Code No: 09A70209 **R09**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, May/June - 2013

Electrical Distribution Systems

(Electrical and Electronics Engineering)

Time: 3 Hours **Max. Marks: 75**

Answer any Five Questions

All Questions Carry Equal Marks

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1.a) Give the classification of loads and draw their characteristics.

b) Obtain the relation between the load factor and loss factor. [5+10]

2.a) Assume that feeder has a length of 2 miles and that the new feeder uniform loading has increased to 3 times the old feeder loading. Determine the new maximum length of the feeder with the same percent voltage drop if the new feeder voltage level is increased to 34.5kV from the previous voltage level of 12.47kV.

b) Explain basic design practice of secondary distribution system and also discuss about secondary banking. [7+8]

3.a) How do you analyze a substation service area with `n' primary feeders.

b) Discuss the benefits, which are derived through optimal location of substations. [8+7]

4. A 1-Φ feeder circuit has total impedance (1+j3) ohms, receiving end voltage is 11kV and current is $50\angle -30^0$ A. Determine:
a) p.f. of load
b) load p.f. for which the drop is maximum
c) load p.f. for which impedance angle is maximum and derive the formula used. [15]

5.a) Discuss the procedure for fault current calculation in following faults:
i) Double Line-Ground fault. ii) Line - Line fault

b) Explain the principle of operation of fuse. [8+7]

6.a) Explain the salient points in general co-ordination procedure.

b) Explain Fuse-Circuit breaker coordination [7+8]

7.a) What is the justification for power factor improvement and what are the benefits.

b) A 3-phase,50Hz, 2200V induction motor develops 400H.P at a power factor 0.8lag and effciency 90% .The power factor is to be raised to unity by connecting a bank of condensers in delta across supply mains. If each of the capacitance unit built up of 4 similar 550V condensers, calculate the required capacitance of each condenser and its KVA rating. [7+8]

8.a) Define:
i. Voltage Regulation
ii. Voltage drop
iii. Nominal voltage
iv. Rated voltage.

b) Explain about step type regulators. [8+7]

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