

Code No: 09A70405

R09

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November - 2013

Electrical Distribution Systems

(Electrical and Electronics Engineering)

Time: 3 Hours

Max. Marks: 75

Answer any Five Questions
All Questions Carry Equal Marks

- 1.a) Explain briefly the classification of loads and modeling of a load in distribution networks.
- b) Discuss the characteristics of different loads. [7+8]
- 2.a) Give a line diagram of loop (ring) type primary feeder system and mention the different component parts. What are the considerations for planning loop (ring) feeders?
- b) Explain the basic design practice of the secondary distribution system. [7+8]
- 3.a) Draw the single line diagram of 33-kV / 11-kV substation and explain the purpose of each component.
- b) Explain the criteria for location of a substation and what are the benefits obtained through optimal location of substation. [7+8]
- 4.a) What are the power losses in A.C distribution? How is it estimated approximately?
- b) What is the importance of % voltage drop in feeder lines? What are the factors that affect % voltage drop? [7+8]
- 5.a) What are the objectives of a distribution protection?
- b) A single phase, 3-wire distributed line 120-0-120V, feeds a load of 10KV line to line and 3KVA on each line to ground. The transformer is 7620V/240V, 25KVA with 7% impedance. The line impedance is $j0.08\Omega$ per wire. Calculate the fault current and fault MVA for the following case (i) L-L fault 1.5 Km from transformer and (ii) L-G fault 1.5Km from transformer. [7+8]
- 6.a) Explain the principle of a circuit recloser used in protection of distribution system
- b) Explain the following: (i) Fuse-Fuse coordination and (ii) Fuse- Circuit breaker coordination. [7+8]
- 7.a) Explain different types of capacitors used in distribution network to improve p.f .
- b) A 400 V, 50 Hz, 3-phase line delivers 207kW at 0.8 p.f lag. It is desired to bring the line p.f to unity by installing shunt capacitors. Calculate the capacitance if they are (i) star connected and (ii) delta connected. [7+8]
8. Explain the different methods of voltage control used in electrical distribution systems. [15]