribution
    c. Primary transmission. d.Secondary transmission

20. What is the main drawback of overhead system over underground system?
    a. Surge problem. b. High initial cost
    c. Higher charging current. d. Underground system is more flexible than overhead system