Seat No.:	Enrolment No
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GUJARAT TECHNOLOGICAL UNIVERSITY

ME - SEMESTER-II EXAMINATION - SUMMER 2015

Subject Code: 2722914 Date: 03/06/2015

Subject Name: Industrial Electronics & Control

Time: 02:30 PM to 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.
- 4. Notations/ symbols used have usual meanings.
- Q.1 (a) Discuss SMPS design for Fly back type topology.

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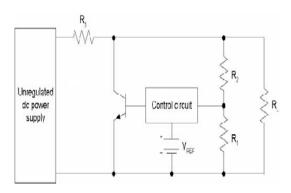
- (b) (i) Find the percent duty of tubes and welds per minute when a welder operates as follows: squeeze -6 cycles, weld -5 cycles and off -8 cycles. (04 marks).
 - (ii) State drawbacks of induction heating. Explain the Joule effect. (03 marks).
- Q.2 (a) Discuss various protections for a power device.

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(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.

OR

(b)



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Fig1.

Describe the operation of voltage regulator shown in the Fig 1.

Q.3	(a)	Describe theory and principle of dielectric heating	06
	(b)	Describe (i) spot welding, and (ii) arc welding.	08
	, ,	OR	
Q.3	(a)	Discuss electronic welding controls used in resistance welding.	06
	(b)	Differentiate: (i) SMPS ó Linear power supplies.	08
		(ii) Power MOSFET - SCR	
Q.4	(a)	Describe control of DC motor using chopper.	07
	(b)	Discuss Drive selection criteria in detail.	07
	()	OR	
Q.4	(a)	Describe control of AC motor using static rotor resistance control.	07
	(b)	How stepper motor can be controlled?	07
Q.5	(a)	Describe operation of a servo controlled voltage stabilizer in detail.	07
	(b)	Write short note on: Inverter.	07
		OR	
Q.5	(a)	Why battery charging is required? Discuss a battery charging circuitry using power component(s).	07
	(b)	Write short note on: Battery operated vehicle.	07
