TE - VI | Power Electronics & Drives | INST

26.11.15

K. G. C. E. EXAM KARJAT, RAIGAD

QP Code : 6311

(3 Hours) **[Total Marks : 80**

NB. Q.1 is Compulsory .
Solve any three questions from the remaining

Q1 20

a) Explain SCR characteristics
b) Write advantages of IGBT and MOSFET
c) Explain need of synchronizing circuit in converters
d) Draw the circuit of Jones Chopper and explain the commutation of main SCR

Q2. 20

Design a converter to give output voltage 150 V at 1A load current.The input is 230 V 50 Hz ac supply. Use UJT 2N2646.

V_{BBmax}= 35 V for Vbb=16 V, C=0.1μF , η_{min}=0.56 η_{max}=0.75, η_{type}=0.63
Iv=4mA, Ip=25μA Consider temperature compensation.

Q3 a) with the help of a neat diagram and associated waveforms discuss the operation of Buck-Boost converter. Also list the advantages and disadvantages of this type of converter.

b) Explain variable frequency I.M. drive. 10

Q4

a) Describe the working of 1phase fully controlled bridge converter in the following two modes. 10
Rectifying mode
Inversion mode.
Also sketch the following waveforms for $\alpha=45^0$,& $\alpha=120^0$

b) Write a short note on reduction of harmonic distortion. 5
c)Briefly explain the V-I characteristic of IGBT. 5

Q 5

a) Explain the application of power electronics in industrial heating process. 10
b) A 1-phase HW ac regulator feeds power to resistive load of 6Ω, from 230 V ,50 Hz source. 10
The firing angle of SCR is π/2. Calculate
1) The rms value of output voltage
2) average input current.

Q6

Explain the current fed ac drives & state its applications 10
State the significant features of traction drives 05
Explain any one type of forced commutation 05

MD-Con.8408-15.