Q.P.Code: 40101

[3 Hours] **[Total Marks: 80]**

N.B. : 1. **Question 1** is **compulsory.**
2. Solve **any three** from remaining.
3. Assume suitable data if required and justify it.

Q.1) Attempt any four **[20]**

a. Explain Punch through IGBT
b. Explain class C commutation circuit
c. Write short note on reduction of harmonic distortion.
d. List out advantage and disadvantages of series inverter and parallel inverter.
e. Explain Type B chopper

Q.2) Design a converter to give output voltage 180 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}=0.63Iv=4mA, Ip=25μA Consider temperature compensation. **[20]**

Q.3)

a. Explain variable AC induction motor drive. **[10]**
b. Explain basic principle of Dielectric heating. List its advantages and applications. **[10]**

Q.4)

a. Explain fan regulator using diac-triac scheme. **[10]**
b. What are the different PWM techniques? Explain with neat waveforms. **[10]**

Q.5)

a. With the help of a neat diagram and associated waveforms discuss the operation of Buck-Boost regulator **[10]**
b. Explain symmetric semiconverter. **[10]**

Q.6)

a. Draw the neat diagram and waveforms and explain Jones Chopper **[10]**
b. Explain circuit diagram of full bridge inverter with free-wheeling diode. **[10]**
