

BE (Seventh Semester)
Mechanical Engineering
Power Apparatus System - 324741(24)
2015 - Winter Session , New Scheme
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Chapter 1

- 1 Enumerate methods of improving string efficiency. **2**
- 2 A 3-unit insulator string is pitted with a guard ring. The capacitance of the link pins to metal work and guard ring can be assumed to be 15% and 5% of the capacitance of each unit. Determine the voltage distribution and string efficiency. **7**
- 3 Discuss Why? **7**
 - (i) Modern high voltage lines have long spans.(2)
 - (ii) The sag calculations are usually based on equivalent span.(2)
 - (iii) Though the exact shape of a line conductor is that of a catenary, the sag calculations are usually done by assuming it to be a parabola.(3)
- 4 Derive the equation to calculate the conductor tension under erection conditions if the conductor tension and loading under bad weather conditions are known. **7**

Chapter 2

- 1 Why are all distributors 3 phase 4 wire. **2**
- 2 What general considerations govern the design of distribution system? Bring out their relative importance. **7**

Also discuss the design of primary distribution system with respect to following selection of voltage choice of scheme and size of feeders. **2+2+3**
- 3 Give the layout of following bus bar schemes and explain the function of each element shown in the layout **4+3**
 - (i) Single bus bar with bus sectionalizer.
 - (ii) Double bus bar.
- 4 Explain the term lower footing resistance. Also comment on effect of magnitude of current on human body **3+4**

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Chapter 3

- 1 What is means by effectively grounded system? 2
- 2 Explain the phenomenon of arcing grounds. How does neutral grounding eliminate arcing grounds? 7
4+3
- 3 By drawing relevant diagrams discuss the disadvantage of ungrounded neutral system composed to grounded neutral system 7
- 4 In a $\lambda - \Delta$ transformer, Δ winding is acting as secondary winding. To provide path for fault current in case of L-G fault, Zig-Zag transformer earthing is provided on Δ side. Show the arrangement of winding on case of zig-zag transformer 7

Chapter 4

- 1 Define bil of a power system element. 2
- 2 Explain Voltage rise phenomenon due to current chopping. 7
- 3 Write a technical note on thyrite surge arrester. 7
- 4 Discuss the following : **2+2+3** 7
(i) External and internal over voltage
(ii) Mechanism of lightening discharge
(iii) Selection of arnester rating

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Chapter 5

- 1 Distinguished between porced and scheduuled outages. 2
- 2 What do you understand by term reliability planning? Discuss the important factors in preparing of reliability model 7
4+3
- 3 Draw a two state model of equipment. Define failure rate and repair rate. 7
5+2
- 4 Explain the term " Probability density function". What is exponential failure density function 7
4+3

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