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 ø 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-ø 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