Reg. No. :

Question Paper Code : 50482

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2017

Fourth Semester

Electrical and Electronics Engineering

EE6402 – TRANSMISSION AND DISTRIBUTION

(Regulations 2013)

Time : Three Hours   Maximum : 100 Marks

Answer ALL questions

PART – A   (10×2=20 Marks)

1. What is interconnected system ?
2. What is the objectives of FACTS ?
3. Why the concept of self GMD is not applicable for capacitance calculation ?
4. What is transposition ? Why are transmission line transposed ?
5. How are transmission line classified ?
6. What is Ferranti effect ?
7. What is a belted-cable ?
8. What are the desirable properties of insulator ?
9. What are the major equipments of a substation ?
10. Give the significance of a stringing chart.

PART – B   (5×13=65 Marks)

11. a) i) Draw and explain the structure of typical electrical power system with various voltage levels.   (8)

    ii) Draw and explain a simple model of UPFC.   (5)

(OR)

    b) i) Briefly discuss the technical advantageous of HVDC over HVAC transmission system.   (8)

    ii) Explain the applications of HVDC transmission system.   (5)

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12. a) Derive the expression for calculating the internal and external flux linkages for a conductor carrying current. Use these expressions to derive the equation for the inductance of a single-phase transmission line. (13)

(OR)

b) Derive an expression for capacitance of a three-phase unsymmetrically spaced overhead line. (13)

13. a) i) Draw the phasor diagram of a short transmission line and derive an expression for voltage regulation and transmission efficiency. (7)

ii) A three-phase transmission line having a series impedance of $(20 + j30)$ Ω delivers 7 MW at 33 kV and 0.8 lagging power factor. Find the sending end voltage, regulation and power angle. Neglect shunt capacitance. (6)

(OR)

b) i) Deduce the expression for the sending end and receiving end power of a transmission line in terms of voltages and ABCD constants. (7)

ii) Briefly explain the procedure of drawing receiving end power circle diagram. (6)

14. a) With neat diagram, explain the various methods of grading of underground cables. (13)

(OR)

b) i) Discuss the constructional features of pin type insulators. (7)

ii) An insulator string consists of three units each having a safe working voltage of 15 kV. The ratio of self-capacitance to shunt capacitance is 6 : 1. Determine the line voltage and string efficiency. (6)

15. a) i) Prove that a transmission line conductor between two supports at equal heights takes the form of a catenary. (7)

ii) What is a sag-template ? Explain how this is useful for location of towers and stringing of power conductors. (6)

(OR)

b) Describe about the various methods of neutral grounding in detail. (13)

PART – C (1×15=15 Marks)

16. a) Derive the expression of capacitance of a bundled conductor.

(OR)

b) Discuss the methods of voltage control in transmission line.