

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – II • EXAMINATION – SUMMER • 2014

Subject code: 1722909

Date: 25-06-2014

Subject Name: Industrial Electronics

Time: 02:30 pm - 05:00 pm

Total Marks: 70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Describe operation of a sequence timer used for an automatic welding process. **06**
(b) (i) Differentiate: SMPS-linear power supplies. **08**
(ii) Draw only circuit diagram of a 1-Ø dc welder.
(iii) Enlist features of an induction heater.
(iv) Explain soldering using ultrasonic.
- Q.2** (a) The shaft having specific resistive 6×10^{-5} ohm-cm and the relative permeability equals to 3. For hardening of this shaft the depth of penetration required is 1.5mm. Calculate the supply frequency of power source. **07**
(b) Discuss piezo-electric generator used for ultrasonic. **07**
OR
(b) Discuss various effects due to ultrasonic. **07**
- Q.3** (a) Design an SMPS with feed-forward topology. Enlist typical specifications for the same. **10**
(b) Protocols are essentials for communication. Justify the statement. **04**
OR
- Q.3** (a) Design an on-line UPS with necessary protections. Explain its operation in brief. **10**
(b) How network topologies are useful to define network functioning? **04**
- Q.4** (a) Derive an expression for the total power entering the metal per sq.cm of surface using induction heating. **07**
(b) Explain in brief: (i) MAP protocol (ii) Technical Office protocol. **07**
OR
- Q.4** (a) Discuss principle of di-electric heating. State applications of dielectric heating. **07**
(b) Draw and explain a typical network plan for an automated factory. **07**
- Q.5** (a) Write short note on: AC drive. **07**
(b) Explain in brief: Battery operated vehicle. **07**
OR
- Q.5** (a) Write short note on: Use of SCRs in HVDC transmission.. **07**
(b) Discuss a battery charger with an electronic circuit. **07**
