Q.28 Give the working principle and V-I characteristics of DIAC. (CO1)

Q.29 Explain the operation of Dual Converter in Circulating mode with Diagram. (CO3)

Q.30 What is dynamic and static equalizing circuit? Why these are used in the circuit? (CO3)

Q.31 Define (CO4)

a) Surges b) Power failure
c) Harmonic distortion d) Frequency variation
e) Sag

Q.32 Give the block diagram of UPS and explain its basic parts. (CO5)

Q.33 Explain Regenerative braking mode with diagram. (CO5)

Q.34 Give principle of operation of HVDC Transmission. (CO5)

Q.35 Write merits and demerits of Series Inverter. (CO3)

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x10=20)

Q.36 Define construction of SCR with diagram. explain working principle and modes of operation of SCR. (CO1)

Q.37 Explain the working and diagram of

a) Single phase half wave controlled rectifier with resistive load.
b) Single phase half wave controlled rectifier with R-L load with load freewheeling diode. (Co2)

Q.38 What is a cycloconverter? Explain single phase step up converter. (CO3)

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5th Sem / Branch : Mechatronics
Sub.: Power Electronics

Time : 3Hrs. M.M. : 100

SECTION-A

Note: Multiple choice questions. All questions are compulsory (10x1=10)

Q.1 The Derating Factor (DRF) is _____ given string efficiency = 95% (CO1)

a) 0.5 b) 0.05
c) 0.95 d) 0.55

Q.2 A TRIAC is equivalent to (CO1)

a) Two SCRs connected in parallel
b) Two SCRs connected in anti-parallel
c) One diode and one SCR connected in parallel
d) One diode & one SCR connected in anto-parallel

Q.3 Field control methods is used in D.C. motors to get (CO4)

a) Speed above normal speed
b) Speed below normal speed
c) Both A & B
d) None of th above

Q.4 A step down chopper can give an output voltage (CO3)

a) Higher than input voltage
b) Lower than input voltage
c) Both higher and lower than input voltage
d) All of the above

Q.5 The duty cycle of a chopper is given by (CO3)

a) $\frac{Ton}{Toff}$ b) $\frac{Toff}{Ton}$

c) $\frac{Ton}{Ton+Toff}$ d) $\frac{Ton}{Ton+Toff}$

Q.6 Under voltage for an extended period of time causing equipment to malfunction is known as (CO5)

a) Sag b) Surge

c) Brownout d) Power Failure

Q.7 Class A-Chopper operates in (CO3)

a) First quadrant

b) Second quadrant

c) All four quadrants

d) Both first and second quadrant

Q.8 MOSFET is a (CO1)

a) Current controlled device

b) Voltage controlled device

c) Both A & B

d) Power controlled device

Q.9 SCR is a _____ layer and _____ terminal device. (CO1)

a) 3, 3 b) 4, 4

c) 4, 3 d) 3, 4

Q.10 A3 phase full wave fully controlled converter is a _____ pulse converter. (CO2)

a) 3 b) 6

c) 12 d) 2

SECTION-B

Note: Objective type questions. All questions are compulsory. (10x1=10)

Q.11 The value of latching current is more than Holding Current. (True/False) (CO1)

Q.12 SCR is a Fully Controlled Switch?(True/False) (CO1)

Q.13 The three terminals of SCR are Gate. Drain and Source. (True/False) (CO1)

Q.14 The cathode of the SCR is always at negative potential w.r.t. anode (True/False) (CO1)

Q.15 A UJT has ____ PN junction. (CO1)

Q.16 A rectifier converters_____to _____. (CO2)

Q.17 The full form of UPS is _____. (CO5)

Q.18 What is firing angle? (CO2)

Q.19 What is slip power? (CO3)

Q.20 Give applications of dual converter? (CO3)

SECTION-C

Note: Short answer type questions. Attempt any twelve questions out of fifteen questions. (12x5=60)

Q.21 What is an inverter? What are its different types? (CO3)

Q.22 Explain the controlling techniques of the chopper? (CO3)

Q.23 Explain the working of SMPS with diagram. (CO3)

Q.24 Explain different types of choppers according to quadrants. (CO3)

Q.25 Explain the following terms related to SCR. (CO1)

a) Forward break over voltage

b) Latching current c) Holding current

d) Forward dv/dt rating e) PIV rating

Q.26 Explain the UJT relaxation oscillator with diagram. (CO1)

Q.27 What are AC and DC drives? (CO1)