

C.U. SHAH UNIVERSITY

Winter Examination-2018

Subject Name: Power Electronics - I

Subject Code: 4TE05PEL1

Branch: B.Tech (Electrical)

Semester: 5

Date: 28/11/2018

Time: 10:30 To 01:30

Marks: 70

Instructions:

- (1) Use of Programmable calculator & any other electronic instrument is prohibited.
 - (2) Instructions written on main answer book are strictly to be obeyed.
 - (3) Draw neat diagrams and figures (if necessary) at right places.
 - (4) Assume suitable data if needed.
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Q-1

Attempt the following questions:

(14)

- a) What are the essential requirements of a gate triggering pulse?
- b) Why equalizing circuits are provided in series connection of thyristors?
- c) Define intrinsic standoff ratio of UJT?
- d) What is Commutation? List various conditions necessary for the commutation of SCR.
- e) How thyristors are protected against over voltage and over current.
- f) Explain difference between half controlled and full controlled Bridge rectifier.
- g) What should be pulse width in single pulse modulation of PWM inverter to eliminate third harmonic?
- h) Explain the terms Duty cycle and chopper frequency.
- i) How many thyristors are required in three phase to three phase three pulse cycloconverter?
- j) Define and explain latching and holding current.
- k) Give comparison of AC voltage controller, Inverter and Cycloconverter with reference to input given and output obtained from this device
- l) If power factor angle is greater than firing angle, can AC voltage controller control the output power? (Yes, No)
- m) Write down equation for average value of output voltage for half wave AC voltage controller.



