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KAMALA INSTITUTE OF TECHNOLOGY & SCIENCE, SINGAPUR
23EE28PC405

II.B. Tech. II. Semester Regular Examinations, June-2025

POWER SYSTEMS-II

(EEE)

Time: 3 Hours

Max. Marks: 60

Note: Question paper consists of Part-A & Part-B.

i) **Part-A** for 10M, ii) **Part-B** for 50marks

- **Part A** is compulsory, consists of 10 sub questions from all units carrying equal marks.
- **Part-B** consists of **10 questions** (numbered from 2 to 11) carrying **10marks** each. From each unit there are 2 questions and the students should answer one of them. Hence the student should answer **5 questions** from **Part-B**.

PART-A (10Marks)			
Q. No	Questions	Marks	BTL
1.a)	What is Ferranti Effect?	1	1
1.b)	What is corona loss? Name two factors affecting corona loss	1	1
1.c)	What is a synchronous phase modifier?	1	1
1.d)	Define an uncompensated transmission line	1	
1.e)	List the advantages of per unit system representation of power system?	1	1
1.f)	List two causes of attenuation of travelling waves	1	1
1.g)	What is the function of a Peterson coil?	1	1
1.h)	Define insulation coordination	1	1
1.i)	What is the purpose of sequence network equations in fault analysis?	1	1
1.j)	Name two common types of faults in power systems	1	1
PART-B (50Marks)			
Q.No	Questions	Marks	BTL
2. a)	Derive the ABCD parameters of a nominal T represented medium length transmission line with neat phasor diagram.	5M	2
b)	A 3-phase, 50 Hz, 150 Km long line has a resistance, inductive reactance and shunt capacitive admittance of 0.1 Ohm, 0.5 Ohm, and 3×10^{-6} Mho/ Km/ phase. If the line delivers 50 MW at 110 KV and 0.8 pf lagging. Determine the sending end voltage and current. Assume nominal Pi model for the line	5M	3
OR			
3. a)	Explain the different methods of reducing corona losses	5M	2
b)	Explain skin effect and proximity effect when referred to overhead lines	5M	2
4.	Explain the transmission line voltage control using shunt and series Capacitance methods. Discuss their merits and	10M	3

	demerits		
OR			
5. a)	What is the need of compensation in power system? Explain about Loadability characteristics of overhead lines.	6M	3
b)	What do you mean by compensation of lines? Explain	4M	2
6. a)	Explain the impedance and reactance diagrams for a simple power system with a neat diagram	4M	2
b)	Explain the process of changing the base of per unit quantities and provide an example	6M	3
OR			
7. a)	Explain the behavior of travelling waves on an open-circuited transmission line	5M	2
b)	Explain the behavior of a line terminated through a capacitance and its effect on wave reflection	5M	2
8.	Discuss the construction, principle of operation and applications of a) Expulsion Type and b) Valve type lightning arresters	10M	3
OR			
9.	What are ground rods and counterpoises? Explain clearly how these can be used to improve the grounding conditions. Give various arrangements of counterpoise.	10M	2
10.a)	Derive the expression for average 3-phase power using symmetrical components	5M	2
b)	Explain how double line-to-ground faults are modeled using symmetrical components	5M	2
OR			
11.a)	Explain the role of fault impedance in fault calculations and its effect on fault current magnitude.	5M	2
b)	Explain how to calculate the short-circuit capacity (SCC) of a bus	5M	2

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