CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)
M.Tech II Semester Regular Examinations September-2023
Course Name: ADVANCED POWER ELECTRONIC CONVERTERS-II
(Power Electronics)

Date: 04.09.2023 FN   Time: 3 hours   Max.Marks: 60

(Note: Assume suitable data if necessary)

PART-A
Answer all TEN questions (Compulsory)
Each question carries ONE mark.   10x1=10M

1. What are the different types of dc – dc converters?   1 M
2. Draw the circuit diagram of push-pull converter and write the equation for dc voltage transfer function.   1 M
3. Draw the circuit diagram of flyback converter and write the equation for dc voltage transfer function.   1 M
4. Discuss the applications of isolated dc-dc converters.   1 M
5. Compare half bridge and full bridge resonant inverter.   1 M
6. List few applications of resonant pulse inverters.   1 M
7. What is the purpose of achieving ZVS in resonant pulse inverters?   1 M
8. Write the expression for value of L in a ZCS inverter.   1 M
9. How to achieve reduced voltage stress and lower losses in a Luo Converter?   1 M
10. What are power line disturbances?   1 M

PART-B
Answer the following. Each question carries TEN Marks.   5x10=50M

11.A). Analyze the buck boost converter and derive the expression for continuous and discontinuous operation   10M

OR

11. B). Explain the principle of operation of Cuk converter with circuit diagram showing different modes.   10M

12. A). Explain the forward converter and draw the steady state waveforms in continuous mode operation.   10M

OR

12. B). Discuss in detail the operation of a flyback converter showing different modes and draw the steady state waveforms of discontinuous mode operation.   10M

13. A). Explain the half bridge resonant inverter with relevant circuit diagram and waveforms.   10M

OR

13. B). Examine the series loaded resonant inverter in continuous and discontinuous modes of operation.   10M

(P.T.O..)

14. A). Compare ZCS and ZVS in detail.   10M

                                              OR

14. B). Explain the basic operation of M-type ZCS resonant converter.   10M

15. A). Explain Uninterruptible power supplies and give its applications.   10M

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15. B). Explain in detail about power conditioners.   10M

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CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)
M.Tech II Semester Regular Examinations September-2023
Course Name: POWER ELECTRONICS APPLICATION TO POWER SYSTEMS
(Power Electronics)

Date: 06.09.2023 FN	Time: 3 hours	Max.Marks: 60

(Note: Assume suitable data if necessary)
PART-A
Answer all TEN questions (Compulsory)
Each question carries ONE mark.   **10x1=10M**

1.	What is bus admittance matrix?	1 M
2.	List the models of OLTC.	1 M
3.	What are line outage distribution factors?	1 M
4.	Define generation shift factor.	1 M
5.	Define voltage stability.	1 M
6.	List the participation factors based on model analysis and applications.	1 M
7.	What is meant by shunt compensator?	1 M
8.	Draw the operating characteristics of TCR.	1 M
9.	List any two advantages of TCSC.	1 M
10.	Draw the transient stability model of TCSC.	1 M

PART-B
Answer the following. Each question carries TEN Marks.   **5x10=50M**

11.A).	i) Discuss reactive power capability of an alternator with necessary diagrams.	5M
	ii) Explain briefly about regulated shunt compensation.	5M

OR

11. B).	Explain the algorithm for formation of bus impedance matrix.	10M

12. A).	i) What do you understand by "Sensitivity Analysis"? What are the significances and limitations of this analysis?	5M
	ii) What do you understand by pre-contingency corrective scheduling? Explain	5M

OR

12. B).	Discuss in detail about contingency selection and evaluation	10M

13. A).	i) What do you mean by "Voltage Stability"? How is it enhanced by facts controllers?	5M
	ii) Define "PV-Curve". What are the significances and limitations of this curve?	5M

OR

13. B).	Explain any two Tools for voltage stability analysis.	10M

(P.T.O..)

