

GUJARAT TECHNOLOGICAL UNIVERSITY
ME - SEMESTER- II(Old course) • EXAMINATION (Remedial) – WINTER- 2015

Subject Code: 1722909**Date:** 08/12/2015**Subject Name:** Industrial Electronics**Time:** 2:30 pm to 5:00 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. **07**

(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). **07**

(ii) State drawbacks of induction heating. Explain the Joule effect. (03 marks).

Q.2 (a) Discuss SMPS design for feed forward topology. **07**

(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**

OR

(b) **07**

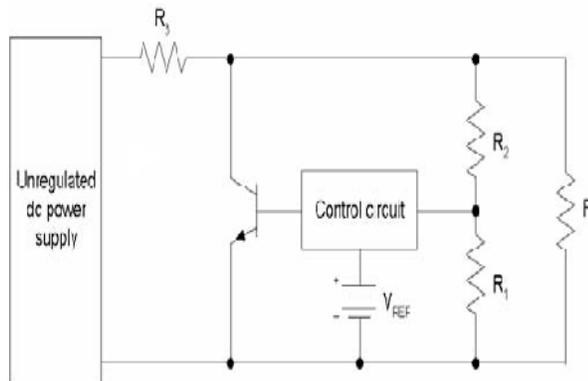


Fig1.

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

Q.3 (a) Describe theory and principle of dielectric heating **07**

(b) Discuss various generation methods for ultrasonic waves. **07**

OR

Q.3 (a) Discuss electronic welding controls used in resistance welding. **07**

(b) Describe high frequency source for induction heating. **07**

Q.4 (a) Discuss Electric traction in detail. **06**

(b) Describe (i) spot welding, and (ii) arc welding. (04 Marks each) **08**

OR

- Q.4 (a)** (i) Differentiate: on-line UPS - Off-line UPS. (02 Marks each) **06**
(ii) Draw only circuit diagram of a 1-Ø dc welder.
(iii) Enlist features of an induction heater.
- (b)** Differentiate: (i) SMPS ó Linear power supplies. **08**
(ii) DC drive - AC drive. (04 Marks each)
- Q.5 (a)** Define protocols. How many protocols are there in various layers? **07**
(b) Write short note on: An Inverter. **07**
- OR**
- Q.5 (a)** Compare wired-wireless network. State its utility for industrial electronics. **07**
(b) Write short note on: Battery operated vehicle. **07**
