Question Bank (G scheme)

Name of subject: POWER ELECTRONICS **Unit Test :II**
Subject code: 17444 **Course : IS/IE/EJ**
Semester: IV

CHAPTER 1. Power Electronics (10 mks)

3 MKS

1) State the phenomenon of breakdown in NPN power transistor with proper output characteristics.
2) State any three advantages of IGBT.

4 MKS

3) State different operating regions of power transistor. What is primary and secondary breakdown?
4) Draw the labeled constructional diagram of N channel IGBT.
5) Compare power transistor & power MOSFET with respect to
a. symbol
b. switching speed
c. SiO2 layer
d. On state losses
e. Application

CHAPTER 4 Phase Controlled Rectifier (24 mks)

3 MKS

6) Define any two performance parameter of inverter.
7) Define chopper &State its classification.
8) Define inverter and classify it.

4 MKS

9) Draw circuit diagram of step up chopper and why it is called as step up?
10) Draw single phase half bridge inverter with R load & State its operation.
11) Show the effect of change of duty cycle on the output voltage of chopper with proper waveforms.

CHAPTER 5. Converters (14 mks)

3 MKS

12) Why germanium is not suitable for control rectification ?

13) State the need of polyphase rectifier.

4 MKS

14) Differentiate controlled &Uncontrolled rectifier with respect to device used, firing circuit, phase angle control & applications.

15) Draw the circuit diagram and input & output voltage waveforms of 3Φ half wave rectifier with resistive load.

16) Draw single phase center tapped controlled rectifier with resistive load and its load voltage waveform.

17) Draw the neat circuit diagram of single phase half wave controlled rectifier with RL load & describe its working. State the effect of freewheeling diode with suitable waveforms in controlled rectifier.

18) A single phase Full wave controlled rectifier is supplied with a voltage V= 230Sin (314t) find average output DC voltage and current if firing angle is 45degrees & load resistance is 100Ω.

CHAPTER 6 Industrial Control circuits (16 mks)

3 MKS

19) Draw labeled circuit of Electronic timer using SCR.

20) Draw labeled basic block diagram of UPS.

4 MKS

21) Draw the temperature controller using SCR. Explain How temperature is controlled?

22) Draw the circuit of speed control of fan using TRIAC. Why DIAC is used ?

23) Draw the labeled circuit diagram of battery charger using SCR.

24) Draw circuit diagram & write the working of emergency light system.

25) Draw block diagram of SMPS & describe its working.