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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 have_____ number of PN junctions: (CO1)

a) 1 b) 2

c) 4 d) 3

Q.2 An SCR is a _____ device: (CO1)

a) Unidirectional b) Bidirectional

c) Tri directional d) All of the above

Q.3 An inverter converts _____ into_____. (CO3)

a) DC, AC b) AC, DC

c) DC, DC d) AC, AC

Q.4 In Single phase full wave full control bridge type rectifier _____ SCR are used. (CO2)

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 SCR? (CO1)

Q.24 Define and classify UPS? Explain each type of UPS with neat diagram and list its applications? (CO5)

Q.25 Design a circuit for speed control of single-phase induction motor? Explain its working using appropriate waveforms. (CO4)

a) 2 b) 4

c) 6 d) 3

Q.5 M in SMPS stands for_____ (CO5)

a) Master b) More

c) Mode d) Mean

Q.6 Which of the following is not a choice of material for heat sink? (CO1)

a) Copper b) Plastic

c) Aluminum d) Alloy of Aluminum

SECTION-B

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

Q.7 Define Duel Converters ? (CO3)

Q.8 Define duty cycle? (CO4)

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

Q.10 In Resistance based gate triggering circuit firing angle can be up to_____°. (CO2)

Q.11 List 2 properties of a material suitable to be used as heat sink? (CO1)

Q.12 Define holding current? (CO1)

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 commutation? List its type? Explain any one in detail? (CO4)

Q.15 Outline the need for series and parallel operation of SCR? (CO3)

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

Q.17 Compare controlled and uncontrolled rectifiers? (CO2)

Q.18 Classify Choppers? Explain class E chopper with neat sketch? (CO3)

Q.19 Explain construction and working of controlled rectifier-based DC drive? (CO4)

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

Q.21 Explain working of SMPS with the help of suitable diagram? (CO5)

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