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Roll No.

221044

4th Sem.

Branch : ECE, ECE (For Speech and Hearing Impaired)
Sub. : Power Electronics

Time : 3 Hrs.

M.M. : 60

SECTION-A

Note: Multiple type Questions. All Questions are compulsory. (6x1=6)

- Q.1 In the principle of phase control. (CO2)
a) The load is on for some cycles and off for some cycles.
b) Control is achieved by adjusting the firing angle of the devices.
c) Control is achieved by adjusting the number of on off cycles.
d) Control cannot be achieved
- Q.2 Speed control of AC drives, induction heating and static VAR compensation are the applications of (CO5)
a) Dual Converter b) Transformer
c) Chopper d) Cyclo converter
- Q.3 UPS is used to (CO4)
a) Enhance the storage in computer
b) Speed up the processing of CPU
c) Provide back up power in case of black out
d) All of the above

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Q.4 A chopper may be thought as a (CO5)

- a) Inverter with DC input
- b) DC equivalent of an AC transformer
- c) Diode rectifier
- d) DC equivalent of an induction motor

Q.5 When a SCR is in the forward blocking state. (CO1)

- a) All the 3 junctions are reverse biased
- b) The anode and cathode junctions are forward biased but the gate junction is reverse biased
- c) The anode junctions in forward biased but the cathode and gate junctions are reverse biased.
- d) The anode and gate junctions are forward biased but the cathode junctions is reverse biased

Q.6 A TRIAC is a _____ Switch. (CO2)

- a) Bidirectional b) Unidirectional
- c) Manual d) None of the above

SECTION-B

Note: Objective/Completion type questions. All questions are compulsory. (6x1=6)

- Q.7 Heat Sinks are generally given a dull black finish. (True/False) (CO2)
- Q.8 Draw the symbol of a UJT. (CO2)
- Q.9 Gate signal can be used to turn off the SCR (True/False) (CO1)

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- Q.10 Equivalent circuit of a TRIAC has two _____ connected in anti parallel. (CO2)
- Q.11 The chopper operates in _____ quadrant when operated in Class B. (CO5)
- Q.12 HVDC transmission is suitable for long distance bulk power transfer. (True/False) (CO4)

SECTION-C

Note: Short answer type Questions. Attempt any eight questions out of ten Questions. (8x4=32)

- Q.13 Why gate triggering method of SCR is widely used? (CO1)
- Q.14 Draw the circuit of a TRIAC based fan regulator. (CO2)
- Q.15 List the steps for routine maintenance of Lead Acid batteries. (CO4)
- Q.16 What is the need of Heat Sinks? (CO2)
- Q.17 Explain the critical di/dt rating of SCR. (CO1)
- Q.18 Differentiate between natural and forced commutation of SCR? (CO1)
- Q.19 Draw a basic block diagram of any solar power plant. (CO4)
- Q.20 Describe the basic principle of V/F operation of AC drive. (CO5)

- Q.21 In a step down chopper, if $V_s = 100V$ and the chopper is operated at a duty cycle of 75%. Find the output voltage. (CO5)
- Q.22 Explain the two functions of a free wheeling diode. (CO3)

SECTION-D

Note: Long answer questions. Attempt any two questions out of three Questions. (2x8=16)

- Q.23 What is a static UPS? Differentiate between on line and off line UPS. Explain the working of OFF LINE UPS with the help of a block diagram. (2,3,3) (CO4)
- Q.24 Explain the working of a single phase full wave fully controlled bridge converter with the help of waveforms. Why it is called fully controlled? (7,1) (CO3)
- Q.25 Explain the working of a UJT based Relaxation oscillator circuit with the help of circuit diagram and waveforms. (CO2)