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. (ii) Draw only circuit diagram of a 1-Ø dc welder. (iii) Enlist features of an induction heater. (iv) Explain soldering using ultrasonic.	**08**
Q.2	**(a)**	The shaft having specific resistive $6x10^{-5}$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)	ñProtocols are essentials for communicationò 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**

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