14. A). Explain configuration and operating characteristics of TCR and FCTCR. 10M

OR

14. B). i) What is Flexible AC transmission system? Describe briefly various devices used in this system. 5M

ii) Classify the various FACTS controllers with proper circuit diagrams. 5M

15. A). Explain the basic principle and different modes of operations of TCSC. 10M

OR

15. B). State and explain transient stability model of TCSC. 10M

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CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)
M.Tech II Semester Regular Examinations September-2023
Course Name: POWER QUALITY IMPROVEMENT TECHNIQUES
(Power Electronics)

Date: 08.09.2023 FN	Time: 3 hours	Max.Marks: 60

(Note: Assume suitable data if necessary)

PART-A
Answer all TEN questions (Compulsory)
Each question carries ONE mark.

10x1=10M

1.	List the major Power Quality Issues.	1 M
2.	Differentiate between Voltage sag and Swell.	1 M
3.	Differentiate between linear and Non-linear loads.	1 M
4.	What are the power quality problems caused by non-linear loads?	1 M
5.	Explain the principle of operation of passive shunt compensation.	1 M
6.	Write the Classification of Compensation devices.	1 M
7.	Write the principle of operation of DSTATCOM.	1 M
8.	Write the principle of operation of DVR.	1 M
9.	Define UPQC.	1 M
10.	Write the classification of UPQC.	1 M

PART-B
Answer the following. Each question carries TEN Marks.

5x10=50M

11.A).	Explain the following in detail: i) Voltage Unbalance ii) Waveform Distortion iii) Voltage fluctuation	10M

OR

11. B).	Explain characteristics of power quality events in short and long duration voltage variations.	10M

12. A).	Explain the waveform distortion due to different types of nonlinear loads	10M

OR

12. B).	Define nonlinear loads and what are the causes of power quality problems due to nonlinear loads explain in detail.	10M

13. A).	Explain the Single phase Shunt Compensation with neat sketch.	10M

OR

13. B).	Explain the Shunt compensation three Phase three wire system with neat diagram.	10M

14. A). Differentiate between Active shunt and Series compensation and Explain the Single phase   10M
PQ and DQ theory based control algorithm for DSTATCOM.

OR

14. B). Explain the Synchronous reference frame based control algorithm for DVR.   10M

15. A). Explain the Principle of operation of UPQC with neat Diagram.   10M

OR

15. B). Explain the Synchronous reference frame based UPQC with neat diagram.   10M

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CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)
M.Tech II Semester Regular Examinations September-2023
Course Name: DISTRIBUTED GENERATION
(Power Electronics)

Date: 11.09.2023 FN   Time: 3 hours   Max.Marks: 60

(Note: Assume suitable data if necessary)
PART-A
Answer all TEN questions (Compulsory)
Each question carries ONE mark.   10x1=10M

1.	What is Distributed Generation?	1 M
2.	List various types of Distributed Generation systems.	1 M
3.	Mention the advantages of multiple DG units.	1 M
4.	List the various techniques used for optimal placement of DGs.	1 M
5.	Define Dynamic analysis.	1 M
6.	List various types of relays used in distribution system.	1 M
7.	List the limitations of DGs.	1 M
8.	Define reliability of DG based system.	1 M
9.	Mention various types of micro grids.	1 M
10.	Compare micro grid with conventional utility grid.	1 M

PART-B
Answer the following. Each question carries TEN Marks.   5x10=50M

11.A).	List the Advantages and Disadvantages of Distributed Generation.	10M
	OR	
11. B).	Explain about current scenario in distributed generation.	10M
12. A).	Explain how the real and reactive powers are controlled in a power electronic inverter-based DG's.	10M
	OR	
12. B).	Discuss rotating machine-based interfaces for grid integration of DGs.	10M
13. A).	Comment on the impact of DGs upon transient and dynamic stability of existing distribution systems.	10M
	OR	
13. B).	Discuss about technical impacts of DGs on transmission systems.	10M
14. A).	Describe the power quality issues of grid connected renewable energy sources.	10M
	OR	
14. B).	Discuss the various harmonic sources and its effect on power quality.	10M
15. A).	Explain the concept of micro grid, and its need and applications.	10M
	OR	
15. B).	State and explain the issues of interconnecting the micro grid with the utility grid.	10M

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