BE/ETRX/Sem VII/REV
Power Elect & Drives.

VT-Oct-10-106

Con. 6525–10.

(REVISED COURSE)

9/12/10

GT–8832

(3 Hours) **[Total Marks : 100**

N.B. : (1) Question **No. 1** is **compulsory**.
(2) Attempt any **four** questions from remaining **six** questions.
(3) **Figures** to the **right** indicate **full** marks.
(4) Assume **suitable** data, if **any**.

Q1) Attempt the following (20)
a) Discuss the different factors for selection of battery for UPS.
b) State and explain briefly, the basic principle of operation of the dual converter.
c) State the need of reduction of harmonics in inverter output.
d) State briefly, the control strategies employed in chopper for operating the switches.

Q2) a) With the help of circuit diagram and relevant waveforms, explain the operation of single phase, half-wave converter drive for a separately excited DC motor. (10)
b) Discuss the variable-frequency control method of an induction motor. (10)

Q3) a) Derive an expression of output voltage of single phase fully controlled converter with source inductance. (10)
b) Design a parallel inverter to feed a load at 200 V, 50 Hz and peak load current is 2 A, E_{dc} = 40 V. Specify the rating of SCRs, transformer and commutating components. (10)

Q4) a) Describe the operation of step up chopper and derive an expression for output voltage of it in terms of duty-cycle. (12)
b) With the help of a circuit diagram, explain the working of SMPS. (08)

Q5) a) Explain sinusoidal pulse modulation as used in PWM inverter. (10)
b) Draw and explain the torque –speed characteristic at different firing angles, for a full converter feeding a separately excited DC motor. (10)

Q6) a) Discuss briefly, the stator voltage control scheme of an induction motor. (10)
b) Derive the expression for commutating components L & C for a voltage commutated chopper. (10)

Q7) Write short note on : (20)
a) Regenerative braking
b) Slip energy recovery scheme
c) McMurray inverter