

B. TECH.**THEORY EXAMINATION (SEM-VI) 2016-17****INDUSTRIAL ELECTRONICS****Time : 3 Hours****Max. Marks : 100****Note : Be precise in your answer. In case of numerical problem assume data wherever not provided.****SECTION – A****1. Attempt all parts of the following question: 10 x 2 = 20**

- (a) List the type of power diodes .
- (b) Name different power electronic circuits?
- (c) Compare MOSFET and BJT
- (d) Define latching current and holding current?
- (e) Define input power factor?
- (f) What is the effect of freewheeling diode in circuit of 3- pulse mid point converter?
- (g) List applications of current source inverter?
- (h) What is the principle of current limit control strategy?
- (i) List advantages of current commuted chopper?
- (j) What are the advantages of induction motor over dc motor?

SECTION – B**2. Attempt any five of the following questions: 5 x 10 = 50**

- (a) Draw static v-I characteristics of SCR and explain its operation?
- (b) Explain triggering methods of thyristor.
- (c) Explain 1 ϕ half wave controlled rectifier with R-L load and freewheeling diode?
- (d) What are various performance factors of line commutated convertors?
- (e) Explain parallel inverters
- (f) Explain various control strategies used for varying duty cycle α ?
- (g) Explain working of step up/ step down chopper?
- (h) Discuss operation of single phase full converter drive with continuous and dis continuous load current?

SECTION – C**Attempt any two of the following questions: 2 x 15 = 30**

- 3** Explain three phase full wave bridge inverter?
- 4**
 - (i) Enumerate the variable frequency control of an induction motor?
 - (ii) The speed of a separated excited d.c motor is controlled through 1- ϕ half controlled converter from 230 V mains. The motor armature resistance is 0.5 ohm and motor constant $k=0.4$ v-s/rad. For load torque of 20 Nm at 1500 r.p.m and for constant armature current , calculate
 - (m) Firing angle of the converter
 - (n) RMS value of thyristor current
 - (o) input power factor of the motor
- 5**
 - (i) Draw a suitable diagram and explain working of slip power recovery system Kramer drive?
 - (ii) Discuss two transistor analogy applied to thyristor