



# GOVERNMENT COLLEGE OF ENGINEERING, JALGAON

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Name of Examination : **Winter 2020** - (Preview)

Course Code & Course Name : **EE303U - Power System II**

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Maximum Marks : **60**

Duration : **3 Hrs**

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**Answer Key Submission Type:** Marking scheme without solution

Instructions:

1. All questions are compulsory.
2. Illustrate your answer with suitable figures/sketches wherever necessary.
3. Assume suitable additional data; if required.
4. Use of logarithmic table, drawing instruments and non programmable calculators is allowed.
5. Figures to the right indicate full marks.

## Q. Solve all of the following (3\*3 = 9)

1)

- a) What is surge impedance loading? [3]
- b) Base voltage = 1,100 volts. base kVA =  $10^6$ . Calculate base impedance. [3]
- c) Describe transients on a transmission line. [3]

## Q. Solve any three of the following (3\*7 = 21)

2)

- a) Draw the phasor diagram of a short transmission line and derive an expression for voltage regulation. [7]
- b) Draw a single line representation of the power system with correct labeling. What do you understand by one line diagram? With the help of an example, differentiate one line diagram and impedance diagram. [7]
- c) For the radial network shown in fig 1, the three-phase fault occurs at F. Determine the fault current and the line voltage at 11 kV base under fault conditions. [7]

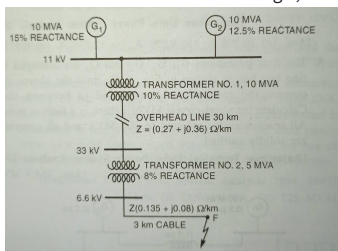


Fig 1. Radial Network (Q 2, c)

- d) Explain how unsymmetrical components of a 3-phase system can be resolve in a symmetrical component system. [7]

## Q. Solve any three of the following (3\*3 = 9)

3)

- a) Distinguish between symmetrical and asymmetrical faults. [3]
- b) What do you understand by “load flow problems”? Enlist methods for load flow solutions. [3]
- c) What is a radial system of distribution? What are its advantages and drawbacks? [3]
- d) Write a short note on interconnected systems. [3]

## Q. Solve any three of the following (3\*7 = 21)

4)

- a) Derive the necessary equation to determine the fault current for double line-to-ground fault. [7]
- b) Elaborate Newton-Raphson (NR) method for load flow solution. [7]
- c) Draw layout diagram and explain in detail the 3-phase, 4-wire distribution system. [7]
- d) What are the consequences of the disconnected neutral on the unbalanced system? In a 3-phase, 4-wire, 400/230 V system, a lamp of 100 watts is connected to one phase and neutral and a lamp of 200 watts is connected to the second phase and neutral. Calculate the voltage across each lamp when the neutral wire is disconnected. [7]

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