Q.P. Code: 20EE0208 **R20**

Reg. No: | | | | | | | | | | |

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech II Year II Semester Regular Examinations October-2022

ELECTRICAL POWER TRANSMISSION SYSTEMS

(Electrical and Electronics Engineering)

Time: 3 hours Max. Marks: 60

(Answer all Five Units **5 x 12 = 60** Marks)

UNIT-I

1	a	Explain the skin effect in transmission lines.	L2	6M
	b	Determine the loop inductance per phase/ km of a single-phase, conductors are arranged 2m apart. The conductor diameter is 1.2cm.	L2	6M

OR

2	a	Derive the expression for the capacitance of a single-phase two-wire line.	L3	6M
	b	A single-phase transmission line has two parallel conductors,3m apart, and the radius of each conductor is 1cm. Calculate the capacitance per km.	L4	6M

UNIT-II

3		A 100 km long, 3-phase, 50 Hz transmission line has following line constants: Resistance/ph/km=0.1ohm, Reactance/ph/km=0.5ohm, susceptance /ph/km=10×10e-6S.If the line supplies a load of 20 MW at 0.9 p.f lagging at 66 kV at the receiving end. Calculate (i) Sending end power factor (ii) % regulation (iii) Transmission efficiency by using the nominal T Method.	L4	12M

OR

4		Derive expressions for sending end voltage and current for a long transmission line using a rigorous method.	L3	12M

UNIT-III

5	a	What is string efficiency? Explain any two methods for improving string efficiency.	L1	6M
	b	What are the causes of insulation failure?	L1	6M

OR

6		What are the methods of reducing the corona effect?	L1	12M

UNIT-IV

7	a	Derive the expression for sag for equal supports.	L3	6M
	b	A 132 kV transmission line has the following data: weight of conductor =680kg/km; length of span = 260m; ultimate strength =3100kg, safety factor=2, calculate height above the ground at which the conductor should be supported. Ground clearance is 10 meters.	L4	6M

OR

8		Define sag and derive the expression for sag and tension when the supports are at unequal heights.	L3	12M

UNIT-V

9	a	What is the necessity of grading cables? Explain the various grading methods of cables.	L1	6M
	b	What are the limitations of solid types of cables?	L1	6M

OR

10		Explain the classification of cables.	L2	12M

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