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3rd Sem / Automation & Robotics

Subject : Drives and Control Systems

Time : 3 Hrs. M.M. : 60

SECTION-A

Note: Multiple choice questions. All questions are compulsory (6x1=6)

Q.1 SCR has_____ number of layers: (CO1)

a) 1 b) 2

c) 4 d) 6

Q.2 A DIAC is a _____ device: (CO1)

a) Unidirectional b) Bidirectional

c) Tri directional d) All of the above

Q.3 A cyclo converter converts _____ into_____. (CO3)

a) DC, AC b) AC, DC

c) DC, DC d) AC, AC

Q.4 In Single phase half wave-controlled rectifier _____ SCR are used. (CO2)

Q.22 Compare AC and DC Drives? (CO4)

SECTION-D

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

Q.23 Draw and explain construction, working and V-I characteristics of TRIAC? (CO1)

Q.24 Define and classify Inverter? Explain series, parallel and Bridge inverter with neat diagram and list their applications? (CO5)

Q.25 Design a battery charger circuit using SCR and explain function of each component? (CO4)

a) 0 b) 1

c) 3 d) 4

Q.5 R in SCR stands for _____ (CO1)

a) Rectifier b) Regenerative

c) Repeat d) Rolled

Q.6 Which of the following is not a requirement in a heat sink? (CO1)

a) Good thermal Conductivity

b) Cost Effective

c) Light weight

d) Easy to Corrode

SECTION-B

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

Q.7 Define UPS? (CO5)

Q.8 Expand SMPS? (CO5)

Q.9 SCR can only pass current to load in positive half cycle of the supply. (T/F) (CO1)

Q.10 In R-C gate triggering circuit firing angle can be up to_____^{o}. (CO2)

Q.11 List 2 materials suitable to be used as heat link? (CO1)

Q.12 Define latching current? (CO2)

SECTION-C

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

Q.13 Explain two transistor analogy of an SCR with suitable diagram? (CO1)

Q.14 Define triggering? List its type? Explain any one in detail? (CO1)

Q.15 Why we need SCRs to be connected in series and parallel? (CO3)

Q.16 Draw and explain Snubber circuit? (CO1)

Q.17 Compare online and offline UPS? (CO5)

Q.18 Define controlled rectifiers? Explain single phase half wave-controlled rectifier with neat sketch? (CO2)

Q.19 Explain construction and working of chopper-based DC Drive? (CO4)

Q.20 What is AC drive? Draw and explain its various blocks? (CO4)

Q.21 List applications of SMPS? (CO5)