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**Question Paper Code: 94304**

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2023

Fourth Semester

Electrical and Electronics Engineering

19UEE404 - Electric Power Transmission and Distribution

(Regulation 2019)

Duration: Three hours

Maximum: 100 Marks

Part A (10X 2=20 Marks)

(Descriptive 10 out of 15 Two marks)

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|---|------|---|
| 1. List the advantages of high voltage power transmission.. | CO 1 | U |
| 2. Mention the reasons for restructuring in power system?   | CO 1 | U |
| 3. List the different types of overhead conductor.          | CO 1 | U |
| 4. What is distributed parameter of the transmission line.  | CO 2 | U |
| 5. What is meant by Disruptive critical voltage             | CO 2 | U |
| 6. State skin effect in transmission line.                  | CO 2 | U |
| 7. Give the equivalent circuit for short transmission line. | CO 3 | U |
| 8. Define Ferranti effect.                                  | CO 3 | U |
| 9. What is called surge impedance loading?                  | CO 3 | U |
| 10 Define safety factor of insulator.                       | CO 4 | U |
| 11 Classify the tests performed on the insulators.          | CO 4 | U |
| 12 Define grading of cables.                                | CO 4 | U |
| 13 Classify the substation according to structure.          | CO 5 | U |
| 14 List the disadvantages of Gas Insulated Substation.      | CO 5 | U |
| 15 Summarize the need for Earthing.                         | CO 5 | U |

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PART – B (5 x 16= 80Marks)

- 16 (a) Develop a comparison between regulated and deregulated environment in electricity sectors. CO1 U (16)
- Or
- (b) Utilize the advantages of EHAV system and also construct the basic structure of power system by using single line diagram. CO1 U (16)
- 17 (a) From the fundamentals derive an expression for the capacitance of a three phase transmission system with symmetrical spacing. CO2 App (16)
- Or
- (b) From the fundamentals derive an expression for the inductance of a three phase transmission system when the conductors are symmetrically placed. CO2 App (16)
- 18 (a) A 220-kV, three-phase transmission line is 40 km long. The resistance per phase is  $0.15 \Omega/\text{km}$  and the inductance per phase is  $1.5915 \text{ mH}/\text{km}$ . The shunt capacitance is negligible. Use the line model to find the voltage and power at the sending end and the voltage regulation and efficiency when the line is supplying a three-phase load of 381 MVA at 0.8 pf lagging at 220 kV CO3 App (16)
- Or
- (b) Derive and explain the Nominal  $\pi$  model of a medium transmission lines. CO3 App (16)
- 19 (a) Each line of a 3-phase system is suspended by a string of 3 similar insulators. If the voltage across the line unit is 17.5 kV, calculate the line to neutral voltage. Assume that the shunt capacitance between each insulator and earth is 1/8th of the capacitance of the insulator itself. Also find the string efficiency. CO4 App (16)
- Or
- (b) What are the different types of testing of Insulators? Explain any one method. CO4 U (16)

- 20 (a) Explain in detail about Gas Insulated Substations CO5 U (16)  
Or  
(b) Explain about the various methods of neutral grounding CO5 U (16)

