

M.E –IIst SEMESTER–EXAMINATION – JULY- 2012

Date: 14/07/2012

Total Marks: 70

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- 1. Attempt all questions.**
- 2. Make suitable assumptions wherever necessary.**
- 3. Figures to the right indicate full marks.**
- 4. Notations/ symbols used have usual meaning.**

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|------------|------------|---|-----------|
| Q.1 | (a) | Differentiate: (i) On-line and Off-line UPS | 06 |
| | | (ii) Di-electric and Induction heating. | |
| | (b) | An energy storage welder is required to produce the same quantity of heat per weld as a conventional welder drawing 25kVA at 0.8 PF for 0.05sec per weld. If the energy storage welder is of the capacitor type and voltage to which it is charged is 1200 volts, calculate the value of capacitor. | 04 |
| | (c) | Enlist features of an induction heater. | 04 |
| Q.2 | (a) | Discuss the Principle of induction heating. | 07 |
| | (b) | Discuss SMPS design for Fly back type topology. | 07 |
| | | OR | |
| | (b) | A UPS is driving a 600W load which has a lagging power factor of 0.8. The efficiency of the inverter is 80%. The battery voltage is 24 volts dc. If there is separate charger for battery , determine (i) kVA rating of the inverter (ii) Wattage of rectifier (iii) A-H rating of battery for a back up time of 30 minutes. | 07 |
| Q.3 | (a) | Discuss chemical, bio-logical and physico-chemical effects of ultrasonic. | 06 |
| | (b) | Define protocols. How many protocols are there in various layers? | 08 |
| | | OR | |
| Q.3 | (a) | Discuss piezo-electric generator for ultrasonic. | 06 |
| | (b) | List various network topologies and explain any two in detail. | 08 |
| Q.4 | (a) | How speed of synchronous motor be changed? | 07 |
| | (b) | Discuss traction drives. | 07 |
| | | OR | |
| Q.4 | (a) | Discuss matching of power electronics converter and motor. | 07 |
| | (b) | Why battery charging is required? Discuss a battery charging circuitry using power component(s). | 07 |
| Q.5 | (a) | Discuss an adjustable voltage IC regulator. | 07 |
| | (b) | Discuss various sources of thermal losses in dielectric heating. | 07 |
| | | OR | |
| Q.5 | (a) | With help of block diagram explain the basic principle of operation of a SMPS. | 07 |
| | (b) | Discuss electronic welding controls used in resistance welding. | 07 |
