

C.U. SHAH UNIVERSITY

Summer Examination-2016

Subject Name: Power Electronics - I

Subject Code: 4TE05PEL1

Branch: B.Tech (Electrical,EEE)

Semester :5

Date: 21/04/2016

Time: 02:30 To 05:30

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) In a thyristor holding current is more then:
 - (i) More than the latching current
 - (ii) Less than the latching current
 - (iii) Equal to latching current
 - (iv) None of the above
- b) IGBT is combination of
 - (i) SIT and BJT
 - (ii) BJT and MOSFET
 - (iii) Power transistor and silicone transistor
 - (iv) Power diode and phototransistor
- c) Which semiconductor power device out of the following is not a current triggered device?
 - (i) Thyristor
 - (ii) GTO
 - (iii) Triac
 - (iv) MOSFET
- d) Which following is a two terminal three-layer device?
 - (i) Power BJT
 - (ii) Power diode
 - (iii) Power MOSFET
 - (iv) Power IGBT
- e) Power BJT is a
 - (i) Voltage controlled device
 - (ii) Current controlled device
 - (iii) Frequency controlled device
 - (iv) None of the above
- f) Chopper control for DC motor provide variation in
 - (i) Input voltage
 - (ii) Frequency



- (iii) Both (1) and (2)
- (iv) None of the above
- g)** Phase controlled converter converts:
 - (i) ac voltage to dc voltage
 - (ii) dc voltage to dc voltage
 - (iii) ac voltage to ac voltage at same frequency
 - (iv) Ac voltage at supply frequency to ac voltage at load frequency
- h)** Triac can be used only in
 - (i) Inverter
 - (ii) Rectifier
 - (iii) Chopper
 - (iv) Cyclo-converter
- i)** In a single phase full wave converter (M2 connection) feeding a highly inductive load, the firing angle for each thyristor is an in the respective half cycle. The period of conduction of each Thyristor is
 - (i) $\pi - \alpha$
 - (ii) π
 - (iii) $\pi + \alpha$
 - (iv) $\pi - 2\alpha$
- j)** In a single phase Full converter number of Thyristor is
 - (i) 16
 - (ii) 8
 - (iii) 4
 - (iv) 2
- k)** In a 3 phase bridge inverter, the gating signal for the three phases have a phase difference of
 - (i) 120°
 - (ii) 60°
 - (iii) 240°
 - (iv) 90°
- l)** A 3 phase Half controlled converter is a
 - (i) 3 pulse converter
 - (ii) 6 pulse converter
 - (iii) 8 pulse converter
 - (iv) 12 pulse converter
- m)** The commutation method in an inverter is
 - (i) Line commutation
 - (ii) Forced commutation
 - (iii) Either (i) or (ii)
 - (iv) None of the above
- n)** Inverter find application in
 - (i) HVDC transmission
 - (ii) UPS
 - (iii) Variable speed ac drive
 - (iv) All of the above



