**Reg. No. :** | | | | | | | | | | |

## Question Paper Code: 49252

M.E. DEGREE EXAMINATION, MAY 2015.

Elective

POWER ELECTRONICS AND DRIVES

14PPE524 – SMPS AND UPS

(Regulation 2014)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions.

PART A - (5 x 1 = 5 Marks)

1. The peak to peak voltage ripple of step down converter is

   (a) $\Delta Q/c$ (b) $I_O DT_S/C$ (c) $VODT_S/RC$ (d) Both a and c

2. The application of full bridge converter is

   (a) dc motor drives (b) UPS

   (c) isolated dc power supplies (d) all the above

3. The quality factor of parallel resonant converter circuit is

   (a) $R/Z_o$ (b) $R/L_r$ (c) $RC_r$ (d) Both b and c

4. The number of output phase voltage in cascade multilevel inverter is defined by

   (a) $m$=2s (b) $m$=2s+1 (c) $m$=2s-1 (d) $m$=s+2

5. The voltage spikes takes place in which mode

   (a) Linear mode (b) Common mode

   (c) Variable mode (d) Both a and b

PART - B (5 x 3 = 15 Marks)

6. Compare buck boost converter and cuk converter.

7. What are the advantages and disadvantages of Flyback?

8. Define the basic resonant circuit concept.

9. How to eliminate harmonics and list the harmonic reduction techniques.

10. What are the uses of power conditioners?

PART - C (5 x 16 = 80 Marks)

11. (a) Explain the CUK DC – DC converter with neat diagram. (16)

Or

(b) With neat circuit diagram, explain the operation of BUCK – BOOST converter. (16)

12. (a) Discuss in detail about the PWM switching strategies of full bridge converter. (16)

Or

(b) Explain the state space modeling of Flyback converter with neat diagram. (16)

13. (a) With neat circuit diagram and waveforms, explain the operation of ZVS Clamped voltage topologies. (16)

Or

(b) Explain the operation of ZCS resonant switch converter. (16)

14. (a) Discuss in detail about the single phase inverter with PWM switching topologies. (16)

Or

(b) With neat circuit diagram and waveforms, explain the operation of three phase inverter with star connected load in 180 degree mode of conduction. (16)

15. (a) Explain the Uninterruptible power supplies with neat diagram. (16)

Or

(b) (i) Describe the Power line disturbances and its types. (6)

(ii) Discuss in detail about design of transformer for power electronics application. (10)