III B. Tech I Semester Supplementary Examinations, May- 2018
POWER SYSTEMS-II
(Electrical and Electronics Engineering)

Time: 3 hours   Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answering the question in **Part-A** is compulsory
3. Answer any **THREE** Questions from **Part-B**

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PART –A

1	a)	What is the effect of ground on capacitance in a long transmission line	[3M]
	b)	What are the differences between lumped and distributed parameters?	[4M]
	c)	What is the importance of propagation constant in the transmission lines?	[4M]
	d)	What is the meaning of travelling of surges	[4M]
	e)	What are the factors that affect Corona	[4M]
	f)	How do you improve the string efficiency?	[3M]

PART -B

2   a)   Derive the expression for the inductance of a 3 phase double circuit line with symmetrical spacing?   [8M]

    b)   A single phase 10 km line is 8m above the ground and diameter of the conductor is 2.1cm and are separated by 4m horizontally. Find capacitance between conductors, between phase and neutral, capacitance when earth effect is neglected and charging current when line is charged at 33kV, 50Hz supply?   [8M]

3   a)   Derive the expression for the percentage voltage regulation of a short transmission line by using phasor diagram?   [8M]

    b)   A 3 phase 5km long transmission line having resistance of 0.51 ohms/km and inductance of 1.75mH/km is delivering power at 0.8 power factor lagging, the receiving end voltage is 32kV and sending end voltage is 33kV,50Hz. Determine the line current ,regulation and efficiency of the transmission line?   [8M]

4   a)   Derive the A, B, C, D constants of transmission line with transformers on both sides?   [8M]

    b)   Drive the necessary expressions for the long transmission line?   [8M]

5   a)   Explain in detail about the concept of attenuation of travelling waves?   [8M]

    b)   An over head line with inductance and capacitance per km length of 1.3mH and 0.08 micro farads respectively connected in series with an underground cable having inductance and capacitance of 0.2mH/km and 0.3micro farad/km respectively. Find the values of reflected and transmitted waves of voltage and current at the junction due to a voltage surge of 100kV travelling to the junction along the line towards the cable and along the cable towards the line?   [8M]

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6 a) Analyze the Ferranti effect by assuming half of the capacitance is concentrated at the receiving end?   [8M]

   b) A 3 phase 220kV,50Hz transmission line consists of 30mm diameter conductor 2.51m apart in the form of equilateral triangle. If the temperature is 38^0C and atmospheric pressure is 76cm. Find the corona loss per km of the line? The irregularity factor is 0.83 and the stress is 21.21kV/cm.   [8M]

7 a) Explain about the stringing chart of over head lines and give its applications?   [8M]

   b) Discuss about the strain type and shackle type of insulators with neat diagrams?   [8M]

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