

ANNA UNIVERSITY COIMBATORE
B.E. / B.TECH. DEGREE EXAMINATIONS – DECEMBER 2009
REGULATIONS : 2007
FOURTH SEMESTER – ELECTRICAL & ELECTRONICS ENGINEERING
070280031 - GENERATION TRANSMISSION AND DISTRIBUTION

TIME: 3 HOURS

MAX.MARKS : 100

PART – A

(20 x 2 = 40 MARKS)

ANSWER ALL QUESTIONS

1. Mention any four non-conventional energy sources.
2. What is meant by reserve capacity?
3. What is use of load duration curve?
4. Define solar constant.
5. Mention the advantages of bundled conductor over single conductor.
6. What are the factors on which skin effect depends upon?
7. What is need for electrical design of overhead lines?
8. Define Proximity effect?
9. If capacitance between two conductors of a 3-phase line is $4\mu\text{F}$, then capacitance of each conductor to neutral is -----.
10. Draw the equivalent circuit of 3-phase long transmission line.
11. What do you understand by generalized circuit constants of a transmission line?
12. What is meant by surge impedance loading?
13. Discuss various factors affecting sag.
14. Define factor of safety.
15. What are the main draw backs of underground cables?
16. Compare the power transmission using overhead line and underground cable.

17. Draw the single line diagram of ring main system.
18. What are the advantages of HVDC transmission?
19. What is meant by tapped sub mains system?
20. What is meant by UPFC?

PART – B

(5 x 12 = 60 Marks)

ANSWER ANY FIVE QUESTIONS

21. a. Draw the structure of electric power system and explain. 8
b. What is meant by load duration curve? and compare with load curve. 4
22. Derive an expression for the inductance per phase for a 3 phase overhead transmission line when conductors are symmetrically placed.
23. a. A 200 km, 3 phase transmission line has its conductors placed at corners of equivalent triangle of 2.5 m side. The radius of each conductor is 1 cm calculate the line to neutral capacitance of line and charging current per phase voltage of 66kV, 50hz. 8
b. Write short notes about inductive interference with neighboring circuits. 4
24. A 3 phase, 50Hz, 100 Km transmission line has the following constants, Resistance /phase/km = 0.1Ω , Reactance//phase/km = 0.5Ω , Susceptance /phase/km = 10^{-5} Mho. If the line supplies a load of 20 MW at 0.9 p.f lagging at 66 kV at the receiving end calculate by using nominal- π method.(i) Sending end Current ii) Line value of sending end voltage. (iii) Sending end power iv) Regulation v) Transmission efficiency.

25. a. Derive an expression for transmission efficiency and regulation for medium transmission line by End Condenser method. 6
- b. Derive an expression for transmission efficiency and regulation for medium transmission line by Nominal-T method. 6
26. Write short notes about underground cables.
27. a. What are different methods to improve string efficiency of an insulator? And explain 8
- b. Derive the expressions for sag in un equal levels. 4
28. a. Write short notes about radial and ring main distributors in detail. 8
- b. Discuss the merits and demerits of EHVAC transmission. 4

*****THE END*****