Duration: 3hrs **[Max Marks:80]**

N.B. : (1) Question No 1 is Compulsory.
(2) Attempt any three questions out of the remaining five.
(3) All questions carry equal marks.
(4) Assume suitable data, if required and state it clearly.

1		Attempt any FOUR	**[20]**
	a	Discuss the selection criteria for switching Power Devices for an application.	
	b	Differentiate Micro Grid and Smart Grid..	
	c	Explain the Principle of operation of Flyback Converter.	
	d	Discuss the need of Multilevel inverters.	
	e	Explain Principle of operation of permanent magnet synchronous motor.	
2	a	Explain the working of Buck-Boost converter with waveforms.	**[10]**
	b	Describe the Voltage and frequency control technique for Induction motor.	**[10]**
3	a	Discuss the state space average modelling of DC-DC Buck converter in detail.	**[10]**
	b	Explain PID Control of DC-DC Converter. Also discuss the closed loop stability.	**[10]**
4	a	Explain Grid interface of Renewable energy sources with suitable Block diagram. Also explain the need of synchronization with grid.	**[10]**
	b	Draw and explain speed control of DC motor Drive.	**[10]**
5	a	Explain concept of distributed generation system with Block diagram.	**[10]**
	b	Explain the concept of zero-order-hold (ZOH). Explain the same in detail.	**[10]**
6	a	Illustrate the instantaneous power theory in control of inverters	**[10]**
	b	Discuss methods of parallel operation of inverters with suitable example.	**[10]**

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