



Regulation R17

Subject code: 1P5BB

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY
(Autonomous, Accredited by NAAC with 'A' Grade)

B.Tech III Year I Semester Supplementary Examinations, January 2023
POWER SYSTEMS-II

Maximum Marks: 70

(EEE)

09-01-2023

Duration: 3 hours

- Note:
1. This question paper contains two parts A and B.
 2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
 3. Part B consists of 5 Units. Answer any one full question from each unit.
 4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks

(10x2M=20 Marks)

- 1 What are bundled conductors?
- 2 ACSR conductor having 7 steel strands surrounded by 25 aluminum conductor will be specified as?
- 3 What is the GMD&GMR?
- 4 What is Skin Effect?
- 5 What is Ferranti effect?
- 6 What are the factors affecting the skin effect?
- 7 What are the factors affecting the corona?
- 8 Classification of over head line insulators?
- 9 What is critical Disruptive voltage?
- 10 What is the capacitance grading.

Part-B

Answer any five of the following questions.

(5X10M=50Marks)

- 11 Derive the expression for inductance of a three phase double circuit line. 10
- OR
- 12 Derive the expression for the capacitance of a conductor in a double circuit hexagonal spaced three phase system? 10
 - 13 Derive the A, B, C and D constants of long transmission lines using Rigorous solution. 10
- OR
- 14 Derive Efficiency and voltage regulation for nominal-T method for medium transmission lines? 10
 - 15 Derive the expressions for regulation and efficiency of a short transmission line. Draw required circuit and phasor diagram. 10
- OR
- 16 Each conductor of a 3-phase high-voltage transmission line is suspended by a string of 4 suspension type disc insulators. If the potential difference across the second unit from top is 13.2 kV and across the third from top is 18 kV, determine the voltage between conductors. 10

- 17 A transmission line has a span of 214 metres between level supports. The conductors have a cross-sectional area of 3.225 cm^2 . Calculate the factor of safety under the following conditions : 10
Vertical sag = 2.35 m ; Wind pressure = 1.5 kg/m run
Breaking stress = 2540 kg/cm² ; Wt. of conductor = 1.125 kg/m run
OR
- 18 Obtain the mathematical expression for potential distribution over a string of suspension type insulators. 10
- 19 Explain about types of cables with neat diagram. 10
- OR
- 20 Derive the sag expression for a transmission line at equal level supports 10