Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII • EXAMINATION – WINTER 2013

Subject Code: 172403 **Date: 07-12-2013**

Subject Name: Power Processing Circuits-II

Time: 10:30 TO 01:00 **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 the operation of a three phase bridge inverter for 180° conduction for star connected resistive load **10**

(b) Differentiate: On-line and Off-line UPS. **04**

Q.2 **(a)** Why Inverter is used? Give detailed classification of inverter. Enlist its area(s) of application(s) where inverter is suitable. **07**

(b) Analyse performance of the circuit shown in Fig.1 **07**

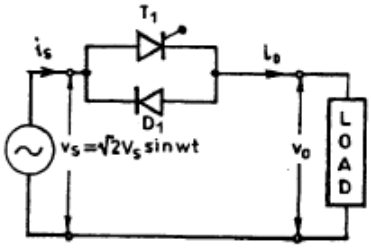

Fig.1

OR

(b) With waveforms, explain the operation of a 1-Ø to 1-Ø cyclo-converter. **07**

Q.3 **(a)** Explain working principle of a single – phase series inverter. **07**

(b) Why multi-level inverter is required? Discuss one application of the same. **07**

OR

Q.3 **(a)** Describe operation of a single – phase full bridge inverter. **07**

(b) Explain diode clamped multi-level inverter. **07**

Q.4 **(a)** Enlist DC input voltage control techniques for inverter. Explain any one of them. **07**

(b) Write short note on: McMurray Inverter. **07**

OR

Q.4 **(a)** State various types of PWM techniques & describe any one of them in detail. **07**

(b) Write short note on: SVPWM. **07**

Q.5 **(a)** Why battery is required? Explain constant current and trickle charging methods for battery. **04**

(b) Write short note on: - Active front-end rectifier. **10**

OR

Q.5 **(a)** With help of block diagram explain the basic principle of operation of a on-line UPS. **04**

(b) State disadvantages of controlled rectifier. Justify the use of Active front-end rectifier. **10**

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