Registration Number:

PSNA College of Engineering and Technology

Department of Electrical and Electronics Engineering

Serial Test-III

Power Electronics for Renewable Energy Systems

Year/Sem : II (M.E)/III Max.Marks:50

Staff In-charge: **M.Kaliamoorthy** Time: 90 Mins

Part A (9 * 2 = 18)

Answer any **NINE** questions

1. Differentiate Autonomous systems and grid connected system.
2. State the advantages of Solar PV system with batteries.
3. Differentiate Line Commutated Converter and Forced commutated converter.
4. Write the expression for average Inductor Current of Boost Converter.
5. Draw the circuit diagram of Buck Boost Converter.
6. Mention some basic principles to follow when designing a quality PV system.
7. Mention the different types of AC voltage controller.
8. What do you meant by AC-DC-AC converters?
9. Mention the issues of GRID connected inverters?
10. Write the expression for average output DC voltage of a three phase uncontrolled rectifier.

Part B (9 * 2 = 18)

Answer **ALL** questions

11. (a) With neat block diagram and waveforms explain the operation of boost converter and derive the expression for ripple current and voltage in discontinuous mode of operation. (10)

    (b) With neat block diagram explain the solar photo voltaic system with battery. (6)

    (OR)

12. With an real time example design determine the battery sizing and the array sizing used in solar PV system (16)

13. (a) Discuss in detail about the various types of PWM inverters (8)

(b) Explain with neat diagram the principle of operation of three phase uncontrolled rectifier (8)

(OR)

14. (a) Explain with neat diagram the principle of operation of three phase fully controlled AC voltage controller and derive the expression for RMS Voltage (10)

(b) Explain the basic principle of operation of matrix converters (6)

Signature of HOD Staff in charge