

THE KAVERY ENGINEERING COLLEGE
(An Autonomous Institution)

M.E DEGREE END SEMESTER THEORY EXAMINATIONS, APR/MAY 2025

Third Semester

Power System Engineering

PS4009 - Industrial Power System Analysis and Design

Regulations - 2021

Duration : 3 Hrs

Maximum: 100 Marks

PART – A (ANSWER ALL QUESTIONS) (Marks 10*2=20)

Q.No	Questions	BLT	CO	Marks
1.	Define the term motor starting methods.	L2	1	2
2.	Recall acceleration time.	L1	1	2
3.	Define voltage magnification.	L2	2	2
4.	Tell the concept of sustained over voltages.	L1	2	2
5.	Define harmonic sources and identify two common examples.	L2	3	2
6.	Recall the purpose of harmonic filters and how they mitigate harmonic distortion.	L1	3	2
7.	Define flicker in the electrical systems and identify its primary sources.	L2	4	2
8.	Tell the impact of arc furnace loads on flicker levels in electrical systems.	L1	4	2
9.	Recall ground grid.	L1	5	2
10.	List the basic steps involved in ground grid calculations.	L1	5	2

PART – B (ANSWER ALL QUESTIONS) (Marks 5*16 = 80)

Q.No	Questions	BLT	CO	Marks
11.	a Analyze the different starting methods for electric motors and compare their advantages and disadvantages.	L3	1	16
	Or			
	b Analyze the challenges associated with motor starting using limited-capacity generators and discuss the implications of these challenges on system performance and reliability.	L3	1	16
12.	a Discuss the impact of switching surge analysis on system reliability and compare it with sustained overvoltage effects.	L2	2	16
	Or			
	b Discuss the challenges associated with sustained over voltages and	L2	2	16

propose strategies to mitigate their impact using modeling techniques.

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| 13. | a | Analyze various harmonic filtering techniques and compare their effectiveness in different applications. | L3 | 3 | 16 |
| | | Or | | | |
| | b | Analyze the effectiveness of harmonic filters in mitigating the adverse effects of harmonics within a specific case study and discuss how the acceptance criteria were applied in the analysis, and assess the overall impact of the findings on system performance. | L3 | 3 | 16 |
| 14. | a | Analyze the sources of flicker and evaluate their contributions to power quality issues in industrial environments. | L3 | 4 | 16 |
| | | Or | | | |
| | b | Investigate the impact of arc furnace loads on flicker generation and analyze strategies to minimize these effects. | L3 | 4 | 16 |
| 15. | a | Discuss the acceptance criteria for grounding grid design and illustrate how these criteria ensure the effective operation of grounding systems. | L2 | 5 | 16 |
| | | Or | | | |
| | b | Outline various methods for improving the performance of grounding grids and explain how each method contributes to enhanced safety and reliability. | L2 | 5 | 16 |